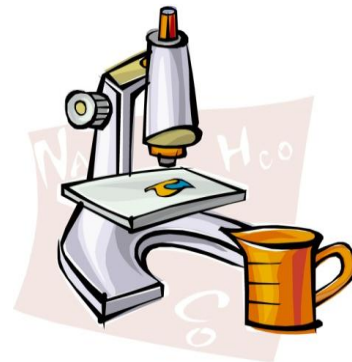


4th Grade Curriculum Essentials Document



Boulder Valley School District Board of Education

<p><u>District A</u> Shelly Benford shelly.benford@bvsd.org voice-mail: 720-561-5815 Term Expires: 2015</p>	<p><u>District B</u> Lesley Smith, Ph.D. lesley.smith@bvsd.org voice-mail: 720-561-5814 Term Expires: 2013</p>
<p><u>District C</u> - Vice-President Laurie Albright, Ed.D. laurie.albright@bvsd.org voice-mail: 720-561-5817 Term Expires: 2015</p>	<p><u>District D</u> Sam Fuqua sam.fuqua@bvsd.org voice-mail: 720-561-5813 Term Expires: 2015</p>
<p><u>District E</u> - Treasurer Tom Miers tom.miers@bvsd.org voice-mail: 720-561-5816 Term Expires: 2013</p>	<p><u>District F</u> Jennie Belval jennie.belval@bvsd.org voice-mail: 720-561-5818 Term Expires: 2013</p>
<p><u>District G</u> - President Jim Reed jim.reed@bvsd.org voice-mail: 720-561-5819 Term Expires: 2015</p>	<p>BVSD Superintendent Bruce K. Messinger, Ph.D. superintendent@bvsd.org phone: 720-561-5100</p>

Table of Contents

General Introduction

Colorado’s 21st Century Skills	5
Comparing the Revised Colorado Academic Standards with previous BVSD Curriculum	6
Instructional Framework	7
Characteristics of a BVSD Standards Based Classroom	8-9
Continuum of State Standards Definitions	10
CELPS (Colorado English Language Proficiency Standards).....	11-34
RtI (Response to Intervention).....	35-36
Curriculum Glossary	37-40
Design Templates	41-46

4th Grade Curriculum Essentials

Health	47-67
English Language Arts	68-124
Mathematics	125-185
Science	186-204
Social Studies	205-227

General Introduction

Colorado's 21st Century Skills

The 21st century skills are the synthesis of the essential abilities students must apply in our rapidly changing world. Today's students need a repertoire of knowledge and skills that are more diverse, complex, and integrated than any previous generation.

Critical Thinking and Reasoning
Information Literacy
Collaboration
Self-direction
Invention

Connections to BVSD New Century Graduate Personal Characteristics and Knowledge and Skills

Personal Characteristics

Respect for Others (Values Others)

Understands and values differences including: cultural, religious, ethnic, gender, age, and ability.

Initiative and Courage

Exhibits self-motivation, self-discipline, persistence, independence, confidence, curiosity, and willingness to take risks, without being afraid to fail.

Citizenship

Understands his or her role and responsibilities and contributes to the community, nation, and world.

Responsibility

Takes responsibility for own thoughts and actions, accepting the consequences.

Ethical Behavior

Exhibits personal integrity through honesty, fairness, sincerity, and a sense of justice.

Flexibility and Open Mindedness

Demonstrates flexibility, open-mindedness, adaptability, resiliency, and openness to change.

Self-respect

Possesses self-respect and confidence, while recognizing one's own limitations.

Knowledge and Skills

Life Competencies

Leads a balanced life: exhibits physical fitness, knows good nutrition rules, stays safe and drug free, knows how to have fun and relax, manages anger and stress, exhibits self-sufficiency and self confidence, and finishes tasks. Understands money management, budgeting, balancing a checkbook, debt management, and record keeping. Demonstrates time management skills and a broad base of knowledge in practical skills such as cooking, sewing, driving, and map reading. Knows how to search for a job and knows where to go to find answers.

Communication: Speaking and Writing

Writes and speaks thoughtfully and articulately to inform, to express one's thinking and creativity, and to communicate to diverse audiences. Uses correct grammar, spelling, and mechanics; organizes for effectiveness. Uses technology for effective communication.

Multicultural/Global Perspective

Understands global customs, economics, literature, history, politics, religions, geography, and demographics. Understands the contributions of different cultures to our society. Demonstrates proficiency in a language other than English.

Literacy: Reading

Reads critically, fluently, and with comprehension. Reads for information research, pleasure and knowledge of literature.

Mathematics

Demonstrates basic math computational skills and understand higher-level mathematical concepts and reasoning. Understands conservation and resource management.

History

Possesses knowledge of American and World Histories and their influence upon the present and the future. Employs literature as a tool for learning about history across cultures.

Science

Demonstrates basic sciences knowledge and understands high-level scientific systems including environmental systems. Knows how to apply the scientific method to real situations.

Arts

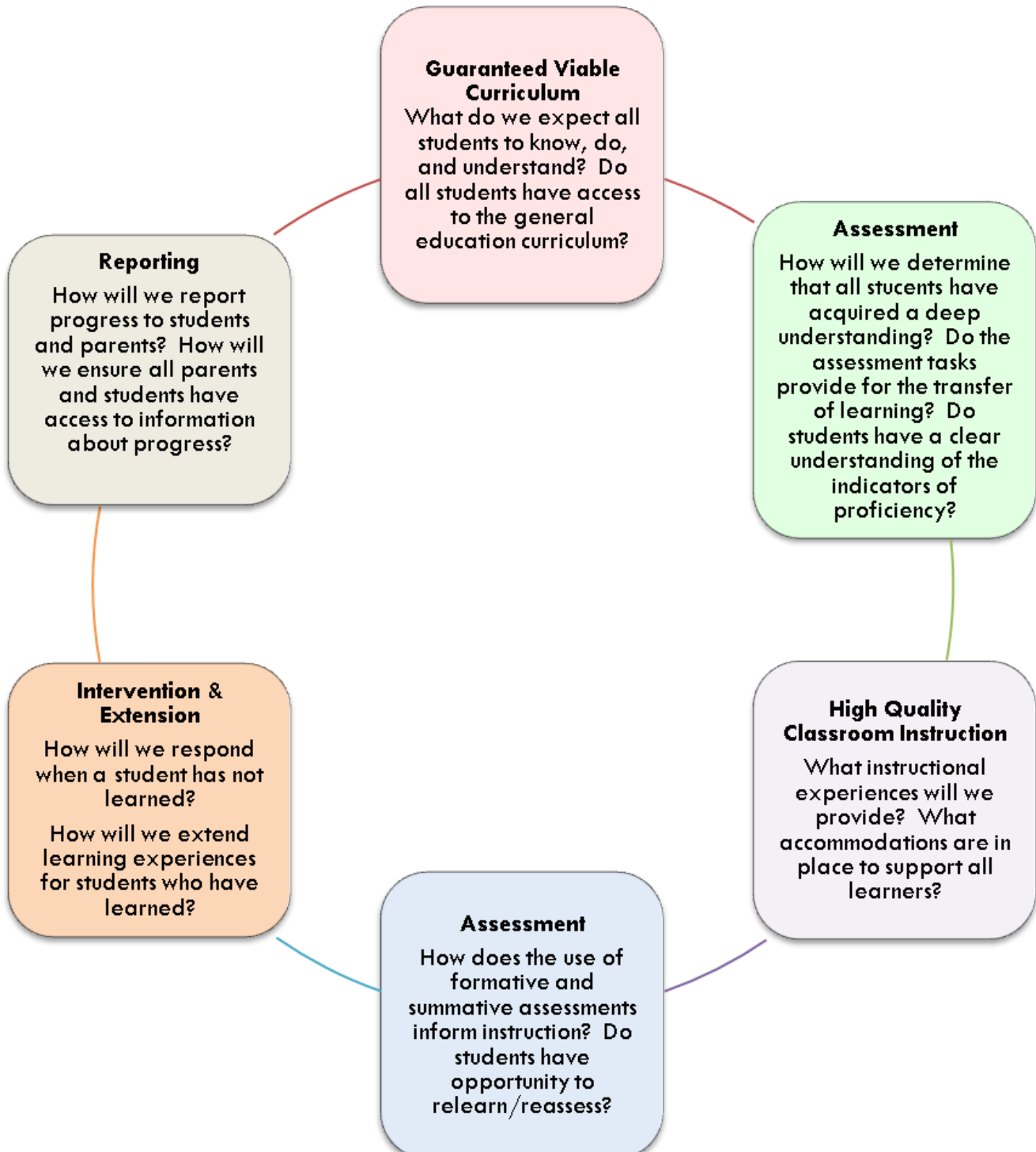
Experiences and appreciates music, visual arts, dance and theater.

Comparing the Revised Colorado Academic Standards with the previous BVSD Curriculum Essential Documents, some of the language is different, but the overall, organizational structure is very similar.

Terms used to describe organizational elements	
Colorado Academic Standards and new BVSD Curriculum Essentials (adopted December 2011)	Previous BVSD Curriculum Essentials (adopted June 2009)
Content area	Content area
Standard	Standard
Prepared Graduates: The P-12 concepts and skills that all students leaving the Colorado education system must have to ensure success in a postsecondary and workforce setting.	Program-level Enduring Understandings
Grade Level Expectations: The articulation, at each grade level, the concepts and skills of a standard that indicates a student is making progress toward being ready for high school (or if in high school - making progress toward being a prepared graduate)	Essential Learnings
Evidence Outcomes: Evidence outcomes are the indication that a student is meeting an expectation at the mastery level.	Essential Knowledge, Skills, Topics, Processes and Concepts
Inquiry Questions: Sample questions intended to promote deeper thinking, reflection and refined understandings precisely related to the grade level expectation.	Essential Questions (Topical/Unit level)

Standards-based Teaching and Learning Instructional Framework

A rigorous and challenging standards-based instructional program ensures maximum academic achievement for all students. The Boulder Valley School District Instructional Framework is a graphic representation that demonstrates how all of the components of an instructional program fit together. Teachers should use this framework and its questions to guide instructional planning and decision-making.



Characteristics of a Boulder Valley School District Standards Based Classroom

Curriculum

All Students Have Access to the General Education Curriculum

- Standards/grade level expectations are clearly visible—in writing—in age appropriate student-friendly language
- Continual correlation of curriculum is made to the standards/grade level expectations
- Models of high quality products (teacher generated, student generated or both) are provided by the district
- Students and parents are informed of expectations (course syllabus course, standards/grade level expectations, grading policy, homework policy, and final culminating activity)
- All students are guaranteed access to the standards/grade level expectations
- Lessons and units are developed using a backwards design process
- Suggested timelines are followed

Instruction

Quality Instruction Demands Student-Teacher Collaboration in the Learning Process

Instruction focuses on standards/grade level expectations/curriculum

- Clear and high expectation for all students
- Instruction driven by standards/curriculum, not materials or a published program
- Frequent, timely, meaningful feedback of student accomplishment

Instruction supports equity with multiple opportunities to learn through grouping, scaffolding, differentiation, and extension

- Teachers use multiple forms of representation are used (e.g., pictures, words, symbols, diagrams, tables, graphs, word walls)

Students actively engage in learning

- Participate in classroom talk (listening, elaborating, clarifying, expanding)
- Apply rigorous, strategic thinking (application, explanation, perspective, interpretation, perspective, empathy, self-knowledge)

Characteristics of a Boulder Valley School District Standards Based Classroom cont'd

Assessment

Assessments are Tightly Aligned to the Standards

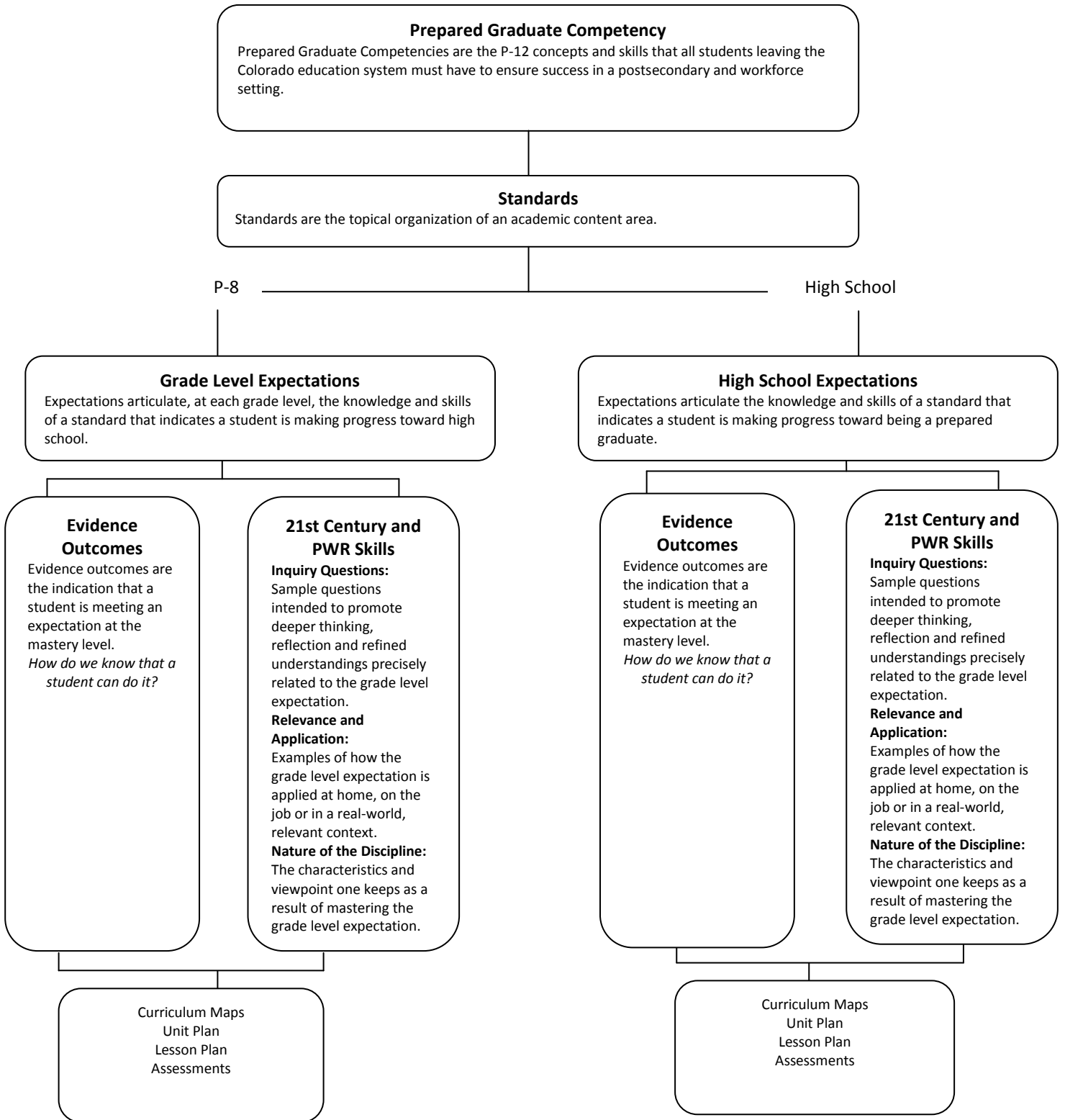
- Students and parents are provided with clear descriptions of proficiency
- Classroom grading practices clearly show how students are progressing toward grade level expectations/standards
- Grading is based on attainment of the standards
- Student understanding is assessed through multiple types of formative and summative assessments
- Student assessment results are used to make instructional decisions about what direction to take
- Feedback explicitly guides continuous progress toward mastery of the standard and is provided to students in a timely manner
- Opportunities to relearn, reassess, and extend learning are embedded in every classroom
- Teachers collaborate in the design and analysis of common assessments that are aligned to standards
- Students create authentic products and performances for critical audiences

Learning Environment

A Healthy Community of Learners Thrives on Collaborative Processes That Value the Input of All Members

- Positive respectful relationships are evident within the classroom
- Students monitor and manage the quality of their own learning
- Student enrollment shows gender and racial/ethnic diversity
- Verbal and nonverbal cues indicate student engagement
- Teachers plan so that time is used purposefully and efficiently
- Students use time provided purposefully and efficiently
- Students and teachers negotiate and share decisions that positively impact the learning environment
- Teachers help students make connections between community, nation, world, and self
- Teachers show a connectedness with all students, and are respectful of student diversity and individual differences
- Students believe they are capable of success, take risks to engage in new experiences, and extend skills and habits of mind

Continuum of State Standards Definitions



Access for All

Colorado English Language Proficiency Standards CELPS

Boulder Valley School District is committed to providing access to all students through including the CELP Standards (WIDA) in this Curriculum Essentials Document and through building and utilizing a comprehensive RtI system.

CELPS/WIDA

World-Class Instructional Design and Assessment

On December 10, 2009, the Colorado State Board of Education voted unanimously to adopt the World-Class Instruction Design and Assessment standards (WIDA) as the Colorado English Language Proficiency standards.

What is CELPS/WIDA?

CELP Standards (WIDA) is now used by a consortium of 22 states dedicated to the design and implementation of high standards and equitable educational opportunities for English language learners (ELLs).

CELP Standards (WIDA) is a framework for instruction for English language development. There are five CELP Standards (WIDA) English language proficiency standards/content areas:

- ELLs communicate for **Social** and **Instructional** purposes within the school setting.
- ELLs communicate information, ideas, and concepts necessary for academic success in the content area of **Language Arts**.
- ELLs communicate information, ideas, and concepts necessary for academic success in the content area of **Mathematics**.
- ELLs communicate information, ideas, and concepts necessary for academic success in the content area of **Science**.
- ELLs communicate information, ideas, and concepts necessary for academic success in the content area of **Social Studies**.

How is CELPS/WIDA organized?

Grade Level Clusters

CELP Standards (WIDA) is organized in five grade-level clusters: Pre K-K, 1-2, 3-5, 6-8, and 9-12.

Language Domains

Each of the five English language proficiency standards encompasses four language domains (listening, speaking, reading, and writing) that define how ELLs process and use language.

Listening- process, understand, interpret, and evaluate spoken language in a variety of situations.

Speaking- engage in oral communication in a variety of situations for a variety of purposes and audiences.

Reading-process, understand, interpret and evaluate written language (symbols and text) with understanding and fluency.

Writing- engage in written communication in a variety of situations for a variety of purposes and audiences.

Proficiency Levels

There are six English language acquisition proficiency levels:

1-Entering, 2-Beginning, 3-Developing, 4-Expanding, 5-Bridging, and 6-Reaching

Proficiency Levels identification must include looking at:

- **Linguistic Complexity:** The amount and quality of speech or writing for a given situation
- **Forms and Conventions:** The types and variety of grammatical structures, conventions, mechanics and fluency
- **Vocabulary Usage:** The specificity of words or phrases for a given context

What are CAN DO Descriptors?

The CAN DO Descriptors are examples of expectations of English language learners for each of the four language domains—listening, speaking, reading, and writing—and six levels of English language proficiency—Entering, Beginning, Developing, Expanding, Bridging and Reaching. There are CAN DO descriptors for each grade level clusters as well as the general PreK-12 spectrum. These differences must be taken into account when using the Descriptors.

- It is important to acknowledge the variability of students' cognitive development due to age, grade level spans, diagnosed learning disabilities (if applicable) and their diversity of educational experiences.
- Expectations of young ELLs differ substantially from those of older students.

The CAN DO Descriptors provide a starting point for working with ELLs and a collaborative tool for planning.

What are Model Performance Indicators?

The CELP Standards (WIDA) English language proficiency standards document includes some examples of formative and summative model performance indicators (MPIs). The MPIs are assessable tasks which students can be expected to do as they approach the transition to the next level of English language proficiency. In addition Model Performance Indicators can be developed to differentiate instruction for ELLs.

An MPI include three components:

- **Language function**- how ELLs process or use language to communicate in a variety of situations (Identify, describe, summarize, answer, etc).
- **Topics**- provide the context or backdrop for language interaction (basic operations, life cycles, facts/opinions, communities etc).
- **Support**- provide scaffold (sensory, graphic or interactive).

Some examples are provided of MPIs for all content areas. Content teachers and ESL teachers work together to develop MPIs for the grades they are teaching.

What assessments will be used with CELPS/WIDA?

The state of Colorado is in the process of developing or adopting an assessment which will replace the CELA by Spring 2014. For more information see www.wida.us.

Colorado English Language Proficiency Standards (CELPS)

The following are example pages from the
CELPS/WIDA standards. The complete
CELPS/WIDA documents can be accessed at:

<http://www.wida.us/index.aspx>

Performance Definitions for the levels of English language proficiency

At the given level of English language proficiency, English language learners will process, understand, produce, or use:

6 Reaching	<ul style="list-style-type: none"> specialized or technical language reflective of the content area at grade level a variety of sentence lengths of varying linguistic complexity in extended oral or written discourse as required by the specified grade level oral or written communication in English comparable to proficient English peers
5 Bridging	<ul style="list-style-type: none"> the technical language of the content areas; a variety of sentence lengths of varying linguistic complexity in extended oral or written discourse, including stories, essays, or reports; oral or written language approaching comparability to that of English proficient peers when presented with grade level material
4 Expanding	<ul style="list-style-type: none"> specific and some technical language of the content areas; a variety of sentence lengths of varying linguistic complexity in oral discourse or multiple, related paragraphs; oral or written language with minimal phonological, syntactic, or semantic errors that do not impede the overall meaning of the communication when presented with oral or written connected discourse with occasional visual and graphic support
3 Developing	<ul style="list-style-type: none"> general and some specific language of the content areas; expanded sentences in oral interaction or written paragraphs; oral or written language with phonological, syntactic, or semantic errors that may impede the communication but retain much of its meaning when presented with oral or written, narrative or expository descriptions with occasional visual and graphic support
2 Beginning	<ul style="list-style-type: none"> general language related to the content areas; phrases or short sentences; oral or written language with phonological, syntactic, or semantic errors that often impede the meaning of the communication when presented with one to multiple-step commands, directions, questions, or a series of statements with visual and graphic support
1 Entering	<ul style="list-style-type: none"> pictorial or graphic representation of the language of the content areas; words, phrases, or chunks of language when presented with one-step commands, directions, WH-questions, or statements with visual and graphic support

Figure 5M: CAN DO Descriptors for the Levels of English Language Proficiency, PreK-12

For the given level of English language proficiency, **with support**, English language learners can:

	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 Reaching
LISTENING	<ul style="list-style-type: none"> Point to stated pictures, words, phrases Follow one-step oral directions Match oral statements to objects, figures or illustrations 	<ul style="list-style-type: none"> Sort pictures, objects according to oral instructions Follow two-step oral directions Match information from oral descriptions to objects, illustrations 	<ul style="list-style-type: none"> Locate, select, order information from oral descriptions Follow multi-step oral directions Categorize or sequence oral information using pictures, objects 	<ul style="list-style-type: none"> Compare/contrast functions, relationships from oral information Analyze and apply oral information Identify cause and effect from oral discourse 	<ul style="list-style-type: none"> Draw conclusions from oral information Construct models based on oral discourse Make connections from oral discourse 	
SPEAKING	<ul style="list-style-type: none"> Name objects, people, pictures Answer WH- (who, what, when, where, which) questions 	<ul style="list-style-type: none"> Ask WH- questions Describe pictures, events, objects, people Restate facts 	<ul style="list-style-type: none"> Formulate hypotheses, make predictions Describe processes, procedures Retell stories or events 	<ul style="list-style-type: none"> Discuss stories, issues, concepts Give speeches, oral reports Offer creative solutions to issues, problems 	<ul style="list-style-type: none"> Engage in debates Explain phenomena, give examples and justify responses Express and defend points of view 	
READING	<ul style="list-style-type: none"> Match icons and symbols to words, phrases or environmental print Identify concepts about print and text features 	<ul style="list-style-type: none"> Locate and classify information Identify facts and explicit messages Select language patterns associated with facts 	<ul style="list-style-type: none"> Sequence pictures, events, processes Identify main ideas Use context clues to determine meaning of words 	<ul style="list-style-type: none"> Interpret information or data Find details that support main ideas Identify word families, figures of speech 	<ul style="list-style-type: none"> Conduct research to glean information from multiple sources Draw conclusions from explicit and implicit text 	
WRITING	<ul style="list-style-type: none"> Label objects, pictures, diagrams Draw in response to a prompt Produce icons, symbols, words, phrases to convey messages 	<ul style="list-style-type: none"> Make lists Produce drawings, phrases, short sentences, notes Give information requested from oral or written directions 	<ul style="list-style-type: none"> Produce bare-bones expository or narrative texts Compare/contrast information Describe events, people, processes, procedures 	<ul style="list-style-type: none"> Summarize information from graphics or notes Edit and revise writing Create original ideas or detailed responses 	<ul style="list-style-type: none"> Apply information to new contexts React to multiple genres and discourses Author multiple forms/ genres of writing 	

Variability of students' cognitive development due to age, grade level spans, their diversity of educational experiences and diagnosed learning disabilities (if applicable) are to be considered in using this information.

Examples of Elementary Model Performance Indicators

(Summative & Formative)

ELP Standard 1: Social and Instructional Language, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
LISTENING	Music & movement	Mimic musical beats or movements modeled by teachers in a whole group (e.g., hop, hop, jump; one clap, two claps)	Respond to chants based on illustrations using gestures, movement or instruments modeled by teachers in a whole group	Respond to songs based on illustrations using gestures, movement or instruments modeled by teachers in a whole group	Interpret songs, (e.g., melodies from diverse cultures) based on illustrations through movement or playing of instruments in small groups or whole class	Follow lyrics of songs and respond accordingly in small groups or whole class (e.g., "Put your right foot in...")
SPEAKING	Spatial relations	Repeat answers to questions about position or location of real-life objects or persons (e.g., "Where's Maria? <i>Here.</i> ")	Answer questions or commands about position or location of real-life objects or persons using relational words (e.g., "Where's the bunny? <i>Over there.</i> ")	Relate position or location of real-life objects or persons using phrases (e.g., "under the table," "on the floor," "in the corner")	Indicate contrasting or opposite position or location of real-life objects or persons using phrases or short sentences (e.g., "The ball goes <i>up.</i> The ball comes <i>down.</i> ")	Describe position or location of real-life objects or persons using sentences
READING	Hygiene & safety	Identify environmental print related to hygiene or safety around classroom or school (e.g., washrooms, fire extinguisher) in L1 or L2	Find real-life objects or pictures related to hygiene or safety that match environmental print around classroom or school (e.g., labels for soap, sink) in L1 or L2	Identify icons, symbols and words related to hygiene or safety found in environmental print or pictures around classroom or school in L1 or L2	Connect environmental print or pictures related to hygiene or safety to teacher reading of illustrated books in L1 or L2	Share "oral reading" of illustrated books related to hygiene or safety with a partner
WRITING	Games	Produce drawings of familiar games from home or school based on class models using language experience in L1 or L2	Describe familiar games from home or school based on class models using language experience in L1 or L2	Tell how to play familiar games from home or school based on class models using language experience in L1 or L2	Depict stories about familiar games from home or school with the class using language experience in L1 or L2	Create class books about games from home or school using language experience in L1 or L2

Level 6- Reaching

	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	
LISTENING	Concepts about print	Point to features of big books in a large group (e.g., "cover," "title," "author," "illustrator") according to oral commands	Show directionality of print in various sources in a large group (e.g., left to right, beginning/ending of pages, top/bottom) according to oral commands	Identify features of text in context with a partner (e.g., spaces between words, sentences) according to oral directions	Sort features of text with a partner (e.g., lower/upper case letters, periods/question marks) according to oral directions	Match illustrations to oral reading of related sentences or short stories	Level 6 - Reaching
SPEAKING	Nursery rhymes	Repeat key words in rhymes from picture cues in a whole group	Chant phrases or short sentences in rhymes using gestures from picture cues in a whole group	Rehearse short rhymes using gestures from picture cues in whole or small groups	Complete short rhymes using gestures from picture cues in whole or small groups	Recite rhymes using gestures from memory in whole or small groups	
READING	Same & different	Match pictures and icons with those that are the same with a partner	Sort pictures and icons that are the same or different with a partner	Classify illustrated words that are the same or different with a partner	Identify letters in illustrated words that are the same or different with a partner	Point out features of words that are the same and different with a partner (e.g., capital v. lower case letters)	
WRITING	Sounds & symbols	Experiment making symbols or letters from models using realia (e.g., in the sand, from play dough)	Reproduce symbols or letters from models using realia (e.g., straws)	Trace symbols or letters associated with pictures or realia	Copy symbols or letters of beginning sounds from labeled pictures in context	Produce letters of beginning sounds from pictures in context	

ELP Standard 3: The Language of Mathematics, Formative Framework

	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	
LISTENING	Non-standard measurement tools	Associate size of real-life objects (e.g., “big,” “little”) with non-standard measurement tools with a partner as modeled orally	Sort real-life objects by size (e.g., “short,” “long”) using non-standard measurement tools with a partner as modeled orally	Determine size of real-life objects using non-standard measurement tools (e.g., three hands long) with a partner as modeled orally	Estimate size of objects from pictures using non-standard measurement tools with a partner as directed orally	Rank size of objects described according to non-standard measurement tools with a partner as directed orally	Level 6 - Reaching
SPEAKING	Quantity	Participate in and supply quantity words in songs and chants in a whole group (e.g., “One, two, button my shoe.”)	Complete phrases in songs and chants involving quantity in a whole group (e.g., “One potato, two potato, _____.”)	Repeat verses and chants involving quantity in a whole group	Provide sentences or lines from songs and chants involving quantity in a whole group	Initiate and lead songs and chants involving quantity in a whole group	
READING	Attributes	Identify icons or pictures of real-life objects with a single attribute as modeled (e.g., “This is a toy. Find the picture of a toy.”)	Classify icons or pictures of real-life objects with a single attribute that belong and don't belong to a group as modeled	Identify icons or pictures of real-life objects with two attributes that belong to a group as modeled (e.g., “Find the big, yellow ones.”)	Sort labeled icons or pictures of real-life objects with two attributes into groups as modeled	Arrange labeled icons or pictures of real-life objects with two attributes by group membership as modeled (e.g., <i>small</i> animals with four legs)	
WRITING	Equivalency	Draw or trace matched pairs of real-life objects as modeled and directed orally (e.g., two hands, two feet)	Connect 1:1 matched sets of real-life objects or pictures as modeled and directed orally (e.g., three pencils with three pencils)	Trace numerals that correspond to matched sets of real-life objects or pictures as modeled and directed orally	Make or reproduce numerals up to number ten with various materials that correspond to matched sets of pictures from word walls or word banks as modeled	Supply numerals and number words that correspond to matched sets of pictures from word walls or word banks	

ELP Standard 4: The Language of Science, Formative Framework

	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	
LISTENING	Change in self & environment	Indicate change in self through gestures or environment from pictures, according to oral commands	Match pictures or photographs of offspring with adults following oral models (e.g., from seeds to plants, from kittens to cats) as examples of change	Identify stages of development in pictures of self or organisms in the environment following oral models as examples of change	Sort illustrated activities by stages of development of self or organisms in the environment following oral models as examples of change	Sequence illustrated activities that denote change in self or environment (e.g., life cycle of plants) as directed orally	Level 6- Reaching
SPEAKING	Senses	Associate senses with physical actions with a partner in L1 or L2	Give examples of uses of senses with a partner in L1 or L2 (e.g., "I see...")	Describe everyday activities that involve senses with a partner in L1 or L2	Explain why senses are useful or important to a partner in L1 or L2	Predict how senses are affected by change (e.g., injury, temperature)	
READING	Animals	Match outlines of animals to pictures or objects (e.g., fitting puzzle pieces) with a partner	Match pictures of animals with labels to animal icons with a partner	Sort pictures of animals with labels by first letter (e.g., cat, cow) with a partner	Find animal words in picture books and classrooms (e.g., on word walls, bulletin boards) with or without a partner	Classify pictures of animals with labels according to picture books (e.g., at the farm)	
WRITING	Colors	Create "messages" in L1 or L2 by experimenting with or mixing colors (e.g., paints)	Practice making letters or scribble writings from models in L1 or L2 using a variety of colors and media	Produce letters and words with invented spellings in L1 or L2 based on model picture books or experiments about colors	Reproduce words or phrases with invented spellings in L1 or L2 found in picture books or experiments about colors	Compose "stories" about colors (e.g., rainbows) using drawings and words, phrases or short sentences with invented spellings in L1 or L2	

	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching
LISTENING	Symbols & holidays	Point to or locate symbols or holiday scenes in classrooms, pictures or objects named orally (e.g., flags)	Show symbols of holidays from pictures or objects based on oral commands (e.g., a pumpkin with a face)	Match symbols of holidays with illustrated scenes based on oral directions	Identify symbols of holidays within illustrated scenes based on oral directions	Find symbols of holidays based on oral descriptions or oral reading	
SPEAKING	Clothing	Repeat names of and identify clothing on self or peers when modeled in L1 or L2	Brainstorm names of articles of clothing (e.g., "shorts," "pants") with peers in L1 or L2	Describe clothing on self to peers in phrases or short sentences	Describe, with details, clothing worn by peers or by characters in picture books (e.g., "He has a red and blue sweater.")	Give reasons for wearing different kinds of clothing	
READING	Seasons	Categorize pictures according to names of seasons in a whole group	Find labeled illustrations or photographs modeled on word walls or displays of seasons in small groups	Match labeled illustrations or photographs of seasons to those in trade books in small groups	Compare labeled illustrations of seasons in various trade books in small groups	Identify words associated with seasons in illustrated expository text in small groups	
WRITING	Self & family	Draw self-portrait and copy or trace name	Draw family portrait from models or photographs and identify people by initials	Draw family members from models or photographs and label people and pets	Draw and describe family members using words or phrases with invented spellings	Produce illustrated "stories" about self and family using phrases or short sentences with invented spellings	

ELP Standard 1: Social and Instructional Language, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6- Reading
LISTENING	Following directions	Follow oral directions according to simple commands using manipulatives or real-life objects (e.g., "Show me your paper.")	Follow oral directions according to complex commands using manipulatives or real-life objects (e.g., "Put the cubes in a row across the paper.")	Follow oral directions by comparing them with visual cues, nonverbal cues or modeling (e.g., "Fold the paper in half. Then place it on your table the long way.")	Follow oral directions without visual or nonverbal support and check with a peer (e.g., "Put your name on the top line of the paper.")	Follow a series of oral directions without support (e.g., "Put your name on the left-hand side of the paper. Then put the date on the right-hand side.")	
SPEAKING	Likes, dislikes & needs	Answer yes/no or choice questions about likes or dislikes with a partner in L1 or L2 (e.g., "Do you like school?")	Share likes, dislikes or needs with a partner in L1 or L2	Paraphrase or combine likes, dislikes or needs with a partner (e.g., "She likes cake and ice cream.") in L1 or L2	Give reasons for likes, dislikes or needs with a partner (e.g., "I like _____ because...") in L1 or L2	Convince a partner to share your likes, dislikes or needs in L1 or L2	
READING	Leisure activities	Match icons or pictures to same on board games or other leisure activities with a partner	Place labeled pictures with corresponding pictures on board games or other leisure activities with a partner	Respond to words or phrases on board games or other leisure activities by carrying out actions with a partner	Carry out directions according to a series of sentences for board games or other leisure activities with a partner	Follow grade-level written directions for board games or other leisure activities	
WRITING	Feelings & emotions	Draw or orally dictate personal experiences involving feelings and emotions in L1 or L2 from pictures or photographs	Label personal experiences involving feelings and emotions in L1 or L2 using pictures or photographs	Produce phrases or sentences about personal experiences involving feelings and emotions in L1 or L2	Maintain diaries or journals of related sentences about personal experiences involving feelings and emotions in L1 or L2	Compose illustrated stories based on personal experiences involving feelings and emotions	

		Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching
LISTENING	Example Genre	Identify characters, places or objects from visuals and oral phrases in illustrated pattern or predictable books after numerous recitations	Match visuals of characters, places or objects with oral statements from illustrated pattern or predictable books after numerous recitations	Compare/contrast visuals of characters, places or objects from a series of oral sentences from illustrated pattern or predictable books after numerous recitations	Interpret visual connections between characters, places or objects in pages read aloud from illustrated pattern or predictable books	Draw conclusions about characters, places or objects from pattern or predictable books read aloud	
	Pattern books/ Predictable books						
	Example Topic	Follow along with classmates in role play activities modeled and described orally (e.g., gestures for songs, chants or poems)	Role play familiar, everyday activities modeled in illustrated books read by teachers in small groups	Role play characters in plays, videos or illustrated stories read by teachers in small groups	Reenact scenes in plays, videos or illustrated stories read by teachers in small groups	Dramatize grade-level stories that are read by teachers or viewed	
	Role play						
SPEAKING	Example Genre	Name people (e.g., "boy," "man") or objects depicted on illustrated covers of fictional stories with a partner in L1 or L2	Describe people or objects in titles and illustrated covers of fictional stories with a partner in L1 or L2	Predict ideas in storylines based on titles and illustrated covers of fictional stories and share with a partner	Make up the beginning of storylines based on titles and illustrated covers of fictional stories and share with a partner	Connect storylines to personal experiences based on titles and illustrated covers of fictional stories	
	Fiction (literary text)						
	Example Topic	Repeat new language related to story pictures or wordless picture books modeled by teachers	Describe people or places depicted in story pictures or wordless picture books in small groups or pairs	State actions of characters or describe events depicted in story pictures or wordless picture books in small groups or pairs	Tell stories from pictures or wordless picture books in small groups or pairs	Create original stories from a series of pictures, wordless picture books or personal experiences	
	Story telling						

		Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching	
LISTENING	Example Genre Pattern books/ Predictable books	Identify characters, places or objects from visuals and oral phrases in illustrated pattern or predictable books	Match visuals of characters, places or objects with oral statements from illustrated pattern or predictable books	Compare/contrast visuals of characters, places or objects from a series of oral sentences from illustrated pattern or predictable books	Interpret visual connections between characters, places or objects in paragraphs or pages read aloud from illustrated pattern or predictable books	Draw conclusions about main ideas from pattern or predictable books read aloud		
	Example Topic Sequence of story	Match pictures to sentences read aloud	Order pictures of related sentences read aloud that use sequential language (e.g., first, second, last; first, then, next)	Sequence pictures of stories read aloud by beginning, middle and end	Match story sequence read aloud to a series of pictures (e.g., "Once upon a time...and they lived happily ever after.")	Select logical outcomes or endings to stories read aloud		
	SPEAKING	Example Genre Fiction (literary text)	Name people (e.g., "boy," "man") or objects depicted in illustrated covers of fictional stories	Describe people or objects in titles and illustrated covers of fictional stories	Predict ideas in storylines based on titles and illustrated covers of fictional stories	Make up the beginning of storylines based on titles and illustrated covers of fictional stories		Relate storylines to personal experiences based on titles and illustrated covers of fictional stories
		Example Topic Story elements	Name persons (characters) or settings of stories from picture books	Describe characters or settings of stories from picture books	State main ideas or themes of stories, including characters or settings, from picture books or illustrated short stories	Narrate main events of plot sequences in given time frames of picture books or illustrated short stories		Re/tell stories using story elements from picture books or short stories

ELP Standard 3: The Language of Mathematics, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	
LISTENING	Graphs Interpretation of data	Shade or color graphs according to oral commands modeled by a teacher (e.g., “Here is a graph. Color this bar red.”)	Identify data in graphs from oral commands or questions modeled by a teacher (e.g., “Which bar shows the most?”)	Locate information on graphs based on oral statements or questions (e.g., “Which bar shows that most people like ice cream?”) and check with a partner	Display comparative data on graphs according to oral commands (e.g., “Fill in the graph to say there are more girls than boys.”) and check with a partner	Interpret data on graphs from oral descriptions (e.g., “Which graph says, ‘Most children are wearing red, some are wearing blue and the fewest are wearing green?’”)	Level 6- Reading
SPEAKING	Number sense	Provide identifying information that involves real-world numbers (e.g., age, address or telephone number) to a partner	Give examples of things with real-world numbers (e.g., room numbers, bus numbers or calendars) to a partner	Exchange examples of how or when to use numbers outside of school with a partner (e.g., shopping)	Explain how to play games or activities that involve numbers (e.g., sports, board games, hopscotch) to a partner	Tell or make up stories or events that involve numbers	
READING	Standard & metric measurement tools	Use diagrams to guide use of standard or metric measurement tools with a partner	Use labeled diagrams from texts to guide use of standard or metric measurement tools with a partner	Identify key phrases in illustrated text to use standard or metric measurement tools with a partner	Follow illustrated directions from text to compare tools for standard or metric measurement with a partner	Follow illustrated directions from text to use standard or metric measurement tools	
WRITING	Quantity	Produce pictures with numerals or reproduce words associated with quantities from models (e.g., from newspapers or magazines)	Take dictation or make notes of examples of phrases associated with quantities in everyday situations (e.g., “a little of,” “a lot of”)	Provide examples of quantities in context (e.g. “a bunch of grapes”) using phrases or short sentences	Describe uses of quantities in everyday math with illustrated examples using sentences	Explain importance of everyday math using quantities in real-life situations (e.g., when shopping or cooking) using a series of related sentences	

ELP Standard 4: The Language of Science, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6-Reading
LISTENING	Force & motion	Explore movement of real-life objects by following oral commands and modeling (e.g., “Push the ball. Watch it move. Make it stop.”)	Move real-life objects by following multi-step oral directions (e.g., “The car goes backwards. The car then goes forwards. Finally, it stops.”)	Compare movement of objects based on oral statements by pointing to pictures or demonstrating using real-life objects (e.g., “Show me which goes fastest: bikes, buses or airplanes.”)	Predict movement of objects by pointing to pictures or demonstrating based on oral statements (e.g., “Show what happens when you let go of balloons.”)	Role play effects of force on motion through gestures or demonstration based on oral scenarios	
SPEAKING	Earth & sky	Name objects of the earth or sky from observation, photographs or models	Describe objects of the earth or sky from observation, photographs or models (e.g., “The sun is big and yellow.”)	State relationships between objects of earth or sky using diagrams, photographs or models (e.g., “Mercury is closest to the sun.”)	Discuss and show changes in the earth and sky using diagrams, photographs or models (e.g., seasons, day/night)	Report, with details, on topics about the earth and sky (e.g., the Big Dipper) using diagrams, photographs or models	
READING	Natural resources	Select labeled natural resources (e.g., sources of water) to make posters from magazine pictures with a partner	Search for words and pictures in big books or illustrated trade books associated with natural resources (e.g., rain or ice) with a partner	Identify illustrated phrases associated with the use of natural resources in activities (e.g., “go swimming”) with a partner	Classify illustrated sentences associated with the use/non-use of natural resources in activities with a partner	Sequence sentences to show the use of natural resources in activities (e.g., washing clothes)	
WRITING	Renewable & non-renewable resources	Label objects that represent renewable and non-renewable materials from real-life or illustrated examples (e.g., paper, cotton or wool) in L1 or L2	List examples of renewable and non-renewable materials from illustrated word/phrase banks using graphic organizers (e.g., T chart) in L1 or L2	Distinguish between renewable and non-renewable resources from pictures or real-life materials (e.g. using phrases or short sentences with opposites) in L1 or L2	Describe goods made from renewable or non-renewable resources from pictures or real-life materials using sentences	Evaluate usefulness of goods made from renewable and non-renewable resources using a series of related sentences	

ELP Standard 5: The Language of Social Studies, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching
LISTENING	Neighborhoods/ Communities	Match signs around neighborhoods with actions based on oral commands and pictures, realia or field trips (e.g., "Stop, look, listen" at railroad crossings) with a partner	Identify signs or places in communities from oral statements and pictures, realia or field trips (e.g., "Firefighters work here.") with a partner	Locate places in relation to other places or signs in neighborhoods or communities from pictures, maps or field trips and oral statements (e.g., "The house is next to the park.") with a partner	Find specific locations on neighborhood or community maps based on detailed oral statements (e.g., "The school is at the corner of First and Oak.") with a partner	Construct or complete neighborhood or community maps with places and signs based on a series of oral directions	
SPEAKING	Families & responsibilities	State what families do based on gestures or modeling in small groups	Share personal responsibilities within a family based on pictures or role playing (e.g., "I feed the dog.") in small groups	Compare responsibilities of family members (e.g., younger and older siblings) based on pictures, role playing or personal experiences in small groups	Propose changes to personal or family responsibilities based on role playing or personal experiences in small groups	Discuss or rate importance of personal or family responsibilities in small groups	
READING	Money & banking	Use phonetic clues to sort or match real or visuals of currencies from around the world, (e.g., peso, penny)	Associate words or phrases related to currencies with illustrated word/phrase walls or picture books	Match simple sentences about familiar experiences with uses of currency shown in illustrations	Sequence illustrated sentences about familiar experiences with uses of currency to make a story	Select titles for grade-level stories about money and banking	
WRITING	Homes & habitats	Draw and label pictures of different types of homes or habitats from models (e.g., on bulletin boards)	Identify different types of homes or habitats from pictures or models using general vocabulary (e.g., "Birds <i>here</i> .")	Describe different types of homes or habitats from pictures using some specific vocabulary (e.g., "Birds live in nests.")	Compare different types of homes or habitats from illustrated scenes using specific vocabulary (e.g., hives v. caves)	Produce stories about different types of homes or habitats using grade-level vocabulary	

	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching
LISTENING	Classroom supplies/ Resources	Identify materials needed to complete tasks from realia and oral commands and check with a partner (e.g., "Take out a number 2 pencil.")	Select materials or resources needed to complete tasks based on realia and compound sentences and check with a partner (e.g., "You need your activity sheet and math book.")	Match materials or resources needed to complete tasks with their uses based on realia and oral directions and check with a partner	Sequence use of materials or resources needed to complete tasks based on realia and oral directions and check with a partner	Evaluate use of materials or resources needed to complete tasks based on oral discourse (e.g., "I may need to change my answer. Which kind of writing tool would be best?")	
SPEAKING	Information gathering	Seek assistance from peers or teachers to gather information (e.g., for assignments) in L1 or L2	Respond to questions from peers or teachers about information gathering (e.g., finding meaning of words) in L1 or L2	Ask questions to obtain information to share with peers in L1 or L2	Clarify information by restating or rephrasing ideas to peers in L1 or L2	Offer specific information that supports ideas with peers	
READING	Personal experiences	Identify words or phrases related to self or personal experiences from illustrated text or word/phrase walls	Make predictions from illustrated text using prior knowledge or personal experiences	Confirm predictions based on prior knowledge or personal experiences from illustrated text	Compare/contrast personal experiences with those in illustrated text	Evaluate validity of information in grade-level text based on personal experiences	
WRITING	Health & safety	Draw, label or list substances or objects around school, home or community related to health or safety from visuals in L1 or L2	Describe health or safety practices around school, home or community from visuals (e.g., pedestrian safety) in L1 or L2	Sequence health or safety procedures or practices at school, home or community from visuals (e.g., fire or disaster drills, accidents on the playground) in L1 or L2	Provide examples and strategies for maintaining health or safety at school, home or community from visuals in L1 or L2	Create pieces (e.g., brochures or newsletters) about safety or health issues with classroom, school, home or community examples	

		Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6- Reaching
LISTENING	Example Genre	Match pictures to individual clues based on oral statements with a partner	Identify pictures associated with solutions to short mysteries read aloud with a partner	Make predictions based on pictures of clues/ pieces of evidence from mysteries and oral descriptions in cooperative groups	Sequence pictures of clues/pieces of evidence from mysteries read aloud in cooperative groups	Apply analogies of events or characters in mysteries read aloud to students' lives	
	Mysteries						
	Example Topic	Point to letter combinations, words, parts of books or illustrations in response to teachers' reading of illustrated books to show comprehension	Gesture during shared reading of illustrated stories or trade books (e.g., giving thumbs-up/ thumbs-down signals) to show comprehension	Follow directions (e.g., create word families or word walls) in response to group reading of illustrated stories or trade books to show comprehension	Respond non-verbally to teachers or peers (e.g., during guided reading) to demonstrate comprehension strategies	Connect information from oral reading of grade-level material to demonstrate comprehension strategies (e.g., "Show me two sentences that go together.")	
	Comprehension strategies						
SPEAKING	Example Genre	Answer WH- or choice questions about pictures of imaginary people, objects or situations from peers in L1 or L2	Describe pictures of imaginary people, objects or situations to peers in L1 or L2	Provide details of pictures of imaginary people, objects or situations to peers	Develop and enact scenarios from pictures of imaginary people, objects or situations with peers	Make up fantasies about imaginary people, objects or situations and share with peers	
	Fantasies						
	Example Topic	Describe self with words and gestures (e.g., features, likes and dislikes)	Compare self with familiar persons (e.g., friends, family members, movie stars) using photographs, pictures or graphic organizers	Compare self with characters in literary works using graphic organizers or technology	Compare self with motives or points of view of characters in literary works using graphic organizers or technology	Explain differences between self-motives or points of view and those of characters in literary works using graphic organizers or technology	
	Points of view						

		Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching	
LISTENING	Example Genre Mysteries	Match pictures to individual clues based on oral statements	Identify pictures associated with solutions to short mysteries read aloud	Make predictions based on pictures of clues/pieces of evidence from mysteries and oral descriptions	Sequence pictures of clues/pieces of evidence from mysteries read aloud	Apply analogies of events or characters in mysteries read aloud to students' lives		
	Example Topic Explicit & inferential information	Match oral statements from narrative or expository material to their illustrated representations	Determine literal meanings of oral passages from narrative or expository material and match to illustrations	Project next in a sequence from oral discourse on narrative or expository material supported by illustrations	Identify cause/effect in oral discourse from narrative or expository material supported by illustrations	Make connections and draw conclusions from oral discourse using grade-level materials		
	SPEAKING	Example Genre Fantasies	Answer WH- questions to distinguish between pictures of real and imaginary people, objects or situations	Describe pictures of imaginary people, objects or situations	Provide details of pictures of imaginary people, objects or situations	Complete scenarios from pictures of imaginary people, objects or situations		Make up fantasies about imaginary people, objects or situations
		Example Topic Story elements & types of genres	Name story elements of various genres (e.g., non-fiction works, fairy tales, myths, fables or legends) depicted visually	Describe story elements of various genres supported by illustrations	Summarize story lines, issues or conflicts in various genres supported by illustrations	Discuss relationships among ideas or offer opinions on issues in various genres supported by illustrations		Propose options or solutions to issues in various genres and support responses with details

Grades 3-5

ELP Standard 3: The Language of Mathematics, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reading
LISTENING	Cost/Money	Match prices to goods using visually supported materials (e.g., newspapers or magazines) and oral questions (e.g., "Which one costs a lot?") with a partner	Compare prices of goods using visually supported materials and oral questions (e.g., "Which one costs more, X or Y?") with a partner	Analyze prices of goods using visually supported materials and oral questions (e.g., "Which one is the most expensive?") with a partner	Predict prices of goods using visually supported materials and oral questions (e.g., "Which one do you think costs <i>under</i> \$1,000?") with a partner	Make conditional purchases of goods from oral questions (e.g., "If you had \$1,000, which items would you buy?")	
SPEAKING	Basic operations	Repeat information about math operations using realia or manipulatives and teacher models (e.g., "Here are 3 groups of 4.") in L1 or L2	Paraphrase information about math operations using realia or manipulatives and teacher models in L1 or L2	Connect new information about math operations to previous experiences using realia or manipulatives	Explain or discuss uses of information about math operations using realia or manipulatives	Integrate or synthesize information about math operations to create own problems	
READING	Scale	Recreate drawings from diagrams and written directions in a small group (e.g., "Make a car like this.")	Create scale drawings from diagrams or models and written directions in a small group	Construct scale drawings from everyday experiences, diagrams or models and written sets of directions in a small group	Reproduce scale models from diagrams and written sets of directions in a small group	Build models to scale based on diagrams and written instructions (e.g., three-dimensional puzzles)	
WRITING	Fractions	Label fractional parts of diagrams or realia from number word banks	Describe what the fractional parts mean from diagrams or realia in phrases or short sentences	Give step-by-step process of how to solve problems involving fractions from diagrams using a series of related sentences	Describe strategies or tips for solving problems involving fractions from diagrams in paragraph form	Create original problems involving fractions embedded in scenarios or situations	

Grades 3-5

ELP Standard 4: The Language of Science, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reading
LISTENING	Foods & nutrition	Choose foods from realia, magazines or newspapers following oral directions	Classify foods from realia, magazines or newspapers following oral directions	Compare choices of foods by following oral directions with visual support	Evaluate choices of foods by following oral descriptions (e.g., "Choose the most nutritious food in this group.")	Design meals by making choices of foods following a series of oral descriptions	
SPEAKING	Nature	Organize and identify natural phenomena from real-life examples (e.g., "leaves," "insects," "rocks") in small groups	Describe natural phenomena from real-life examples using general vocabulary (e.g., "This leaf has five points.") in small groups	Categorize natural phenomena from real-life examples and give reasons for categorization scheme using general and some specific vocabulary in small groups	Compare features of natural phenomena from real-life examples using specific and some technical vocabulary (e.g., "This leaf has five veins while this one has two.") in small groups	Discuss and explain physical relationships among natural phenomena from real-life examples using technical vocabulary	
READING	Ecology & conservation	Sort real-life objects according to labels (e.g., recyclable and not recyclable)	Identify ways to conserve from pictures and written text	Sequence descriptive sentences and pictures to illustrate forms of conservation (e.g., recycling process)	Find solutions to conservation issues presented in illustrated texts or Web sites	Research better or new ways to conserve using grade-level materials	
WRITING	Earth's history	Label features of the Earth based on diagrams or models (e.g., its layers)	Classify features of the Earth, past or present, from diagrams or graphic organizers using phrases or short sentences	Describe features of the Earth, past or present, from diagrams or graphic organizers using related sentences	Differentiate features of the Earth in past, present or future from diagrams or graphic organizers using paragraphs	Compose fictional and non-fictional multi-paragraph pieces about the Earth's features	

Grades 3-5

ELP Standard 5: The Language of Social Studies, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 - Reaching
LISTENING	<p>Tools & artifacts</p> <p>Time long ago</p>	Identify tools or artifacts of the past (e.g., from indigenous cultures) from pictures and oral statements in small groups	Identify uses of tools or artifacts of the past from pictures and detailed oral descriptions in small groups	Match pictures of tools or artifacts of the past within their environments with illustrated oral scenarios in small groups	Re-enact the past involving the creation or use of tools or artifacts based on illustrated oral readings, videos or movies in small groups	Interpret work of paleontologists and anthropologists through role play based on oral readings, videos or movies	
SPEAKING	<p>Maps & globes/ Locations</p>	Locate and show places on maps or globes (e.g., "Here is Delaware.") in L1 or L2 with a partner	Define locations of places on maps or globes (e.g., using relational language—"Wisconsin is <i>between</i> Minnesota and Michigan.") in L1 or L2 with a partner	Detail locations of places on maps or globes (e.g., using descriptive language) with a partner	Give directions from one place/location to another on maps or globes (e.g., using sequential language) to a partner	Give explanations for places/locations on maps or globes (e.g., "I know this city is the capital because there is a star.")	
READING	<p>Immigration/ Migration</p>	Trace immigration/ migration routes on globes or maps with a partner	Match immigration/ migration routes on globes or maps to text and share with a partner	Organize information on immigration/ migration based on investigation using graphic or visual support with a partner	Compare information on immigration/ migration based on investigation (e.g. in Web sites, newspapers or libraries) using graphic or visual support with a partner	Identify reasons or explanations for immigration/migration based on investigation using grade-level multicultural texts	
WRITING	<p>Historical events</p>	Reproduce historical highlights from labeled timelines or visually supported headlines	Create phrases or short sentences from timelines or visually supported headlines	Make entries of related sentences (e.g., in journals or logs) based on timelines or visually supported text	Produce reports by summarizing information (e.g., using first person)	Compose historical documentaries from multiple sources (e.g., using third person)	

Response to Intervention

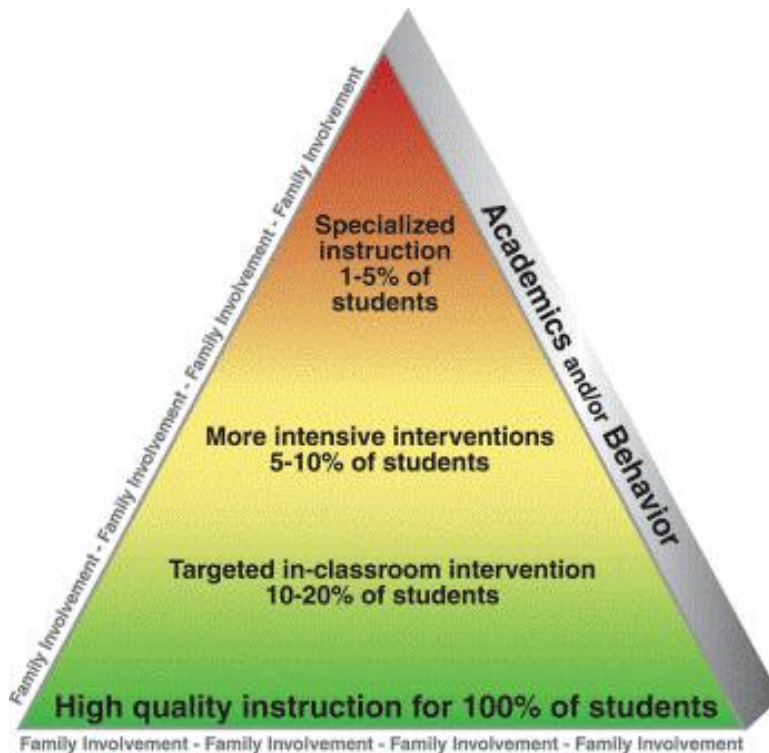
RtI

RtI stands for Response to Intervention. **The overarching purpose of RtI is to improve educational outcomes for every student.** This was determined by state statute to guarantee that every student receive the support that he or she will need to succeed in a PK-12 public education system.

What is RtI?

Response to Intervention is an educational model promoting early identification for students who are struggling academically or behaviorally. RtI involves intervention tiers of increasingly individualized levels of instruction for students based on student need. RtI is typically divided into three tiers. Each tier, moving up the pyramid, represents heightened frequency and intensity as well as a decrease in the number of students receiving the specific learning intervention. As shown in the pyramid below, Response to Intervention can encompass academic and/or behavioral needs. 80% of students will thrive from high quality whole-class instruction.

For those who do not, interventions are targeted, based on the student need, and will be implemented in the student's classroom. Decision-making in RtI is based on data from progress monitoring, teacher assessments, observations and as well as school-based Problem Solving Team recommendations. As the students' needs dictate, more tiers of interventions are available for students as the diagram indicates.



Tier 1: 100% of students

Tier 1, the bottom of the pyramid, represents the base of high-quality instruction that all students receive in a whole-class setting. This document and district efforts to guarantee that all students are exposed to each Colorado Academic Standard in every content area through thoughtful, effective and meaningful instructional strategies constitutes Tier 1. Whole-class differentiation or interventions (re-teaching a concept to the entire class after an assessment, for example) fall under Tier 1 instruction.

Tier 2: 5-20% of students

A student will move into Tier 2 as the classroom teacher identifies academic or behavioral needs that impede that student's learning. The teacher will provide for the student targeted, in-class interventions that are specifically designed to meet the student's need. The teacher will increase intensity of these interventions, utilizing the school Problem Solving Team (PST) if academic progress is not being made through these in-class interventions.

Tier 3: 1-5% of students

The uppermost tier of the pyramid indicates that specialized instruction is used to address student needs. These interventions may or may not occur in the whole-class setting but will address specific individual needs of the student.

For more information see the BVSD Student Success website page
<http://www.bvsd.org/studentsuccess/rti/Pages/default.aspx>

General Curriculum Essentials Document Glossary

Anchor	An anchor is a sample of work or performance used to set the specific performance standard for each level of proficiency. Anchors contribute to scoring reliability and support students by providing tangible models of quality work.
Assessment	Assessment refers to the act of determining a value or degree.
Authentic assessment	An authentic assessment is one composed of tasks and activities design to simulate or replicate important, real-world challenges. It asks a student to use knowledge in real-world ways, with genuine purposes, audiences, and situational variables. Authentic assessments are meant to do more than “test;” they should teach students what the “doing” of a subject looks like and what kinds of performance challenges are actually considered most important in a field or profession.
Assessment System	Assessment is a complex feature of our educational system. Assessment varies from classroom-based formative types to large-scale state accountability efforts, and it has direct implications for students, parents, teachers and administrators. (Guiding Principles for Assessment in the Boulder Valley School District (BVSD), Standing Committee on Assessment, Approved May 19, 2011).
Backward Design	An approach to designing a curriculum or unit that begins with the end in mind and designs toward that end. This term is used by Grant Wiggins and Jay McTighe in <i>Understanding by Design</i> .
Benchmark	Clearly demarcated progress points that serve as concrete indicators for a standard.
Big Idea	From <i>Understanding by Design</i> (Wiggins and McTighe, 2005), the core concepts, principles, theories, and processes that should serve as the focal point of the curriculum, instruction, and assessment. Big ideas are enduring, important and transferable beyond the scope of a particular unit.
Concept	A concept is a mental construct or category represented by a word or phrase. Concepts include both tangible objects (chair, telephone) and abstract ideas (bravery, anarchy).
Content Standard	A content standard answers the question, “ <i>What a student should know, do or understand?</i> ”
Curriculum	The curriculum represents what should be taught. It is an explicit and comprehensive plan that is based on content and process standards.
Curriculum Implementation	Curriculum implementation is putting the curriculum into place.
Curriculum Mapping	Curriculum mapping and webbing are approaches that require teachers to align the curriculum, standards, and learning activities across grade levels or within a grade level to ensure a continuum of learning that makes sense for all students.

Formative assessment	An assessment is considered formative when the <u>feedback</u> from learning activities is actually used to adapt the teaching to meet the learner's needs.
Guaranteed Viable Curriculum	In researching what works in schools, Robert Marzano (2003), found five school-level factors that promote student achievement. Using the process of statistical effect size analysis, Marzano concluded that a guaranteed and viable curriculum is the most powerful school-level factor in determining overall student achievement. Marzano defines a guaranteed and viable curriculum as a combination of opportunity to learn (guaranteed) and time to learn (viable). According to Marzano, students have the opportunity to learn when they study a curriculum that clearly articulates required standards to be addressed at specific grade levels and in specific courses. A curriculum is viable when the number of required standards is manageable for a student to learn to a level of mastery in the time provided (usually a semester, trimester, or year).
Learning Activities	These represent the experiences and instruction that will enable students to achieve the desired results such as materials, projects, lectures, videos, homework, assignments, presentations, accommodations, and vocabulary.
Performance Task	A performance task uses one's knowledge to effectively act or bring to fruition a complex product that reveals one's knowledge and expertise.
Prerequisite knowledge and skill	The knowledge and skill required to successfully perform culminating tasks or achieve an understanding. These typically identify discrete knowledge and know-how required to put everything together in a meaningful, final performance.
Post-Secondary Workforce Readiness (PWR) Skills	"Postsecondary and workforce readiness" describes the knowledge, skills, and behaviors essential for high school graduates to be prepared to enter college and the workforce and to compete in the global economy." http://www.cde.state.co.us/communications/download/PDF/PWRadoptedddescription63009.pdf
Processes	Processes include all the strategies, decisions, and sub-skills a student uses in meeting the content standard.
Product	The tangible and stable result of a performance and the processes that led to it. The product is valid for assessing the student's knowledge to the extent that success or failure in producing the product reflects the knowledge taught and being assessed.
Rubric	A scoring tool that rates performance according to clearly stated levels of criteria and enables students to self-assess. A rubric answers the question, <i>What does understanding or proficiency for an identified result look like?</i> The scales can be numeric or descriptive.

Scope and Sequence	Scope refers to the breadth and depth of content to be taught in a curriculum over any given time (e.g. week, term, year, over a student's school life). Sequence refers to the order in which content is presented to learners over time. Together a scope and sequence of learning bring order to the delivery of content, supporting the maximizing of student learning and offering sustained opportunities for learning. Without a planned scope and sequence there is the risk of ad hoc content delivery and the missing of significant learning.
Strategies	Strategies are procedures, methods, or techniques to accomplish an essential learning.
Summative assessment	An assessment is considered summative when the feedback is used as a summary of the learning up to a given point in time.
CSAP	Colorado Student Assessment Program. The assessment program used by the State of Colorado to summatively assessment student knowledge as a component of the Federal No Child Left Behind Act.
TCAP	Transitional Colorado Assessment Program (2012, 2013). This is the assessment program that will be in place during the two years between the CSAP and the new assessment program, which will begin in 2014.
GLE	Grade Level Expectation. The articulation (at each grade level), concepts, and skills of a standard that indicate a student is making progress toward being ready for high school. <i>What do students need to know from preschool through eighth grade?</i> (Colorado Academic Standards 2010, p.13)
CAS	Colorado Academic Standards (adopted December 2009, Math/Literacy December 2010)
CCSS	Common Core State Standards (developed by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO), adopted by the state of Colorado in June 2010)
PFL	Personal Financial Literacy. Personal financial literacy was integrated preschool through grade twelve in the math standards in order to assure high school graduates are fiscally responsible. House Bill 08-1168 requires standards that include these skills: goal setting, financial responsibility, income and career; planning, saving and investing, using credit; risk management and insurance.
Prepared Graduate Competencies	The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting. (Colorado Academic Standards 2010, p.13)
Nature of the Discipline	The characteristics and viewpoint one keeps as a result of mastering the grade level expectation. (Colorado Academic Standards 2010, p.13)

Relevance and Application	Examples of how the grade level expectation is applied at home, on the job or in a real-world, relevant context. (Colorado Academic Standards 2010, p.13)
Evidence Outcome	The indication that a student is meeting an expectation at the mastery level. <i>How do we know that a student can do it?</i> (Colorado Academic Standards 2010, p.13)
21 st Century Skills and Readiness Competencies	These are defined by the Colorado Department of Education to include: <ul style="list-style-type: none"> • Inquiry Questions • Relevance and Application • Nature of the Discipline
Inquiry Questions	Sample questions are intended to promote deeper thinking, reflection and refined understandings precisely related to the grade level expectation.

Elementary Unit Design Templates

Unit Design Template

For designing units of instruction that will span one or more weeks and include multiple lessons

Desired Results

What do we want students to know and be able to do?

Colorado/BVSD Grade Level Expectation(s):

Relevance and Application (Why is it important to learn this?):

Unit Essential Questions/Inquiry Questions:

Academic Vocabulary:

Language Considerations:

Assessment Evidence

How will we know if students have learned?

What are the different ways that students will be able to demonstrate what they know and can do?

Assessment tools, strategies, student products (taking into account the different strengths of students in the classroom):

Scoring guide/Rubric (please attach if applicable)

Strategies for Student Self-Assessment and Reflection:

Learning Plans
What instructional experiences will we provide?
How will the range of different learning experiences support an inclusive classroom environment?

Differentiated Learning Activities (taking into account the different strengths of students in your classroom):

Materials:

Specific accommodations and scaffolds:

Technology and Information Literacy Integration

Intervention and Extension
How will we respond when a student has not learned?
How will we extend learning experiences for students who have learned?

Extension activities:

Strategies for intervention and/or re-teaching in different ways:

Lesson Plan Template

Content Objectives:

From Colorado/BVSD Grade Level Expectations and Evidence Outcomes

Language Objectives:

From WIDA Standards

Academic Vocabulary:

SIOP Features

Preparation Options

- Adaptation of Content
- Links to Background
- Links to Past Learning
- Strategies incorporated

Scaffolding

- Modeling
- Guided practice
- Independent practice
- Comprehensible input

Grouping

- Whole class
- Small groups
- Partners
- Independent

Integration of Processes

- Reading
- Writing
- Speaking
- Listening

Application

- Hands-on
- Meaningful
- Linked to objectives
- Promotes engagement

Assessment

- Individual
- Group
- Written
- Oral

Lesson Sequence

- Introduction:
-
-
-
-
- Closing:

Materials:

4th Grade Health Curriculum Essentials Document



**Boulder Valley School District
Department of Curriculum and Instruction
February 2012**

Introduction

Purpose

The purpose of a quality physical education program is to guide students in the process of becoming physically active for a lifetime. Physical education is a component of education that takes place through movement. In physical education, as in all academic areas, students must learn the basic skills be able to demonstrate throughout their preschool through twelfth-grade experience.

1. Movement Competence and Understanding (Physical Education)

Includes motor skills and movement patterns that teach skill and accuracy in a variety of routines, games, and activities that combine skills with movement; demonstrates the connection between body and brain function; and creates patterns for lifelong physical activity.

2. Physical and Personal Wellness (Shared Standard)

Includes physical activity, healthy eating, and sexual health and teaches lifelong habits and patterns for a fit, healthy, and optimal childhood and adulthood; examines society, media, family, and peer influence on wellness choices; practices decision-making and communication skills for personal responsibility for wellness; and identifies the consequences of physical inactivity, unhealthy eating, and early sexual activity. Includes health promotion and disease prevention, and teaches responsibility and skills for personal health habits as well as behavior and disease prevention; sets personal goals for optimal health; examines common chronic and infectious diseases and causes; and recognizes the physical, mental, and social dimensions of personal health.

3. Emotional and Social Wellness (Shared Standard)

Includes mental, emotional, and social health skills to recognize and manage emotions, develop care and concern for others, establish positive relationships, make responsible decisions, handle challenging situations constructively, resolve conflicts respectfully, manage stress, and make ethical and safe choices; examines internal and external influences on mental and social health; and identifies common mental and emotional health problems and their effect on physical health.

4. Prevention and Risk Management (Shared Standard)

Includes alcohol, tobacco, and other drug prevention; violence prevention; and safety; teaches skills to increase safe physical and social behavior in at home, in school, in the community, and in personal relationships; provides specific knowledge on avoidance of intentional and unintentional injuries; and practices decision-making and communication skills to avoid drug use, bullying, and dating violence. Students integrate and apply the skills learned in physical education to their everyday life. In addition, numerous benefits result from participating in a quality physical education program such as: learning how to live an active and healthy lifestyle, proper nutrition, skill development, improved physical fitness, reinforcement of other subjects, goal setting, self-discipline, leadership and cooperation, stress reduction, enhanced self-efficacy, and strengthened peer relationships.

The physical education setting also provides a unique opportunity for students to develop an understanding and respect for differences among people. Cultural and global awareness can be enhanced through participation in physical activity, sports, dance and/or rhythms from other cultures.

4th Grade Overview

Course Description	Topics at a Glance								
<p>Health education in fourth grade is based on developing skills in relation to age appropriate health topics. By developing skills related to effectively accessing health resources, communicating, analyzing peer and media influences, goal setting, decision making, and health advocacy, students in BVSD will be able to achieve and maintain optimal wellness.</p>	<ul style="list-style-type: none"> • Goal setting to enhance nutrition status • Positive behaviors that support relationships • Uses for medicines • Skills to prevent a conflict from escalating to violence • Explain the interrelationship between the dimensions of wellness health • Communication skills to avoid using tobacco • Food intake and physical health • Stress management 								
Assessments	Unifying Theme "Controlling my actions for my health and the health of others"								
<ul style="list-style-type: none"> • Observation • Participation • Performance Tasks • Rubrics • Conferencing • Portfolio • Growth Over Time 	<p>Organizing Concepts:</p> <ul style="list-style-type: none"> • Interactions between body, mind and behavior • Home, peer, community, environmental. Cultural, and/or media influences • Communication for personal and social wellness • Self management of health and relationships • http://www.cde.state.co.us/sitoolkit/DisciplineConceptMap1.htm <p>Concept Connections:</p> <ul style="list-style-type: none"> • Attributes • Claims and Evidences • Interaction • Compare and Contrast • http://www.cde.state.co.us/sitoolkit/CC_FourthGrade.htm <p>Health Standards Supports:</p> <ul style="list-style-type: none"> • School, home and community connections • Positive school climate - bully prevention, conflict resolution, positive ways to support others • Social emotional learning • Student goal setting • Communication skills for personal needs • Managing stress 								
Grade Level Expectations									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Standard</th> <th style="width: 85%;">Big Ideas for Fourth Grade (Grade Level Expectations)</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">2. Physical and Personal Wellness</td> <td style="vertical-align: top;"> <ol style="list-style-type: none"> 1. Demonstrate the ability to set a goal to enhance personal nutrition status 2. Examine the connection between food intake and physical health 3. Explain that the dimensions of wellness are interrelated and impact personal health </td> </tr> <tr> <td style="vertical-align: top;">3. Emotional and Social Wellness</td> <td style="vertical-align: top;"> <ol style="list-style-type: none"> 1. Identify the positive behaviors that support relationships 2. Comprehend concepts related to stress and stress management </td> </tr> <tr> <td style="vertical-align: top;">4. Prevention and Risk Management</td> <td style="vertical-align: top;"> <ol style="list-style-type: none"> 1. Identify positive and negative uses for medicines 2. Demonstrate the ability to use interpersonal communication skills to avoid using tobacco 3. Demonstrate skills necessary to prevent a conflict from escalating to violence </td> </tr> </tbody> </table>	Standard	Big Ideas for Fourth Grade (Grade Level Expectations)	2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Demonstrate the ability to set a goal to enhance personal nutrition status 2. Examine the connection between food intake and physical health 3. Explain that the dimensions of wellness are interrelated and impact personal health 	3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Identify the positive behaviors that support relationships 2. Comprehend concepts related to stress and stress management 	4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Identify positive and negative uses for medicines 2. Demonstrate the ability to use interpersonal communication skills to avoid using tobacco 3. Demonstrate skills necessary to prevent a conflict from escalating to violence 	
Standard	Big Ideas for Fourth Grade (Grade Level Expectations)								
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Demonstrate the ability to set a goal to enhance personal nutrition status 2. Examine the connection between food intake and physical health 3. Explain that the dimensions of wellness are interrelated and impact personal health 								
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Identify the positive behaviors that support relationships 2. Comprehend concepts related to stress and stress management 								
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Identify positive and negative uses for medicines 2. Demonstrate the ability to use interpersonal communication skills to avoid using tobacco 3. Demonstrate skills necessary to prevent a conflict from escalating to violence 								

2. Physical and Personal Wellness

Includes physical activity, healthy eating, and sexual health and teaches lifelong habits and patterns for a fit, healthy, and optimal childhood and adulthood; examines society, media, family, and peer influence on wellness choices; practices decision-making and communication skills for personal responsibility for wellness; and identifies the consequences of physical inactivity, unhealthy eating, and early sexual activity. Includes health promotion and disease prevention, and teaches responsibility and skills for personal health habits as well as behavior and disease prevention; sets personal goals for optimal health; examines common chronic and infectious diseases and causes; and recognizes the physical, mental, and social dimensions of personal health.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates in the Physical and Personal Wellness standard are:

- Apply knowledge and skills to engage in lifelong healthy eating
- Apply knowledge and skills necessary to make personal decisions that promote healthy relationships and sexual and reproductive health (NOT ADDRESSSED AT THIS GRADE LEVEL)
- Apply knowledge and skills related to health promotion, disease prevention, and health maintenance

Content Area: Comprehensive Health - Fourth Grade		
Standard: 2. Physical and Personal Wellness in Health		
Prepared Graduates: Apply knowledge and skills to engage in lifelong healthy eating		
Grade Level Expectation Concepts and skills students master: 1. Demonstrate the ability to set a goal in order to enhance personal nutrition status		
Evidence Outcomes	21st Century Skills and Readiness Competencies	
Students can: <ol style="list-style-type: none"> Set a goal to improve food choices based on appropriate nutritional content, value, and calories Explain the importance of eating a variety of foods from all the food groups Identify healthy foods (including snacks) in appropriate portion sizes Identifies the benefits of eating fruits and vegetables and the importance of fiber in the digestive process Identifies foods high in fat and cholesterol and explains the importance of limiting intake of certain types of fat (LDL/saturated fats), and consuming adequate quantities of "healthy" fats (HDL/unsaturated fats) Identifies foods high in sugar and sodium Identifies the components of a food label and explains how to access information from food labels Gathers information on various foods and compares their nutritional values Describes ways in which various advertising sources provide accurate and/or misleading information about nutrition and physical activity Analyzes the influence of ads that promote high- fat, high- sugar, high- sodium, high- calorie, and/or low- nutritional value foods Examines messages from the media and other sources about body weight 	Inquiry Questions: <ol style="list-style-type: none"> How can your personal goals for healthy eating work within the choices of food available to you at home and at school? If two foods have the same amount of calories, are they equally healthy for you? Why or why not? Do all foods help your body in the same ways? Why or why not? How can you tell if a portion size is appropriate? 	
		Relevance and Application: <ol style="list-style-type: none"> Healthy foods provide nutrients that in turn provide you energy for daily activities. Nutrients are necessary for good health and proper growth and development. Different foods provide different nutrients. To get all the nutrients you need, it is necessary to eat a balanced diet such as eating a variety of healthy foods within and across the major food groups.
		Nature of Discipline: <ol style="list-style-type: none"> Healthy eating is a personal responsibility and is affected by the choices available to us.

Content Area: Comprehensive Health - Fourth Grade	
Standard: 2. Physical and Personal Wellness in Health	
Prepared Graduates: Apply knowledge and skills to engage in lifelong healthy eating	
Grade Level Expectation Concepts and skills students master: 2. Examine the connection between food intake and physical health	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Explain that both eating habits and level of physical activity affect a person’s overall well-being and ability to learn b. Summarize body signals that tell people when they are hungry and when they are full 	Inquiry Questions: <ol style="list-style-type: none"> 1. Why do most people feel better after they eat? 2. Why do some people eat even if they are not hungry? 3. How can you increase physical activity during the school day? 4. What happens to your body and brain if you eat too much or not enough?
	Relevance and Application: <ol style="list-style-type: none"> 1. Daily physical activity can make a person feel more awake, better able to concentrate, and full of energy. 2. Hunger signals tell us when to eat, and when to stop.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Healthy food choices and exercise can positively affect brain function, and physical and emotional health 2. Eating healthy portions when you are hungry and stopping when you are full can help you meet your energy needs and avoid overeating.

Content Area: Comprehensive Health - Fourth Grade	
Standard: 2. Physical and Personal Wellness in Health	
Prepared Graduates: Apply knowledge and skills related to health promotion, disease prevention, and health maintenance	
Grade Level Expectation Concepts and skills students master: 3. Explain that the dimensions of wellness are interrelated and impact personal health	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Explain the physical, social, and emotional dimensions of personal health and wellness and how they interact b. Define wellness 	Inquiry Questions: <ol style="list-style-type: none"> 1. What is wellness? 2. What are the benefits and consequences of our choices in terms of wellness? 3. Why does wellness sometimes require that we make changes to our current behaviors, relationships, or actions?
	Relevance and Application: <ol style="list-style-type: none"> 1. Personal behaviors, such as eating healthy and engaging in physical activity, have a long term effect on wellness.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Current and future personal wellness is dependent upon applying health-related concepts and skills in everyday lifestyle behaviors.

3. Emotional and Social Wellness

Includes mental, emotional, and social health skills to recognize and manage emotions, develop care and concern for others, establish positive relationships, make responsible decisions, handle challenging situations constructively, resolve conflicts respectfully, manage stress, and make ethical and safe choices; examines internal and external influences on mental and social health; and identifies common mental and emotional health problems and their effect on physical health.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates in the Emotional and Social Wellness standard are:

- Utilize knowledge and skills to enhance mental, emotional, and social well-being

Content Area: Comprehensive Health - Fourth Grade	
Standard: 3. Emotional and Social Wellness in Health	
Prepared Graduates: Utilize knowledge and skills to enhance mental, emotional, and social well-being	
Grade Level Expectation: Concepts and skills students master: 1. Identify positive behaviors that support healthy relationships	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Discuss factors that support healthy relationships with friends and family b. Describe the characteristics of a friend c. Discuss how culture and tradition influence personal and family development d. Describe different kinds of families, and discuss how families can share love, values, and traditions as well as provide emotional support, and set boundaries and limits e. Identify the positive ways that peers and family members show support, care, and appreciation for one another f. Identifies the many communities to which people belong (families, friendship networks, faith traditions, schools, neighborhoods) g. Establishes a support network of family, friends, and trusted adults for mental and emotional support 	Inquiry Questions: <ol style="list-style-type: none"> 1. Why are relationships with family and friends so important? 2. What is friendship? 3. How do your family’s customs differ from those of your neighbor? Why is it important to learn about other traditions and values?
	Relevance and Application: <ol style="list-style-type: none"> 1. Families interact differently in various parts of the world. 2. Family members, peers, school personnel, and community members can support school success and responsible behavior.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Sensitivity to differences and appreciation for diversity are characteristics of good mental and emotional health.

Content Area: Comprehensive Health - Fourth Grade	
Standard: 3. Emotional and Social Wellness in Health	
Prepared Graduates: Utilize knowledge and skills to enhance mental, emotional, and social well-being	
Grade Level Expectation Concepts and skills students master: 2. Comprehend concepts related to stress and stress management	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Identify personal stressors at home, with friends, in school and the community, and in the environment b. List physical and emotional reactions to stressful situations c. Identify positive and negative ways of dealing with stress 	Inquiry Questions: <ol style="list-style-type: none"> 1. What would school be like if there was no stress? 2. Can stress be positive?
	Relevance and Application: <ol style="list-style-type: none"> 1. Stress management techniques relieve and re-direct stress.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Stress management is key for positive mental health.

4. Prevention and Risk Management

Includes alcohol, tobacco, and other drug prevention; violence prevention; and safety; teaches skills to increase safe physical and social behavior in at home, in school, in the community, and in personal relationships; provides specific knowledge on avoidance of intentional and unintentional injuries; and practices decision-making and communication skills to avoid drug use, bullying, and dating violence.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates in the Prevention and Risk Management standard are:

- Apply knowledge and skills to make health-enhancing decisions regarding the use of alcohol, tobacco, and other drugs
- Apply knowledge and skills that promote healthy, violence-free relationships
- Apply personal safety knowledge and skills to prevent and treat intentional or unintentional injury

Content Area: Comprehensive Health - Fourth Grade	
Standard: 4. Prevention and Risk Management in Health	
Prepared Graduates: Apply knowledge and skills to make health-enhancing decisions regarding the use of alcohol, tobacco, and other drugs	
Grade Level Expectation Concepts and skills students master: 1. Identify positive and negative uses for medicines	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Describe the purpose of prescribed and over-the-counter medicines and how they can be used or misused in the treatment of common medical problems b. Demonstrate the ability to read, understand, and follow labels such as those on common household medicines c. Summarize the risks associated with the inappropriate use of over-the-counter medicines, prescriptions, and vitamins d. Describe the steps to take if over-the-counter or prescription drugs are used incorrectly e. Describes the difference between legal and illegal use of tobacco, alcohol, and other drugs 	Inquiry Questions: <ol style="list-style-type: none"> 1. What could happen if I misread a medicine label? 2. If vitamins are good for me, why would I need to be careful when taking them? 3. If someone in my family is sick and then I get sick with the exact same thing, can I take the same medication?
	Relevance and Application: <ol style="list-style-type: none"> 1. Other cultures treat common medical problems in different ways. 2. Doctors, nurses and pharmacists provide guidance on proper use of medications.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Medicines must be used correctly to order to be safe and have a maximum benefits.

Content Area: Comprehensive Health - Fourth Grade	
Standard: 4. Prevention and Risk Management in Health	
Prepared Graduates: Apply knowledge and skills to make health-enhancing decisions regarding the use of alcohol, tobacco, and other drugs	
Grade Level Expectation Concepts and skills students master: 2. Demonstrate the ability to use interpersonal communication skills to avoid using tobacco	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Demonstrate effective verbal and nonverbal ways to refuse pressures to use tobacco b. Describe how to ask for help from a trusted adult in staying away from second-hand smoke c. Examine the factors that influence a person’s decision to use or not to use tobacco 	Inquiry Questions: <ol style="list-style-type: none"> 1. Why is it important to know when to say "no," even when it's not popular? 2. Why do commercials and media sometimes make smoking look glamorous? 3. Who or what impacts my ability to choose not to use tobacco?
	Relevance and Application: <ol style="list-style-type: none"> 1. Researchers study tobacco use rates in adolescents. 2. Researchers have found that exposure to second-hand smoke can have short- and long-term effects on health.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Successful interpersonal communication is knowing how, when, and why to convey your personal health needs and wants. 2. Culture, media, and social pressures influence health behaviors.

Content Area: Comprehensive Health - Fourth Grade		
Standard: 4. Prevention and Risk Management in Health		
Prepared Graduates: Apply knowledge and skills that promote healthy, violence-free relationships		
Grade Level Expectation Concepts and skills students master: 3. Demonstrate skills necessary to prevent a conflict from escalating to violence		
Evidence Outcomes	21st Century Skills and Readiness Competencies	
Students can: <ol style="list-style-type: none"> a. Demonstrate simple conflict resolution techniques to diffuse a potentially violent situation b. Describe situations that lead to violence, the consequences of violent behavior, and the importance of resolving conflict through effective communication skills c. Discuss methods for making decisions to avoid conflicts or violence d. Explain the positive alternatives to using violence e. Explain the dangers of having weapons at home, in school, and in the community f. Explain the importance of respecting the personal space and boundaries of others g. Defines the characteristics of a bully, target/victim, and bystander h. Explains how teasing, bullying, and harassment may lead to violence i. Distinguishes between "tattling" and "telling" j. Identifies resources within the school that will help students who have been or are being teased, bullied, and harassed, or are victims of other forms of violence 	Inquiry Questions: <ol style="list-style-type: none"> 1. What is conflict resolution? 2. What if there was no violence in the world? 3. How can you promote peaceful problem solving? 	
		Relevance and Application: <ol style="list-style-type: none"> 1. Physical and emotional consequences of violence have a significant impact on society.
		Nature of Discipline: <ol style="list-style-type: none"> 1. Conflict resolution is a lifelong skill. 2. Effective communication and personal skills can develop, maintain, and enhance healthy behaviors.

Prepared Graduate Competencies in Comprehensive Health

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates in Movement Competence and Understanding:

- Demonstrate competency in motor skills and movement patterns needed to perform a variety of physical activity
- Demonstrate understanding of movement concepts, principles, strategies, and tactics as they apply to learning and performing physical activities

Prepared Graduates in Physical and Personal Wellness:

- Participate regularly in physical activity
- Achieve and maintain a health-enhancing level of physical fitness
- Apply knowledge and skills to engage in lifelong healthy eating
- Apply knowledge and skills necessary to make personal decisions that promote healthy relationships and sexual and reproductive health
- Apply knowledge and skills related to health promotion, disease prevention, and health maintenance

Prepared Graduates in Emotional and Social Wellness:

- Utilize knowledge and skills to enhance mental, emotional, and social well-being
- Exhibit responsible personal and social behavior that respects self and others in physical activity settings

Prepared Graduates in Prevention and Risk Management:

- Apply knowledge and skills to make health-enhancing decisions regarding the use of alcohol, tobacco, and other drugs
- Apply knowledge and skills that promote healthy, violence-free relationships
- Apply personal safety knowledge and skills to prevent and treat intentional or unintentional injury

**Comprehensive Health
Grade Level Expectations at a Glance**

Standard High School	Grade Level Expectation
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Analyze the benefits of a healthy diet and the consequences of an unhealthy diet 2. Analyze how family, peers, media, culture, and technology influence healthy eating choices 3. Demonstrate ways to take responsibility for healthy eating 4. Use a decision-making process to make healthy decisions about relationships and sexual health 5. Support others in making positive and healthful choices about sexual activity 6. Develop and maintain the ongoing evaluation of factors that impact health, and modify lifestyle accordingly
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Analyze the interrelationship of physical, mental, emotional, and social health 2. Set goals, and monitor progress on attaining goals for future success 3. Advocate to improve or maintain positive mental and emotional health for self and others
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Comprehend concepts that impact of individuals' use or nonuse of alcohol or other drugs 2. Analyze the factors that influence a person's decision to use or not use alcohol, tobacco, and other drugs 3. Develop interpersonal communication skills to refuse or avoid alcohol, tobacco, or other drugs 4. Develop self-management skills to improving health by staying tobacco, alcohol, and drug-free 5. Analyze the factors that influence community and societal beliefs that underlie violence, and describe relationships, attitudes, behavior, and vulnerability to violence 6. Analyze the underlying causes of self-harming behavior, harming others and steps involved in seeking help 7. Identify the emotional and physical consequences of violence, and find strategies to deal with, prevent, and report them 8. Access valid information and resources that provide information about sexual assault and violence 9. Demonstrate verbal and nonverbal communication skills and strategies to prevent violence 10. Advocate for changes in the home, school, or community that would increase safety

**Comprehensive Health
Grade Level Expectations at a Glance**

Standard	Grade Level Expectation
Eighth Grade	
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Describe the physical, emotional, mental, and social benefits of sexual abstinence, and develop strategies to resist pressures to become sexually active 2. Analyze how certain behaviors place one at greater risk for HIV/AIDS, sexually transmitted diseases (STDs), and unintended pregnancy 3. Describe the signs and symptoms of HIV/AIDS, and other sexually transmitted diseases (STDs) 4. Promote and enhance health through disease prevention
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Access valid school and community resources to help with mental and emotional health concerns 2. Internal and external factors influence mental and emotional health
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Analyze influences that impact individuals' use or non-use of alcohol, tobacco, and other drugs 2. Access valid sources of information about alcohol, tobacco, and other drugs 3. Demonstrate decision-making skills to be alcohol, tobacco and drug-free 4. Analyze the factors that influence violent and non-violent behavior 5. Demonstrate ways to advocate for a positive, respectful school and community environment that supports pro-social behavior
Seventh Grade	
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Analyze factors that influence healthy eating behaviors 2. Demonstrate the ability to make healthy food choices in a variety of settings 3. Compare and contrast healthy and unhealthy relationships (family, peer, and dating) 4. Analyze the internal and external factors that influence sexual decision-making and activity 5. Define sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS)
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Demonstrate effective communication skills to express feelings appropriately 2. Develop self-management skills to prevent and manage stress
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Analyze the consequences of using alcohol, tobacco and other drugs 2. Demonstrate safety procedures for a variety of situations

**Comprehensive Health
Grade Level Expectations at a Glance**

Standard	Grade Level Expectation
Sixth Grade	
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Access valid and reliable information, products, and services to enhance healthy eating behaviors 2. Access valid and reliable information regarding qualities of healthy family and peer relationships 3. Comprehend the relationship between feelings and actions 4. Analyze how positive health behaviors can benefit people throughout their life span
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Understand how to be mentally and emotionally healthy
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Analyze the factors that influence a person's decision to use or not use alcohol and tobacco 2. Demonstrate the ability to avoid alcohol, tobacco, and other drugs 3. Demonstrate self-management skills to reduce violence and actively participate in violence prevention 4. Demonstrate ways to advocate for safety, and prevent unintentional injuries
Fifth Grade	
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Demonstrate the ability to engage in healthy eating behaviors 2. Explain the structure, function, and major parts of the human reproductive system 3. Describe the physical, social, and emotional changes occurring at puberty 4. Demonstrate interpersonal communication skills needed to discuss personal health problems to establish and maintain personal health and wellness 5. Comprehend concepts, and identify strategies to prevent the transmission of disease
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Analyze internal and external factors that influence mental and emotional health
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Access valid information about the effects of tobacco use and exposure to second-hand smoke, and prescription and over-the-counter drugs 2. Demonstrate pro-social behaviors that reduce the likelihood of physical fighting, violence, and bullying 3. Demonstrate basic first aid and safety procedures
Fourth Grade	
2. Physical and Personal Wellness	<ol style="list-style-type: none"> 1. Demonstrate the ability to set a goal to enhance personal nutrition status 2. Examine the connection between food intake and physical health 3. Explain that the dimensions of wellness are interrelated and impact personal health
3. Emotional and Social Wellness	<ol style="list-style-type: none"> 1. Identify the positive behaviors that support relationships 2. Comprehend concepts related to stress and stress management
4. Prevention and Risk Management	<ol style="list-style-type: none"> 1. Identify positive and negative uses for medicines 2. Demonstrate the ability to use interpersonal communication skills to avoid using tobacco 3. Demonstrate skills necessary to prevent a conflict from escalating to violence

**Comprehensive Health
Grade Level Expectations at a Glance**

Standard	Grade Level Expectation
Third Grade	
2. Physical and Personal Wellness	1. Demonstrate the ability to make and communicate appropriate food choices
3. Emotional and Social Wellness	1. Utilize knowledge and skills to treat self and others with care and respect 2. Demonstrate interpersonal communication skills to support positive interactions with families, peers, and others
4. Prevention and Risk Management	1. Examine the dangers of using tobacco products or being exposed to second hand smoke. 2. Describe pro-social behaviors that enhance healthy interactions with others 3. Identify ways to prevent injuries at home, in school, and in the community
Second Grade	
2. Physical and Personal Wellness	1. Identify eating behaviors that contribute to maintaining good health 2. Recognize basic childhood chronic diseases
4. Prevention and Risk Management	1. Identify the dangers of using tobacco products and being exposed to second hand smoke. 2. Identify safe and proper use of household products 3. Explain why bullying is harmful and how to respond appropriately 4. Demonstrate interpersonal communication skills to prevent injury or to ask for help in an emergency or unsafe situation
First Grade	
2. Physical and Personal Wellness	1. Eating a variety of foods from the different food groups is vital to promote good health 2. Demonstrate health enhancing behaviors to prevent unintentional injury or illness
3. Emotional and Social Wellness	1. Demonstrate how to express emotions in healthy ways 2. Identify parents, guardians, and other trusted adults as resources for information about health
4. Prevention and Risk Management	1. Demonstrate strategies to avoid hazards in the home and community
Kindergarten	
2. Physical and Personal Wellness	1. Identify the major food groups and the benefits of eating a variety of foods 2. Explain how personal hygiene and cleanliness affect wellness
3. Emotional and Social Wellness	1. Exhibit understanding that one's actions impact others
4. Prevention and Risk Management	1. Identify the importance of respecting the personal space and boundaries of self and others 2. Explain safe behavior as a pedestrian and with motor vehicles 3. Demonstrate effective communication skills in unsafe situations
Preschool	
2. Physical and Personal Wellness	1. Develop self-management skills and personal hygiene skills to promote healthy habits
4. Prevention and Risk Management	1. Identify ways to be safe while at play

Glossary of Terms

Word	Definition
Acceptable/Unacceptable Touch	touch that feels "safe" or "comfortable" to the child vs. touch that feels "unsafe" or "uncomfortable"
Alcohol	ethanol especially when considered as the intoxicating agent in fermented and distilled liquors
Body Autonomy	a sense of independence and self-control with respect to one's body; the idea that "my body belongs to me"
Bullying	to treat abusively; to affect by means of force or coercion
Bystander	one present but not taking part in a situation or event
Community	a group of people with a common characteristic or interest living together within a larger society
Digestion	the process of making food absorbable by dissolving it and breaking it down into simpler chemical compounds that occurs in the living body chiefly through the action of enzymes
Drugs	a substance other than food intended to affect the structure or function of the body
Faith Traditions	a substance other than food intended to affect the structure or function of the body
Fat	animal tissue consisting chiefly of cells distended with greasy or oily matter; any of various compounds of carbon, hydrogen, and oxygen that are glycerides of fatty acids
Feelings	an emotional state or reaction; the overall quality of one's awareness especially as measured along a pleasantness-unpleasantness continuum
Fiber -	mostly indigestible material in food that stimulates the intestine to peristalsis
Friendship	the state of being friends
Goals	the end toward which effort is directed
Harassment	to create an unpleasant or hostile situation for especially by uninvited and unwelcome verbal or physical conduct
High Density Lipoprotein (HDL)	"bad" cholesterol that carries cholesterol to the cells, including the cells that line the blood vessel walls
Low Density Lipoprotein (LDL)	"bad" cholesterol that carries cholesterol to the cells, including the cells that line the blood vessel walls
Illegal	not according to or authorized by law

Interpersonal Communication	communication between individuals and/or groups, often aided by proficiency in particular skills or strategies
Legal	conforming to or permitted by law or established rules
Mediation	intervention between conflicting parties to promote reconciliation, settlement, or compromise
Needs	a physiological or psychological requirement for the well-being of an organism
Nutritional Value	the aggregate value of nutrients, vitamins, and minerals, calories, and fat in a food item
Over the Counter Drugs	medicines that may be sold directly to a consumer without a prescription
Prescription Drugs	
Respect	expression of regard for self and/or deference to others
Risk	someone or something that creates or suggests a hazard; a characteristic that increases an individual's chances of developing a health problem
Saturated Fat	one of three types of fatty acids; solid at room temperature
Sodium	salt; soft alkaline chemical
Support	to assist or provide help
Tattling	to provide information with the intent of getting someone else in trouble
Telling	to provide information with the intent of getting someone else in trouble
Tobacco	a plant that can be dried/cured and can be smoked, chewed, snorted or drunk
Unsaturated Fat	one of three types of fatty acids; liquid at room temperature
Victim	one that is subjected to oppression, hardship, or mistreatment
Violence	exertion of physical or emotional force so as to intimidate, injure or abuse
Wants	something that is desired by not necessary for survival
Wellness	the quality or state of being in good health especially as an actively sought goal

4th Grade English Language Arts Curriculum Essentials Document



**Boulder Valley School District
Department of Curriculum and Instruction
April 2012**

Introduction

On December 10, 2009, the Colorado State Board of Education adopted the revised English Language Arts: Reading, Writing and Communicating Academic Standards, along with academic standards in nine other content areas, creating Colorado's first fully aligned preschool through high school academic expectations. Concurrent to the revision of the Colorado standards was the Common Core State Standards (CCSS) initiative. These standards present a national perspective on academic expectations for students in kindergarten through high school in the United States. On August 2, 2010, the Colorado State Board of Education adopted the Common Core State Standards, and requested the integration of the Common Core State Standards and the Colorado Academic Standards. All the expectations of the Common Core State Standards are embedded and coded with CCSS in the state standards document and in this BVSD Curriculum Essentials Document.

In addition to standards in English Language Arts (ELA), the Common Core State Standards offer literacy expectations for history/social studies, science, and technical subjects. These expectations, in grades 6 through grade 12, are intended to assist teachers in "using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields." (Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects, page 3). These expectations are NOT meant to supplant academic standards in other content areas, but to be used as a literacy supplement. These standards are listed in the Appendix to the Secondary level BVSD Curriculum Essentials Document.

This BVSD Curriculum Essentials Document incorporates all of the Common Core English Language Arts State Standards and the essentials from the Colorado Academic Standards for Reading, Writing and Communicating along with evidence outcomes identified by BVSD teachers. The Grade Level Expectations (GLE) have also been revised as measurable behavioral statements. You will note that the GLEs are similar statements across grade levels. The differences are seen within the Evidence Outcomes listed for each GLE at each grade level. We referenced the multiple resources used to write our BVSD curriculum and used the following notations throughout the CEDs::

Preschool – 12th notations:

- Common Core State Standards (CCSS: #of the grade level standard)
 - Example: (CCSS: RL.3.10)
- State or BVSD Teacher Addition: Brown font
 - Example: b. Speak clearly, using appropriate volume and pitch, for the purpose and audience.

Preschool Only:

The State standards and the preschool *Teaching Strategies GOLD - Objectives for Development & Learning Assessment* was referenced in designing Grade Level Expectations and Evidence Outcomes. You will note parenthetical statements such as (adapted from G.12.a.6) if the GOLD Assessment was used. The G represents GOLD Assessment, 12.a represents the objective number and the 6 represents the student behavior indicator.

This curriculum document is a culmination of an extended, broad-based effort to fulfill the charge issued by the Colorado Department of Education to design a curriculum that meets or exceeds the state standard expectations and to ensure that all students are college and career ready in English Language Arts when they graduate from BVSD. The Boulder Valley English Language Arts: Reading, Writing, and Communicating Curriculum Council would like to thank the many teachers, specialists, and assistants who were contributing writers to this important document.

21st Century Skills and Readiness Competencies in English Language Arts: Reading, Writing, and Communicating

The reading, writing, and communicating subcommittee embedded 21st century skills, school readiness, and postsecondary and workforce readiness skills into the revised standards utilizing descriptions developed by Coloradans and vetted by educators, policymakers, and citizens.

Colorado's Description of 21st Century Skills

The 21st century skills are the synthesis of the essential abilities students must apply in our rapidly changing world. Today's students need a repertoire of knowledge and skills that are more diverse, complex, and integrated than any previous generation. Drama and theatre arts are inherently demonstrated in each of Colorado's 21st century skills, as follows:

Critical Thinking and Reasoning

Critical thinking and reasoning are vital to advance in the technologically sophisticated world we live in. In order for students to be successful and powerful readers, writers, and communicators, they must incorporate critical thinking and reasoning skills. Students need to be able to successfully argue a point, justify reasoning, evaluate for a purpose, infer to predict and draw conclusions, problem solve, and understand and use logic to inform critical thinking.

Information Literacy

The student who is information-literate accesses information efficiently and effectively by reading and understanding essential content of a range of informational texts and documents in all academic areas. This involves evaluating information critically and competently; accessing appropriate tools to synthesize information; recognizing relevant primary and secondary information; and distinguishing among fact, point of view, and opinion.

Collaboration

Reading, writing, and communicating must encompass collaboration skills. Students should be able to collaborate with each other in multiple settings: peer groups, one-on-one, in front of an audience, in large and small group settings, and with people of other ethnicities. Students should be able to participate in a peer review, foster a safe environment for discourse, mediate opposing perspectives, contribute ideas, speak with a purpose, understand and apply knowledge of culture, and seek others' ideas.

Self-Direction

Students who read, write, and communicate independently portray self-direction by using metacognition skills. These important skills are a learner's automatic awareness of knowledge and ability to understand, control, and manipulate cognitive processes. These skills are important not only in school but throughout life, enabling the student to learn and set goals independently.

Invention

Applying new ways to solve problems is an ideal in reading and writing instruction. Invention is one of the key components of creating an exemplary writing piece or synthesizing information from multiple sources. Invention takes students to a higher level of metacognition while exploring literature and writing about their experiences.

Standards in English Language Arts: Reading, Writing, and Communicating

Standards are the topical organization of an academic content area. The four standards of English Language Arts: Reading, Writing, and Communicating are:

1. Speaking and Listening

Learning of word meanings occurs rapidly from birth through adolescence within communicative relationships. Everyday interactions with parents, teachers, peers, friends, and community members shape speech habits and knowledge of language. Language is the means to higher mental functioning, that which is a species-specific skill, unique to humans as a generative means for thinking and communication. Through linguistic oral communication, logical thinking develops and makes possible critical thinking, reasoning, development of information literacy, application of collaboration skills, self-direction, and invention.

Oral language foundation and written symbol systems concretize the way a student communicates. Thus, students in Colorado develop oral language skills in listening and speaking, and master the written language skills of reading and writing. Specifically, holding Colorado students accountable for language mastery from the perspectives of scientific research in linguistics, cognitive psychology, human information processing, brain-behavior relationships, and socio-cultural perspectives on language development will allow students to master 21st century skills and serve the state, region, and nation well.

2. Reading for All Purposes

Literacy skills are essential for students to fully participate in and expand their understanding of today's global society. Whether they are reading functional texts (voting ballots, a map, a train schedule, a driver's test, a job application, a text message, product labels); reference materials (textbooks, technical manuals, electronic media); or print and non-print literary texts, students need reading skills to fully manage, evaluate, and use the myriad information available in their day-to-day lives.

3. Writing and Composition

Writing is a fundamental component of literacy. Writing is a means of critical inquiry; it promotes problem solving and mastering new concepts. Adept writers can work through various ideas while producing informational, persuasive, and narrative or literary texts. In other words, writing can be used as a medium for reasoning and making intellectual connections. As students arrange ideas to persuade, describe, and inform, they engage in logical critique, and they are likely to gain new insights and a deeper understanding of concepts and content.

4. Research and Reasoning

Research and Reasoning skills are pertinent for success in a postsecondary and workforce setting. Students need to acquire these skills throughout their schooling. This means students need to be able to distinguish their own ideas from information created or discovered by others, understand the importance of creating authentic works, and correctly cite sources to give credit to the author of the original work.

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects include a separate standard for Language. In this document, those Language expectations are integrated into the four standards above as appropriate.

4th Grade Overview

Course Description	Topics Across All Grades
<p>English Language Arts in Fourth Grade focuses on the continued development of motivated, strategic, constructive, fluent and independent readers, writers, and communicators. The emphasis is on extending oral language abilities and the use of reading and writing processes. Students will read literature and informational texts. They will share responses, express understandings and support opinions using textual evidence both orally and in writing. Students will also use research skills and tools to gather, organize, summarize and present information.</p>	<p>We are developing learners who:</p> <ul style="list-style-type: none"> • Demonstrate independence • Build strong content knowledge • Respond to the varying demands of audience, task, purpose, and discipline • Comprehend as well as critique • Value evidence • Use technology and digital media strategically and capably • Come to understand other perspectives and cultures <p>Who value: Critical thinking and reasoning, informational literacy, collaboration, self-direction and invention</p>
Assessments	Effective Components of English Language Arts
<p>Screeners, diagnostics, interim and summative assessments will be used along with assessments evaluated formatively to plan lessons and provide focused feedback to students. Below are some assessment examples.</p> <ul style="list-style-type: none"> • Observations/Conversations/Work Samples • Group/Individual Projects - Performance tasks (planning, in-progress, final assignments) • District/State Literacy Assessment • Individual Reading Inventories such as Running Records, QRIs, Guided Reading Level Benchmark Books • Questions/Comments/Reading Responses • Peer assessments/ Self assessments 	<p>Teachers in BVSD:</p> <ol style="list-style-type: none"> 1. Provide a literacy block of 120 minutes for reading and writing every day using literature and informational texts, including online resources 2. Evaluate data formatively to plan for: <ol style="list-style-type: none"> a. Reading & Writing Demonstrations b. Shared Reading & Writing c. Guided Reading & Writing <ol style="list-style-type: none"> i. Flexible grouping focused on needs ii. Continuous text: both reading and writing iii. Promote reciprocity between reading and writing through deliberate attention to both <ol style="list-style-type: none"> d. Daily independent reading and writing 3. Immerse students in many types of texts (examples: songs, picture books, rhyming, informational) at independent and instructional reading levels 4. Explicitly and systematically teach foundational and essential skills and strategies for reading and writing utilizing BVSD adopted resources and online resources 5. Provide authentic, meaningful, purposeful, relevant opportunities for students to respond to what is read 6. Ensure students use textual evidence when explaining their learning from reading and writing in all content areas 7. Ensure additional small group instructional time for students not performing at grade level <p style="text-align: right;">Refer to the online version of the BVSD handbook, <i>Literacy Journey</i>, for best practices guidance</p>
Standards	Grade Level Expectations
1. Speaking and Listening	<ol style="list-style-type: none"> 1. Communicate effectively while reporting on a topic, telling a story, or recounting an experience. 2. Listen to other's ideas, forms own opinions, and engages effectively in collaborative discussions.
2. Reading for All Purposes	<ol style="list-style-type: none"> 1. Use a range of strategies efficiently to construct meaning while reading literature. 2. Use a range of strategies efficiently to construct meaning while reading informational texts. 3. Use a range of decoding and vocabulary learning strategies to acquire and use grade-appropriate words and phrases. 4. Read fluently with varied expression and sufficient accuracy to support comprehension.
3. Writing and Composition	<ol style="list-style-type: none"> 1. Use the recursive writing process to create narratives and poems for intended audiences and purposes. 2. Use the recursive writing process to create informative/explanatory and opinion pieces for a variety of audiences and purposes. 3. Apply conventions of standard English grammar and usage, capitalization, punctuation, and spelling consistently.
4. Research and Reasoning	<ol style="list-style-type: none"> 1. Conduct and presents relevant research by taking notes and categorizing information on different aspects of a topic. 2. Use evidence from research and logical reasoning to support own analysis and reflection.

1. Speaking and Listening: Flexible communication and collaboration

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standard requires students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

Common Core Anchor Standards

These are the Common Core Preschool through grade 12 College and Career Readiness Anchor Standards for Speaking and Listening. These anchor standards and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

SPEAKING AND LISTENING

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

LANGUAGE Anchor Standards Connected to Speaking and Listening*

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary Acquisition and Use

5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

*Numbers correspond to the six Common Core Language Anchor Standards. Listed here are the ones that connect to Speaking and Listening.

Colorado's Prepared Graduate Competencies

These are the Preschool through grade 12 concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Speaking and Listening Standard:

- Collaborate effectively as group members or leaders who listen actively and respectfully pose thoughtful questions, acknowledge the ideas of others, and contribute ideas to further the group's attainment of an objective
- Deliver organized and effective oral presentations for diverse audiences and varied purposes
- Use language appropriate for purpose and audience
- Demonstrate skill in inferential and evaluative listening

Content Area: English Language Arts – Fourth Grade

Standard: 1. Speaking and Listening

Prepared Graduates:

- Use language appropriate for purpose and audience

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. Communicate effectively while reporting on a topic, telling a story, or recounting an experience.

Evidence Outcomes

Students can:

Presentation of Knowledge and Ideas

- a. Report on a topic or text, tell a story, or recount an experience, in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (CCSS: SL.4.4)

Presentation of Knowledge and Ideas

- b. Add audio recordings and visual displays to presentations, when appropriate, to enhance the development of main ideas or themes. (CCSS: SL.4.5)

Presentation of Knowledge and Ideas

- c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English, when appropriate, to tasks and situations. (CCSS: SL.4.6)

Knowledge of Language

- d. Use knowledge of language and its conventions when writing, speaking, reading, or listening. (CCSS: L.4.3)
 - i. Choose words and phrases to convey ideas precisely. (CCSS: L.4.3a)
 - ii. Choose punctuation for effect. (CCSS: L.4.3b)
 - iii. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion). (CCSS: L.4.3c)

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. What is important to remember to do when presenting ideas to a group?
2. What must a speaker do to prepare to present ideas to a group?
3. Why is it important to use precise vocabulary in presentations?
4. How does a speaker communicate so others will listen and understand the message?

Relevance and Application:

1. Knowing your audience and purpose contributes to your presentations.
2. Speakers use different presentation techniques/strategies to relate to an audience.

Nature of Discipline:

1. Good communicators acknowledge the ideas of others.
2. Everyone has a role in contributing to a discussion.
3. Oral discussion helps to build connections to others and create opportunities for learning.
4. A speaker's choice of words and style set a tone and define the message.
5. A speaker selects a writing form and organizational pattern based on the audience and purpose.

Content Area: English Language Arts – Fourth Grade

Standard: 1. Speaking and Listening

Prepared Graduates:

- Collaborate effectively as group members or leaders who listen actively and respectfully pose thoughtful questions, acknowledge the ideas of others, and contribute ideas to further the group's attainment of an objective
- Demonstrate skill in inferential and evaluative listening

GRADE LEVEL EXPECTATION

Concepts and skills students master:

- 2. Listen to other's ideas, forms own opinions, and engages effectively in collaborative discussions.

Evidence Outcomes

21st Century Skills and Readiness Competencies

Students can:

Comprehension and Collaboration

- a. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing own ideas clearly. (CCSS: SL.4.1)
 - i. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. (CCSS: SL.4.1a)
 - ii. Follow agreed-upon rules for discussions and carry out assigned roles. (CCSS: SL.4.1b)
 - iii. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. (CCSS: SL.4.1c)
 - iv. Review the key ideas expressed and explain own ideas and understanding in light of the discussion. (CCSS: SL.4.1d)

Comprehension and Collaboration

- b. Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally. (CCSS: SL.4.2)

Comprehension and Collaboration

- c. Identify the reasons and evidence a speaker provides to support particular points. (CCSS: SL.4.3)

Inquiry Questions:

- 1. Why is paraphrasing someone else's thinking important before sharing other opinions?
- 2. Why is important to listen to all members in a group before making a decision about an issue or problem?
- 3. How can discussion increase our knowledge and understanding of an idea(s)?
- 4. How do speakers express their thoughts and feelings?

Relevance and Application:

- 1. Listening and supporting ideas while conversing with others is a skill used throughout life.
- 2. Interacting with others by sharing knowledge, ideas, stories, and interests builds positive relationships. For example, when planning a school festival, students, parents, and teachers work together to develop ideas and plan the work.
- 3. Businesses of all sizes create communication plans so employees are kept informed and know how and where to offer opinions.

Nature of Discipline:

- 1. Good communicators acknowledge the ideas of others.
- 2. Everyone has a role in contributing to a discussion.
- 3. Effective listeners are able to interpret and evaluate increasingly complex messages.

2. Reading: Text complexity and the growth of comprehension

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

Common Core Anchor Standards

These are the Common Core Preschool through grade 12 College and Career Readiness Anchor Standards for Reading and Language. These anchor standards and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

READING

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see “Research to Build and Present Knowledge” in Writing and “Comprehension and Collaboration” in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

LANGUAGE Anchor Standards Connected to Reading*

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

*Numbers correspond to the six Common Core Language Anchor Standards. Listed here are the ones that connect to Reading.

Colorado's Prepared Graduate Competencies

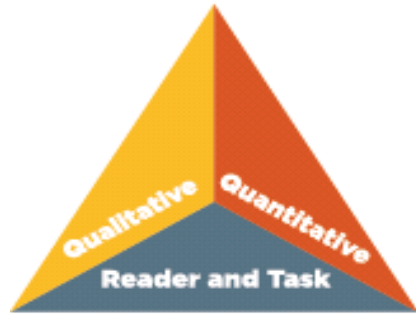
These are the Preschool through grade 12 concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Reading for All Purposes Standard:

- Interpret how the structure of written English contributes to the pronunciation and meaning of complex vocabulary
- Demonstrate comprehension of a variety of informational, literary, and persuasive texts
- Evaluate how an author uses words to create mental imagery, suggest mood, and set tone
- Read a wide range of literature (American and world literature) to understand important universal themes and the human experience
- Seek feedback, self-assess, and reflect on personal learning while engaging with increasingly more difficult texts
- Engage in a wide range of nonfiction and real-life reading experiences to solve problems, judge the quality of ideas, or complete daily tasks

From the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (Pages 31 and 57):

Measuring Text Complexity: Three Factors



Qualitative evaluation of the text: Levels of meaning, structure, language conventionality and clarity, and knowledge demands

Quantitative evaluation of the text: Readability measures and other scores of text complexity

Matching reader to text and task: Reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for K-5

Students in K-5 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature		Informational Text	
Stories	Dramas	Poetry	Literary Nonfiction and Historical, Scientific, and Technical Texts
Includes children's adventure stories, folktales, legends, fables, fantasy, realistic fiction, and myth	Includes staged dialogue and brief familiar scenes	Includes nursery rhymes and the subgenres of the narrative poem, limerick, and free verse poem	Includes biographies and autobiographies; books about history, social studies, science, and the arts; technical texts, including directions, forms, and information displayed in graphs, charts, or maps; and digital sources on a range of topics

Range of Text Types for 6-12

Students in grades 6-12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature		Informational Text	
Stories	Drama	Poetry	Literary Nonfiction
Includes the subgenres of adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, and graphic novels	Includes one-act and multi-act plays, both in written form and on film	Includes the subgenres of narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads, and epics	Includes the subgenres of exposition, argument, and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, technical, or economic accounts (including digital sources) written for a broad audience

Content Area: English Language Arts – Fourth Grade

Standard: 2. Reading for All Purposes

Prepared Graduates:

- Demonstrate comprehension of a variety of informational, literary, and persuasive texts
- Seek feedback, self-assess, and reflect on personal learning while engaging with increasingly more difficult texts

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. Use a range of strategies efficiently to construct meaning while reading literature.

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>Key Ideas and Details</p> <ol style="list-style-type: none">a. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (CCSS: RL.4.1)b. Identify and draw inferences about setting, characters (such as motivations, personality traits), and plot. (CCSS: RL.4.2)c. Determine a theme of a story, drama, or poem from details in the text; summarize the text. (CCSS: RL.4.3)d. Summarize text by identifying and sequencing important ideas, and by providing supporting details, while maintaining sequence.e. Describe, in depth, a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character’s thoughts, words, or actions). (CCSS: RL.4.4)f. Describe the development of plot (such as the origin of the central conflict, the action of the plot, and how the conflict is resolved). <p>Craft and Structure</p> <ol style="list-style-type: none">g. Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean). (CCSS: RL.4.4)h. Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, and meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, and stage directions) when writing or speaking about a text. (CCSS: RL.4.5)i. Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations. (CCSS:	<p>Inquiry Questions:</p> <ol style="list-style-type: none">1. How do people use reading strategies to better understand different types of writing?2. Why might readers compare themselves (similarities and differences) to characters in a text?3. How do authors use events throughout a text to prepare readers for the ending of the text?4. Why is it important to be able to use details and examples in texts to support your statements about a text?5. How does reading enjoyment contribute to lifelong learning? <p>Relevance and Application:</p> <ol style="list-style-type: none">1. Readers who recognize and understand point of view, conflict, and theme in literature can make comparisons to relationships and events occurring in their own lives.2. Recognizing differences in text structures supports the reader to comprehend a variety of texts3. Readers ensure they understand or comprehend what they read. <p>Nature of Discipline:</p> <ol style="list-style-type: none">1. Readers continually monitor their thinking as they read.2. Reading is the creation and recreation of meaning, therefore comprehension is the ultimate goal of readers.3. Readers use comprehension strategies automatically without thinking about them.4. Reading is a way to explore personal interests, answer important questions, satisfy a need for information, and to be entertained.5. Readers employ strategies to help them understand text. Strategic readers can develop, select, and apply strategies to enhance their comprehension.

RL.4.6)

Integration of Knowledge and Ideas

- j. Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text. (CCSS: RL.4.7)
- k. Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures. (CCSS: RL.4.9)

Range of Reading and Complexity of Text

- l. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the grades 4–5 text complexity band, proficiently and independently, with scaffolding, as needed, at the high end of the range. (CCSS: RL.4.10)

Content Area: English Language Arts – Fourth Grade

Standard: 2. Reading for All Purposes

Prepared Graduates:

- Demonstrate comprehension of a variety of informational, literary, and persuasive texts
- Seek feedback, self-assess, and reflect on personal learning while engaging with increasingly more difficult texts
- Engage in a wide range of nonfiction and real-life reading experiences to solve problems, judge the quality of ideas, or complete daily tasks

GRADE LEVEL EXPECTATION

Concepts and skills students master:

2. Use a range of strategies efficiently to construct meaning while reading informational texts.

Evidence Outcomes

21st Century Skills and Readiness Competencies

Students can:

Key Ideas and Details

- a. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (CCSS: RI.4.1)
- b. Determine the main idea of a text and explain how it is supported by key details; summarize the text. (CCSS: RI.4.2)
- c. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. (CCSS: RI.4.3)

Craft and Structure

- d. Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area. (CCSS: RI.4.4)
- e. Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text. (CCSS: RI.4.5)
- f. Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided. (CCSS: RI.4.6)
- g. Identify common organizational structures (e.g., paragraphs, topic sentences, and concluding sentences), and explain how they aid comprehension.
- h. Skim materials to develop a general overview of content.
- i. Scan to locate specific information or to perform a specific task (finding a phone number, locating a definition in a glossary, identifying a specific phrase in a passage).
- j. Use text features (bold type, headings, visuals, captions, glossary) to organize or categorize information.

Inquiry Questions:

1. How can readers learn about themselves, others, and the world from reading informational texts?
2. How do text features support readers to easily access information in informational texts?
3. How do readers know if the text is informing them or trying to persuade them?
4. How does comprehension of informational text contribute to lifelong learning?

Relevance and Application:

1. Readers interpret intended messages from various types of informational texts (such as billboards, web pages, and posters).
2. The skills used in reading comprehension transfers to readers' ability to understand and interpret events.
3. Throughout life, people will be asked to retell or recount events that have occurred.

Nature of Discipline:

1. Readers read for enjoyment and information.
2. Readers connect their reading to previous sections within the text and to other resources.
3. Reading informational texts helps people understand themselves and make connections to the world.
4. Readers gather information from multiple sources. Comparing what they know to what they want to learn helps construct new meaning.
5. Readers can share facts after reading an informational text.
6. Texts have consistent features that support the reader

Integration of Knowledge and Ideas

- k. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. (CCSS: RI.4.7)
- l. Explain how an author uses reasons and evidence to support particular points in a text. (CCSS: RI.4.8)
- m. Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (CCSS: RI.4.9)

Range of Reading and Complexity of Text

- n. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding, as needed, at the high end of the range. (CCSS: RI.4.10)

to access information written texts.

Content Area: English Language Arts – Fourth Grade	
Standard: 2. Reading for All Purposes	
Prepared Graduates:	
<ul style="list-style-type: none"> ➤ Interpret how the structure of written English contributes to the pronunciation and meaning of complex vocabulary ➤ Demonstrate comprehension of a variety of informational, literary, and persuasive texts 	
GRADE LEVEL EXPECTATION	
Concepts and skills students master:	
3. Use a range of decoding and vocabulary learning strategies to acquire and use grade-appropriate words and phrases.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>Phonics and Word Recognition</p> <p>a. Know and apply grade-level phonics and word analysis skills in decoding words. (CCSS: RF.4.3)</p> <p>i. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context. (CCSS: RF.4.3a)</p> <p>Vocabulary Acquisition and Use</p> <p>b. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies. (CCSS: L.4.4)</p> <p>i. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase. (CCSS: L.4.4a)</p> <p>ii. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph). (CCSS: L.4.4b)</p> <p>iii. Read and understand words with common prefixes (un-, re-, dis-) and derivational suffixes (-ful, -ly, -ness).</p>	<p>Inquiry Questions:</p> <ol style="list-style-type: none"> 1. Why is it vital for readers to clarify the meaning of unfamiliar and multiple-meaning words? 2. How can analyzing word structures help readers understand word meanings? 3. How does knowledge of word parts increase vocabulary and deepen comprehension of text? 4. How have other languages and cultures influenced the English language? <p>Relevance and Application:</p> <ol style="list-style-type: none"> 1. Changing accent changes the meaning of words (CONtest, conTEST). 2. Understanding root words can help readers determine the meaning of unfamiliar words. 3. The spelling of multisyllabic root words can change when suffixes are added (transfer, transferrable). 4. Announcers read stylized print with appropriate inflection. 5. Language is continuously evolving as a reflection of human evolution.

- iv. Read and understand words that change spelling to show past tense: write/wrote, catch/caught, teach/taught.
- v. Read multisyllabic words with and without inflectional and derivational suffixes.
- vi. Infer meaning of words using explanations offered within a text.
- vii. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases. (CCSS: L.4.4c)

Vocabulary Acquisition and Use

- c. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (CCSS: L.4.5)
 - i. Explain the meaning of simple similes and metaphors (e.g., as pretty as a picture) in context. (CCSS: L.4.5a)
 - ii. Recognize and explain the meaning of common idioms, adages, and proverbs. (CCSS: L.4.5b)
 - iii. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms). (CCSS: L.4.5c)
- d. **Vocabulary Acquisition and Use** – Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation). (CCSS: L.4.6)

Nature of Discipline:

1. The ability to notice accent is essential for successful communication.
2. Readers use phonemes, graphemes (letters), and morphemes (suffixes, prefixes) in an alphabetic language.
3. Understanding of a text’s features, structures, and characteristics facilitate the reader’s ability to make meaning of the text.
4. Readers use language structure and context clues to identify the intended meaning of words and phrases as they are used in text.

Content Area: English Language Arts – Fourth Grade

Standard: 2. Reading for All Purposes

Prepared Graduates:

- Interpret how the structure of written English contributes to the pronunciation and meaning of complex vocabulary
- Demonstrate comprehension of a variety of informational, literary, and persuasive texts

GRADE LEVEL EXPECTATION

Concepts and skills students master:

- 4. Read fluently with varied expression and sufficient accuracy to support comprehension.

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>Fluency</p> <ul style="list-style-type: none">a. Read with sufficient accuracy and fluency to support comprehension. (CCSS: RF.4.4)<ul style="list-style-type: none">i. Read grade-level text with purpose and understanding. (CCSS: RF.4.4a)ii. Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression. (CCSS: RF.4.4b)iii. Use context to confirm or self-correct word recognition and understanding, rereading as necessary. (CCSS: RF.4.4c)	<p>Inquiry Questions:</p> <ul style="list-style-type: none">1. As readers think about the tone and message of the text, how can they use intonation and expression to make meaning clear?2. How does fluency affect comprehension?3. Why does a reader, who is reading silently, need to monitor their fluency? <p>Relevance and Application:</p> <ul style="list-style-type: none">1. It is important to read accurately and fluently to understand what is being read. <p>Nature of Discipline:</p> <ul style="list-style-type: none">1. Reading with prosody increases comprehension and fluency. These are skills of proficient readers.2. Understanding of a text’s features, structures, and characteristics facilitate the reader’s ability to make meaning of the text.3. Readers use language structure and context clues to identify the intended meaning of words and phrases as they are used in text.4. Fluent readers group words quickly to help them gain meaning from what they read.

3. Writing: Text types, responding to reading, and research

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw upon and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

From the Common Core State Standards Expectations for EACH grade level:

“Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.”

Common Core Anchor Standards

These are the Common Core Preschool through grade 12 College and Career Readiness Anchor Standards for Writing and Language. These anchor standards and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

WRITING

Text Types and Purposes (*These broad types of writing include many subgenres.)

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

LANGUAGE Anchor Standards Connected to Writing*

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary Acquisition and Use

5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

*Numbers correspond to the six Common Core Language Anchor Standards. Listed here are the ones that connect to Writing.

Prepared Graduate Competencies

These are the Preschool through grade 12 concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Writing and Composition standard:

- Write with a clear focus, coherent organization, sufficient elaboration, and detail
- Effectively use content-specific language, style, tone, and text structure to compose or adapt writing for different audiences and purposes
- Apply standard English conventions to effectively communicate with written language
- Implement the writing process successfully to plan, revise, and edit written work
- Master the techniques of effective informational, literary, and persuasive writing

Content Area: English Language Arts – Fourth Grade

Standard: 3. Writing and Composition

Prepared Graduates:

- Write with a clear focus, coherent organization, sufficient elaboration, and detail
- Implement the writing process successfully to plan, revise, and edit written work
- Master the techniques of effective informational, literary, and persuasive writing

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. Use the recursive writing process to create narratives and poems for intended audiences and purposes.

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can: Text Types and Purposes</p> <ol style="list-style-type: none">a. Plan and write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. (CCSS: W.4.3)<ol style="list-style-type: none">i. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. (CCSS: W.4.3a)ii. Choose planning strategies to support text structure and intended outcome.iii. Use dialogue and description to develop experiences and events or show the responses of characters to situations. (CCSS: W.4.3b)iv. Use a variety of transitional words and phrases to manage the sequence of events. (CCSS: W.4.3c)v. Use concrete words and phrases and sensory details to convey experiences and events precisely. (CCSS: W.4.3d)vi. Provide a conclusion that follows from the narrated experiences or events. (CCSS: W.4.3e)vii. Write poems that express ideas or feelings using imagery, figurative language, and sensory details.viii. Use correct format (indenting paragraphs, parts of a letter, poem, etc.) for intended purpose. <p>Production and Distribution of Writing</p> <ol style="list-style-type: none">b. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (CCSS: W.4.4) <p>Production and Distribution of Writing</p> <ol style="list-style-type: none">c. With guidance and support from peers and adults, develop	<p>Inquiry Questions:</p> <ol style="list-style-type: none">1. How do graphic organizers assist writers?2. How do writers create a visual image for readers?3. How does knowledge of writing process refine skills, increase confidence, and shape insight?4. How do writers communicate purposefully and clearly with various audiences?5. How do effective writers hook and hold readers and make writing easy to follow?6. How does revising and editing strengthen ideas, organization, voice, word choice sentence fluency, and conventions? <p>Relevance and Application:</p> <ol style="list-style-type: none">1. Writers who are diligent about their word choices increase the likelihood that intended audiences will understand the precise message that writers are attempting to convey <p>Nature of Discipline:</p> <ol style="list-style-type: none">1. Personal experiences can inspire a wide variety of writing.2. Writers use a repertoire of strategies that enables them to vary form and style, in order to write for different purposes, audiences, and contexts.3. Writers select a form based on their audience and purpose.

and strengthen writing, as needed, by planning, revising, and editing. (CCSS: W.4.5)

Production and Distribution of Writing

- d. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing, as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting. (CCSS: W.4.6)

Range of Writing

- e. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. (CCSS: W.4.10)

Content Area: English Language Arts – Fourth Grade

Standard: 3. Writing and Composition

Prepared Graduates:

- Write with a clear focus, coherent organization, sufficient elaboration, and detail
- Implement the writing process successfully to plan, revise, and edit written work
- Master the techniques of effective informational, literary, and persuasive writing

GRADE LEVEL EXPECTATION

Concepts and skills students master:

- 2. Use the recursive writing process to create informative/explanatory and opinion pieces for a variety of audiences and purposes.

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>Text Types and Purposes</p> <ul style="list-style-type: none">a. Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (CCSS: W.4.1)<ul style="list-style-type: none">i. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer’s purpose. (CCSS: W.4.1a)ii. Provide reasons that are supported by facts and details. (CCSS: W.4.1b)iii. Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition). (CCSS: W.4.1c)iv. Provide a concluding statement or section related to the opinion presented. (CCSS: W.4.1d) <p>Text Types and Purposes</p> <ul style="list-style-type: none">b. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (CCSS: W.4.2)<ul style="list-style-type: none">i. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. (CCSS: W.4.2a)ii. Identify a text structure appropriate to purpose (sequence, chronology, description, explanation, comparison-and-contrast).iii. Choose planning strategies to support text structure and intended outcome.iv. Use correct format (indenting paragraphs, parts of a letter, poem, etc.) for intended purpose.v. Organize relevant ideas and details to convey a central idea or prove a point.vi. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples	<p>Inquiry Questions:</p> <ul style="list-style-type: none">1. What forms of writing assist writers in sharing information?2. How do authors know what information is accurate and credible?3. Why would it be important for authors to label illustrations, photos, graphs, charts, or other media?4. How is informational writing different from narrative writing?5. How is word choice affected by audience and purpose?6. How are writers persuasive without being biased?7. How does formatting aid readers?8. How is writing a tool for thinking, solving problems, exploring issues, constructing questions, and addressing inquiry. <p>Relevance and Application:</p> <ul style="list-style-type: none">1. Writers organize informative/explanatory writing differently than literary writing.2. Writers use digital resources to add graphics and visual effects to a project to make a specific impact on audiences.3. Businesses use proposals to persuade consumers to buy their products.4. Writing is a tool for thinking: solving problems, exploring issues, constructing questions, and addressing inquiry. <p>Nature of Discipline:</p> <ul style="list-style-type: none">1. Writers use transitions in their writing to make shifts clearer and easier to follow.2. Writers often use visuals to help convey their message.3. Elements of reasoning, through carefully chosen facts and details, are necessary to use when sharing opinions with an audience.4. Key purposes for writing informational text include: to describe, to explain, to instruct, to persuade, and to retell.

<p>related to the topic. (CCSS: W.4.2b)</p> <p>vii. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because). (CCSS: W.4.2c)</p> <p>viii. Use precise language and domain-specific vocabulary to inform about or explain the topic. (CCSS: W.4.2d)</p> <p>ix. Provide a concluding statement or section related to the information or explanation presented. (CCSS: W.4.2e)</p> <p>Production and Distribution of Writing</p> <p>c. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (CCSS: W.4.4)</p> <p>Production and Distribution of Writing</p> <p>d. With guidance and support from peers and adults, develop and strengthen writing, as needed, by planning, rereading, revising, and editing to ensure writing makes sense. (CCSS: W.4.5)</p> <p>Production and Distribution of Writing</p> <p>e. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing, as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting. (CCSS: W.4.6)</p> <p>Range of Writing</p> <p>f. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. (CCSS: W.4.10)</p>	
---	--

Content Area: English Language Arts – Fourth Grade

Standard: 3. Writing and Composition

Prepared Graduates:

- Apply standard English conventions to effectively communicate with written language

GRADE LEVEL EXPECTATION

Concepts and skills students master:

- 3. Apply conventions of standard English grammar and usage, capitalization, punctuation, and spelling consistently.

Evidence Outcomes

Students can:

Conventions of Standard English

- a. Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking. (CCSS: L.4.1)
 - i. Use relative pronouns (who, whose, whom, which, that) and relative adverbs (where, when, why). (CCSS: L.4.1a)
 - ii. Form and use the progressive (e.g., I was walking; I am walking; I will be walking) verb tenses. (CCSS: L.4.1b)
 - iii. Use modal auxiliaries (e.g., can, may, must) to convey various conditions. (CCSS: L.4.1c)
 - iv. Order adjectives within sentences according to conventional patterns (e.g., a small red bag rather than a red small bag). (CCSS: L.4.1d)
 - v. Form and use prepositional phrases. (CCSS: L.4.1e)
 - vi. Use compound subjects (Tom and Pat went to the store) and compound verbs (Harry thought and worried about the things he said to Jane) to enhance sentence fluency in writing.
 - vii. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons. (CCSS: L.4.1f)
 - viii. Correctly use frequently confused words (e.g., to, too, two; there, their). (CCSS: L.4.1g)

Conventions of Standard English

- b. Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing. (CCSS: L.4.2)
 - i. Use correct capitalization. (CCSS: L.4.2a)
 - ii. Use commas and quotation marks to mark direct speech and quotations from a text. (CCSS: L.4.2b)
 - iii. Use a comma before a coordinating conjunction in a

21st Century Skills and Readiness Competencies

Inquiry Questions:

- 1. How do rules of language affect communication?
- 2. How do writers prepare their writing for different audiences?
- 3. What is the purpose of applying appropriate conventions of standard English?
- 4. How can use of spelling rules and patterns improve written communication?
- 5. How is the written word different from the spoken word?
- 6. How do writers use technology to support the writing process?

Relevance and Application:

- 1. Proper grammar usage is important in speaking and writing so that the speaker's and writer's precise message is understood.
- 2. Writers use a range of resources including technology as revising and editing tools.
- 3. Writers use accurate vocabulary, grammar, usage, and mechanics to add clarity to writing.

Nature of Discipline:

- 1. Universal conventions are devised to ensure all readers everywhere will understand a message.

compound sentence. (CCSS: L.4.2c)

- iv. Spell grade-appropriate words correctly, consulting references as needed. (CCSS: L.4.2d)

Knowledge of Language

- c. Use knowledge of language and its conventions when writing, speaking, reading, or listening. (CCSS: L.4.3)
 - i. Choose words and phrases to convey ideas precisely. (CCSS: L.4.3a)
 - ii. Choose punctuation for effect. (CCSS: L.4.3b)
 - iii. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion). (CCSS: L.4.3c)

4. Research and Reasoning

Research and Reasoning skills are pertinent for success in postsecondary and workforce settings. Students need to acquire these skills throughout their schooling. This means students need to be able to distinguish their own ideas from information created or discovered by others, understand the importance of creating authentic works, and correctly cite sources to give credit to the author of the original work. Below and on the next page are the Common Core Anchor Standards and Colorado’s Prepared Graduate Competencies.

Common Core Anchor Standards

These are the Common Core Preschool through grade 12 College and Career Readiness Anchor Standards for Writing that connect to Research and Reasoning. These anchor standards and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

WRITING

Text Types and Purposes (These broad types of writing include many subgenres.)

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

LANGUAGE Anchor Standards Connected to Research and Reasoning*

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary Acquisition and Use

5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

*Numbers correspond to the six Common Core Language Anchor Standards. Listed here are the ones that connect to Research and Reasoning.

Colorado's Prepared Graduate Competencies

These are the preschool through grade 12 concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Research and Reasoning standard:

- Discriminate and justify a position using traditional lines of rhetorical argument and reasoning
- Articulate the position of self and others using experiential and material logic
- Gather information from a variety of sources; analyze and evaluate the quality and relevance of the source; and use it to answer complex questions
- Use primary, secondary, and tertiary written sources to generate and answer research questions
- Evaluate explicit and implicit viewpoints, values, attitudes, and assumptions concealed in speech, writing, and illustration
- Demonstrate the use of a range of strategies, research techniques, and persistence when engaging with difficult texts or examining complex problems or issues
- Exercise ethical conduct when writing, researching, and documenting sources

Content Area: English Language Arts – Fourth Grade

Standard: 4. Research and Reasoning

Prepared Graduates:

- Demonstrate the use of a range of strategies, research techniques, and persistence when engaging with difficult texts or examining complex problems or issues
- Gather information from a variety of sources; analyze and evaluate the quality and relevance of the source; and use it to answer complex questions
- Use primary, secondary, and tertiary written sources to generate and answer research questions

GRADE LEVEL EXPECTATION

Concepts and skills students master:

1. Conduct and present relevant research by taking notes and categorizing information on different aspects of a topic.

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>Research to Build and Present Knowledge</p> <ol style="list-style-type: none">a. Conduct short research projects that build knowledge through investigation of different aspects of a topic. (CCSS: W.4.7) <p>Research to Build and Present Knowledge</p> <ol style="list-style-type: none">b. Recall relevant information from experiences, or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (CCSS: W.4.8)<ol style="list-style-type: none">i. Identify a topic and formulate open-ended research questions for further inquiry and learning.ii. Present a brief report of research findings to an audience.iii. Identify relevant sources for locating informationiv. Locate information using text features, (appendices, indices, glossaries, and table of content).v. Gather information using a variety of resources (reference materials, trade books, online resources, library databases, print and media resources).vi. Read for key ideas, take notes, and organize information read (using graphic organizer).vii. Interpret and communicate the information learned by developing a brief summary with supporting details.viii. Develop relevant supporting visual information (charts, maps, diagrams, photo evidence, and models).	<p>Inquiry Questions:</p> <ol style="list-style-type: none">1. How do writers support their ideas and opinions?2. How do text features support writers to gather appropriate research data?3. How do researchers begin research projects?4. How do writers/researchers include the perspectives, thinking, or opinions of others as they learn? <p>Relevance and Application:</p> <ol style="list-style-type: none">1. Writers plan, write, and present information that reflects their point of view.2. Researchers start by examining what they know and using an inquiry process to investigate their questions.3. Researchers who use multiple resources create a stronger research project.4. Digital resources can be used to summarize and organize thinking while researching and while presenting information.5. Social networking tools can be used to create and share research information. <p>Nature of Discipline:</p> <ol style="list-style-type: none">1. Researchers use many sources of information including digital resource guides and texts' table of contents, glossaries, and appendices.2. Writers/Researchers/Presenters must be precise and share key points so the reader/audience will be able to follow their reasoning.

Content Area: English Language Arts – Fourth Grade		
Standard: 4. Research and Reasoning		
Prepared Graduates:		
<ul style="list-style-type: none"> ➤ Articulate the position of self and others using experiential and material logic ➤ Gather information from a variety of sources; analyze and evaluate the quality and relevance of the source; and use it to answer complex questions ➤ Evaluate explicit and implicit viewpoints, values, attitudes, and assumptions concealed in speech, writing, and illustration ➤ Demonstrate the use of a range of strategies, research techniques, and persistence when engaging with difficult texts or examining complex problems or issues 		
GRADE LEVEL EXPECTATION		
Concepts and skills students master:		
2. Use evidence from research and logical reasoning to support own analysis and reflection.		
	21st Century Skills and Readiness Competencies	
Students can: Research to Build and Present Knowledge <ul style="list-style-type: none"> a. Draw evidence from literary or informational texts to support analysis, reflection, and research. (CCSS: W.4.9) <ul style="list-style-type: none"> i. Apply grade 4 Reading standards to literature (e.g., “Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character’s thoughts, words, or actions].”). (CCSS: W.4.9.a) ii. Apply grade 4 Reading standards to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text”). (CCSS: W.4.9.b) b. Consider negative, as well as positive implications, of own thinking or behavior, or others’ thinking or behavior. c. State, elaborate, and give an example of a concept (for example, state, elaborate, and give an example of friendship or conflict) d. Identify key concepts and ideas. e. Ask primary questions of clarity, significance, relevance, accuracy, depth, and breadth. 	Inquiry Questions: <ol style="list-style-type: none"> 1. How do readers identify key concepts and ideas/ 2. How does a reader/researcher know they clearly understand the concepts and topics? 3. What strategy do readers use to help them identify the key concepts or main ideas of a text? 4. How does elaborating help audiences clearly understand a concept? 	
		Relevance and Application: <ol style="list-style-type: none"> 1. Concepts and ideas reflect prior knowledge and experiences. 2. Writers/Researchers/Presenters acknowledge that further reading or research can increase their depth of understanding.
		Nature of Discipline: <ol style="list-style-type: none"> 1. Researchers understand that clear concepts and ideas must be supported with facts. 2. Good communicators are able to state the issue or concept, elaborate on it, and have an example to clearly express their thinking.

Conventions Scope & Sequence

Exposure

Mastery

Independent Usage

Use <i>CAPITALIZATION</i> for...	K	1	2	3	4	5	6	7	8	9	10	11	12
first word in a sentence													
the pronoun I													
first and last name													
titles used with names (Mr. Mrs. President, Senator, Dr. etc)													
dates (January 3)													
names of people													
holidays													
calendar words (days, months)													
product names													
geographic names													
book/song/story titles													
words used as names (Uncle John)													
speaker's first word in dialogue													
racess and nationalities													
religions													
languages													
names of organizations													
historical events													
acronyms													
Use <i>PERIODS, QUESTION MARKS, AND EXCLAMATION MARKS</i> to...	K	1	2	3	4	5	6	7	8	9	10	11	12
recognize and name ending punctuation													
end sentences													
show abbreviations and after a person's initials (e.g., St., R.K)													
choose punctuation for effect													
write and punctuate compound and complex sentences													
format and punctuate dialogue													
Use <i>COMMAS</i> to...	K	1	2	3	4	5	6	7	8	9	10	11	12
write out dates (January 1, 2011)													
separate single words in a series													
separate a series of numbers													

write greetings and closings in letters														
punctuate addresses (e.g., between city and state)														
punctuate dialogue														
for effect														
mark direct speech and quotations from a text														
place before a coordinating conjunction in a compound sentence														
separate an introductory element from the rest of the sentence														
set off interruptions and interjections														
set off the words <i>yes</i> and <i>no</i> (e.g., <i>Yes, thank you</i>)														
set off a tag question from the rest of the sentence (e.g., <i>It's true, isn't it?</i>)														
indicate direct address (e.g., <i>Is that you, Steve?</i>)														
set off nonrestrictive/parenthetical elements														
separate coordinate adjectives (e.g., <i>It was a fascinating, enjoyable movie but not He wore an old [,] green shirt</i>)														
write and punctuate compound and complex sentences correctly														
indicate a pause or break														
format and punctuate dialogue correctly														
Use APOSTROPHES for...	K	1	2	3	4	5	6	7	8	9	10	11	12	
contractions (I'm, we're, etc.)														
frequently occurring possessives (Ashley's, Mom's, etc)														
showing ownership: singular, plural, shared possessives														
forming possessives with indefinite pronouns (everybody's, others', anybody's)														
Use ABBREVIATIONS for...	K	1	2	3	4	5	6	7	8	9	10	11	12	
titles of people's names (Dr., Mrs., etc)														
calendar words														
states														
addresses														
acronyms														
Use QUOTATION MARKS to...	K	1	2	3	4	5	6	7	8	9	10	11	12	
choose punctuation for effect														
mark direct speech and quotations from a text														

indicate titles of works														
emphasize special words														
write and punctuate compound and complex sentences correctly														
format and punctuate dialogue correctly														
Use <i>UNDERLINING & ITALICS</i> for...	K	1	2	3	4	5	6	7	8	9	10	11	12	
titles of works														
special words														
emphasis														
Use <i>PARENTHESES</i> to...	K	1	2	3	4	5	6	7	8	9	10	11	12	
set off nonrestrictive/parenthetical elements														
Use <i>HYPHENS</i> to...	K	1	2	3	4	5	6	7	8	9	10	11	12	
choose punctuation for effect														
separate numbers (e.g., forty-three)														
form compound words (e.g., merry-go-round editor-in-chief)														
separate numbers in a fraction														
divide a word														
create new words														
form an adjective (e.g., family-friendly, etc.)														
join letters or words,														
avoid confusing or awkward spelling														
follow hyphenation conventions														
Use <i>COLONS & SEMI COLONS</i> for...	K	1	2	3	4	5	6	7	8	9	10	11	12	
separating items in a series (semi colons)														
introduction of a list (colons)														
formal introductions (colons)														
a business letter (colons)														
writing numbers in time (e.g., 4:30)														
emphasis (colons)														
punctuating compound and complex sentences														
joining and setting off two independent clauses (semicolon)														
conjunctive adverbs (semicolon)														
introducing a list or quotation														
linking two or more closely related independent clauses (perhaps with a conjunctive adverb)														

Use ELLIPSES & DASHES to...	K	1	2	3	4	5	6	7	8	9	10	11	12	
punctuate for effect														
indicate an omission														
indicate a pause or a break														
show emphasis														
Use PROPER FORMATTING for...	K	1	2	3	4	5	6	7	8	9	10	11	12	
paragraphs (e.g., indenting)														
parts of a letter														
poetry														
formatting and punctuating dialogue														
identify comma splices and fused sentences in writing and revise to eliminate them														
writing and editing work so that it conforms to the guidelines in a style manual (e.g., <i>MLA Handbook</i> , <i>Turabian's Manual for Writers</i>) appropriate for the discipline and writing type.														
using a style guide to follow the conventions of Modern Language Association (MLA) or American Psychological Association (APA) format														

Elementary Academic Vocabulary for English Language Arts: Reading, Writing, and Communicating

abstract noun	A noun that names a thing that cannot be touched or seen such as a concept, idea, experience, state of being, trait, quality, or feeling (e.g. freedom, love, happiness, democracy, honesty, pain, sympathy).
abridged	A condensed version of a text that still maintains the overarching theme.
active voice	One of the two "voices" of verbs . When the verb of a sentence is in the active voice, the subject is doing the acting, as in the sentence "Kevin hit the ball." Kevin (the subject of the sentence) acts in relation to the ball.
adage	A traditional saying that expresses something considered to be a general truth.
adjective	A word or phrase that describes a noun or pronoun. (e.g. Male peacocks have beautiful feathers. The feathers are colorful .)
adventure story	A story about an exciting or unexpected event or course of events often involving a risky undertaking of unknown outcome.
adverb	A word that describes a verb, an adjective, or another adverb. Most adverbs tell where, how, or when. Adverbs often end in -ly, but not always (e.g., The first pitch curved <i>inside</i> . - tells where; Roberto hit the next pitch <i>hard</i> . - tells how; Roberto ran <i>immediately</i> . - tells when).
affix	A letter or group of letters which are added to the beginning or end of a word to make a new word; such as ' un happy' and 'care less '; prefixes, suffixes, and endings that add meaning to a word or change the tense or part of speech of a word.
alliteration	The repeating of the beginning consonant sounds in words (e.g. The dog danced down the driveway.)
analogy	A similarity between like features of two things on which a comparison may be based. (e.g. "A rudder is to a ship as a goal is to a person.")
analyze	To examine critically, so as to bring out the essential elements. To examine carefully and in detail so as to identify causes, key factors, possible results, etc.
antagonist	A character in a story or poem that deceives, frustrates, or works against the main character or protagonist in some way. The antagonist need not be a person; it could be death, the devil, an illness, or any challenge that prevents the main character from attaining his or her goals.
antonym	The opposite of another word (e.g., large/small; hard/soft; in/out).
APA	American Psychological Association (APA) format is an editorial style developed for writers in the social and behavioral sciences. This format emphasizes simple, direct, concise writing.
approximation	Learning through making attempts, even if attempts are not completely successful.
archetype	A narrative design, character type, or image said to be identifiable in a wide variety of works of literature.
argument	A disagreement or opposing point of view. In writing and speech, argument is one of the traditional modes of discourse which defines a course of reasoning aimed at demonstrating truth or falsehood.
article	The word that comes before a noun – a, an, and the. (e.g. A dog ate the shoe. I love to eat an apple for snack.)
aside	The act of saying something away from others or in privacy; a technique used commonly in the theater.
assessment	A means for gathering information or data that reveals what learners control, partially control, or do not yet control consistently.
assonance	The repetition in words of identical or similar vowel sounds followed by different consonant sounds.
attending (reading process)	When sampling text, paying particular attention to visual information to construct a sense of the text.
audience	The person or group of people who read or hear what someone has written.

author	The person who produces a piece of writing.
autobiography	The story of a real person's life that is written by that person.
automaticity	Rapid, accurate, fluent word decoding without conscious effort or attention.
background knowledge/schema	Background knowledge/schema is using what the reader already knows about a subject that will help him gain new information and bring meaning to new information.
bibliography	A list of all the works and sources of information <i>consulted</i> while undertaking research for a paper or presentation.
biography	The story of a real person's life that is written by another person.
blend	A combination of two or more sounds.
brainstorming	Collecting ideas by thinking freely and openly about all the possibilities; used often with groups.
breadth	A wide range or extent.
cause and effect	A method of paragraph or essay development in which a writer analyzes the reasons for and/or the consequences of an action, event, or decision.
character	A person who takes part in the action of a story, novel, or a play. A Character can also be an animal, or imaginary creature in a piece of writing.
character traits	Traits are the basic orientation of the character. Bravery, cruelty and/or intolerance are all examples of character traits.
characterization	The representation of individuals in literary works. This may include direct methods like the attribution of qualities in description or commentary and indirect methods inviting readers to infer qualities from characters' actions, speech, or appearance. A flat character is one who remains undeveloped. A round character is one that is fully developed. A character that does not undergo change is referred to as static. A character that undergoes some transformation is called dynamic.
choral reading	To read aloud in unison with a group.
chronology	A record of events in the order of their occurrence; an arrangement of events in time.
citation	A brief notation of a scholarly source. It gives credit to the author of the material utilized. A citation is imperative for readers to research the finding of one's information. It also protects the writer reusing the material from plagiarism and possible copyright infringement.
cite	Quote (a passage, book, or author) as evidence for or justification of an argument or statement. (Not to be confused with website or sight.)

claim	An assertion of the truth of something. A claim expresses a specific position on some doubtful or controversial issue that the arguer wants the audience to accept. When confronting any message, especially a complex one, it is useful to begin by identifying the claims that are made.
climax	The most important or exciting event or point usually occurring the near the end of a story.
cohesiveness	The degree to which the ideas are said to "hang together" or the degree to which elements of the story are consistent, logical, and reasonable, given the whole story.
collaborative conversations	Conversation in which participants adhere to rules of the discussion, and accept roles/responsibilities for the successful outcome of the conversation.
collaborative discussion	A conversation in which each member of a group helps one another to better understand something (a piece of writing, idea, message, etc.) through shared exploration and respectful speaking and listening.
comma	1. Used before the conjunction in a compound sentence (e.g. I'd hoped to give my dog a bath, but I'm not sure that's possible.) 2. Used to separate items in a list (e.g. I bought my dog a dish, a collar, a leash, and some treats.) 3. Used to separate a date and a year, and a city and a state (e.g. My dog was born in Boise, Idaho on June 1, 1998.) 4. Used before quotation marks in a sentence (e.g. Then Bob told me, "I really love your dog.")
compare and contrast	To analyze in order to show similarities (compare) and differences (contrast) of a topic.
complex sentence	A sentence that has at least one independent clause and one dependent clause.
comprehension	Using a system of strategic actions, smoothly and in coordination, to get meaning while reading texts.
comprehension strategies	Strategies used to teach kids to read strategically, showing them how to construct meaning when they read. Creating and validating predictions, questions and inferences, monitoring understanding of the text, clarifying the confusing parts, summarizing, synthesizing and connecting text events to their own prior knowledge and experiences are all examples of comprehension strategies.
compound sentence	A sentence that contains two independent clauses joined by a coordinator (for, and, or, but, etc.).
concluding statement	The sentence very near or at the end which sums up the main point in a paragraph or story.
concrete details	Details directly from the story that answers a question. The detail is not inferred thus is found directly in written material.
conflict	The problem a character faces in piece of literature. There are five types of conflict: Man vs. Man; Man vs. Society; Man vs. Himself; Man vs. Nature; and Man vs. Fate (destiny).
conjunction	Connects individual words or groups of words (e.g. as, and, because, but, however, neither, although, unless).
connotation	The suggestion of a meaning by a word apart from the thing it explicitly names or describes. The attitudes and feelings associated with a word. These associations can be negative or positive and have an important influence on style and meaning.

consonance	The repetition of a final consonant sound in words with different vowels.
context	The part of a text or statement that surrounds a particular word or passage and determines its meaning. The meaning comes from the words themselves, the word order, and the combination of the words.
contraction	When an apostrophe is used to show that one or more letters have been left out when two words are put together to form one word (e.g. do not = don't; they will = they'll).
conventions	Formal usage that has become customary in written language. Grammar, capitalization and punctuation are three categories of conventions in writing.
conversation	The spoken exchange of thought, feeling and opinions.
credibility	The quality of being convincing or believable, or worthy of trust; often used to measure whether or not the information the writer uses is trustworthy.
data	Factual information (as measurements or statistics) used as a basis for reasoning, discussion, or calculation.
decoding	Using letter-sound relationships to translate a word from a series of symbols to a unit of meaning.
deductive reasoning	The form of logic in which, if the premises in an argument are all true, and the argument's form is valid, the conclusion is inescapably true.
demonstration	Modeling how proficient readers and writers work through all aspects of the reading and writing process, and the decisions they make while reading/writing.
denotation	The literal or dictionary definition of a word. Denotation contrasts with connotation.
descriptive writing	When a writer uses words to paint a picture of a person, a place, a thing, or an idea specific details in the mind of the reader.
descriptive poems	A poem that uses imagery and the five senses of taste, smell, feel, touch, and sight to bring the subject to life for the reader.
dialect	A regional variety of language. In most languages, including English and Spanish, dialects do not interrupt understanding; the differences are actually minor.
dialogue	The conversation between characters in a drama or narrative. A dialogue occurs in most works of literature. It moves the action along in a work and helps to characterize the personality of the speakers.
dictate	To say or read aloud something for another person to transcribe.
digraph	Two successive letters that make a single sound. For example, the ea in bread, or the ng in sing.
digression	Material not strictly relevant to the main theme or plot of a piece of writing or speech.

diphthong	Speech sound beginning with one vowel sound and moving to another vowel sound within the same syllable. For example, oy in the word boy.
directionality	The orientation of print. In the English language, directionality is from left to right.
domain specific words and phrases	Vocabulary specific to a particular field of study (domain); in the Standards, <i>domain-specific words and phrases</i> are analogous to Tier Three words.
drafting	A stage of the writing process during which a writer organizes information and ideas into sentences and paragraphs. This involves working through technical aspects such as handwriting, spelling and punctuation, to transfer ideas from plan to paper.
drama	A work to be performed by actors on stage, radio, or television; the genre of literature represented by works intended for the stage; a situation or sequence of events that is highly emotional, tragic, or turbulent.
editing (writing process)	The process of correcting the surface features (grammar, spelling and punctuation) of writing. For emergent and early writers, the process of the teacher correcting the surface features (grammar, spelling and punctuation) of student writing that the student has yet to master. The purpose being to bring the piece to conventional form.
elaborate	To give more details about something; to discuss something more fully.
emergent literacy	Early behaviors such as "reading" from pictures and "writing" with scribbles are examples of emergent literacy and are an important part of children's literacy development.
enunciation	Carefully pronounced and articulated speech for the purpose of communicating effectively with an audience.
environmental print	Symbols and texts found in everyday life situations (i.e., signs, logos, labels, etc.).
epic	A long narrative poem on a great and serious subject, often about the deeds of a great hero or heroes.
essential question	A question that is not answerable with finality in a brief sentence. Its aim is to stimulate thought, to provoke inquiry, and to spark more questions, not just pat answers.
evaluate	To estimate the nature, quality, ability, extent, or significance of;
events (story)	The situations and events in a story.
evidence	Facts, figures, details, quotations, or other sources of data and information that provide support for claims or an analysis and that can be evaluated by others. Evidence should be in an appropriate form and be derived from a source accepted as appropriate to a particular discipline.
exclamation point	Punctuation mark used at the end of sentences that show strong feeling or excitement. (e.g. Wow! What a huge dog!)

explanatory text	A text written to explain or make clear how something works or why something is the way it is. This type of writing uses one or more of the following methods: identification, definition, classification, illustration, comparison, and analysis.
explicit	Stated clearly and in detail, leaving no room for confusion or doubt.
exposition	Usually at the beginning of the story, explains what happened before the story starts, the setting of the story, and often introduces the characters.
expression	A word or phrase in speaking, writing or art that communicates a thought or feeling.
fable	Stories that have animals with human traits and always include a moral or lesson (e.g., <i>The Tortoise and the Hare</i> , <i>The Lion and the Mouse</i>).
fact versus opinion	Statements of fact can be proven conclusively to be true or false. Statements of opinion cannot be proven to be true or false.
fairytale	A story that has magical characters and objects (e.g. <i>Cinderella</i> , <i>Alice in Wonderland</i> , <i>Princess and the Pea</i>).
falling action	The part of the story which follows the climax, or turning point; it includes action or dialogue needed to bring the story to an end.
fantasy	A story including elements that are impossible such as talking animals, imaginary creatures, lands, etc. (e.g., "Somewhere over the Rainbow," in <i>The Wonderful Wizard of Oz</i>).
fiction	Imaginative works of prose, primarily the novel and the short story. Although fiction draws on actual events and real people, it springs mainly from the imagination of the writer. The purpose is to entertain as well as enlighten the reader by providing a deeper understanding of the human condition.
figurative language	Language that communicates and enhances ideas by going beyond the ordinary or literal meaning of the words.
figure of speech	Specific literary devices used to create a special effect or feeling, often by making some type of comparison, such as; hyperbole, metaphor, simile, understatement.
findings	A conclusion reached after examination or investigation; a statement or document containing an authoritative decision or conclusion.
flashback	A narrative technique that allows a writer to present past events during current events, in order to provide background for the current narration. By giving material that occurred prior to the present event, the writer provides the reader with insight into a character's motivation and/or background to a conflict. Flashbacks are often conveyed through narration, dream sequences, and memories.
fluency	The way an oral reading sounds, including phrasing, intonation, pausing, stress, rate and integration of the first five factors. It bridges word decoding and comprehension. Fluency is a set of skills that allows readers to rapidly decode text while maintaining a high level of comprehension.
focus	A sharply defined point, center, or theme of an effort, written passage, undertaking, or presentation.

folktale	Oral story passed down through generations based on traditional beliefs or on superstition (e.g., <i>The People Who Hugged Trees</i> , <i>The Empty Pot</i> , <i>Tikki Tikki Tembo</i>).
foreshadowing	A writer's use of hints or clues to indicate events that will occur in a story. Foreshadowing creates suspense and at the same time prepares the reader for what is to come.
forming intentions (writing process) (also termed planning)	Choosing a topic, determining the audience and form and planning writing are components of forming intentions.
fragment sentence	A fragment may contain a subject and verb, but it is NOT a complete sentence. (e.g. Because that girl was silly! Maria's cool red bicycle, parked behind the house.)
general academic words and phrases	Vocabulary common to written texts but not commonly a part of speech; in the Standards, <i>general academic words and phrases</i> are analogous to Tier Two words and phrases.
generalization	An idea or statement which emphasizes general rather than specific characteristics.
genre	A category of literature or writing style (e.g., mystery, science fiction, historical fiction, biography, memoir, etc.).
gesture	A movement or position of the hand, arm, body, head, or face that is expressive of an idea, opinion, emotion, etc., made to express or help express thought or to emphasize speech.
glossary	<u>A list of terms in a special subject, field, or area of usage, with accompanying definitions. Such a list at the back of a book, explaining or defining important, difficult or unusual words and expressions used in the text or field of study.</u>
grammar	The study of the structure and features of language; rules and standards which are to be followed to produce acceptable and correct writing and speaking.
grapheme	The smallest unit of a writing system. A grapheme may be one letter such as t or combination of letters such as sh. A grapheme represents one phoneme.
graphic elements	The part of a work that contains visual representations of information and ideas (charts, animations, video, etc.) beyond simple written text.
graphic organizer	A visual guide that helps writers plan a writing activity or helps readers understand and organize information found in a text.
guided inquiry	The teacher provides the problem for investigation as well as the necessary materials. Students are expected to devise their own procedure to solve the problem.
guided reading/writing	An instructional setting that enables the teacher to work with a small group of students to help them learn effective strategies for processing text with understanding. The purpose of guided reading/writing is to meet the varying instructional needs of all the students.
high-frequency words	Words which appear frequently in texts and used in student writing for a specific subject and/or grade.
historical fiction	A fictional story that is set in a particular place and time period in the past; often the setting is real, but the characters are altered, a composite, or entirely made up from the author's imagination.

homograph	A word with same spelling as another: a word that is spelled in the same way as one or more other words but is different in meaning, e.g. the verb "project" and the noun "project."
homonym	A word having the same sound and spelling as another word, but a different origin and meaning, for instance, "The musician uses a <i>bow</i> to play his violin"; "The little girl has a <i>bow</i> in her hair."
homophone	A word with a different meaning but having the same pronunciation as another word, whether or not it is spelled alike, for instance, "wood" and "would," or "to," "two," and "too."
hyperbole	An intentional exaggeration for emphasis or comic effect. An overstatement (e.g. "It took a million years to finish my homework.")
idea	Something imagined or pictured in the mind, ideas often lead to a plan of action.
idiom	A phrase or expression that means something different from what the words actually say. An idiom is usually understandable to a particular group of people. For example, using 'over his head' for 'he doesn't understand.'
illustration	Graphic representations of important content (for example, art, photos, maps, graphs, charts) found in a piece of literature.
Illustrator	An artist who creates drawings or images usually designed to enhance accompanying text.
image/imagery	Words and phrases that create vivid sensory experiences for the reader. Most images are visual, but imagery may also appeal to the senses of smell, hearing, taste, or touch.
implicit	Implied or understood though not directly expressed.
index	An alphabetical reference that lists topics, people, or titles, giving the location of where they are mentioned in a text.
inductive reasoning	The form of logic which proceeds from the specific observation to the general statement. The conclusion of such an argument provides the best or most probable explanation of the premises, but is itself not necessarily true.
infer	To go beyond the literal meaning of a text; to think about what is not stated but is implied by the writer.
inference	A conclusion reached on the basis of evidence and reasoning not immediately apparent.
inflection	An alteration of the form of a word by the addition of an affix, as in English <i>dogs</i> from <i>dog</i> , or by changing the form of a base, as in English <i>spoke</i> from <i>speak</i> , that indicates grammatical features such as number, person, mood, or tense.
informational text	A text that provide facts about a variety of topics (e.g., sports, animals, science, history, careers, travel, geography, space, weather, etc.).
inquiry	A question; a query; an investigation. Also the seeking of information or knowledge. Scientific inquiry refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work.

interjection	A single word that shows strong emotion or emphasis; usually an introductory word. (e.g. Whoa , that's hot salsa! Ouch , that hurt! Help!)
interrogative	A word or phrase used to ask a question.
irony	The contrast between expectation and reality. This incongruity has the effect of surprising the reader or viewer. Types include dramatic, situational, and verbal. Techniques of irony include hyperbole, understatement, and sarcasm.
journal	A daily record of thoughts, impressions, reflections, and autobiographical information, often a source of ideas for further writing.
key understandings	Important ideas within (literal), beyond (implied) or about (determined through critical analysis) the text that are necessary to comprehension.
legend	A story from the past that shows a heroic figure, supposedly based on a real person but often exaggerated (e.g. John Henry, Johnny Appleseed).
letter-sound correspondence	Recognizing the corresponding sound of a specific letter when that letter is seen or heard.
link	A hyperlink in electronic presentation that directs the user to another resource.
literal language	Refers to words that do not deviate from their defined meaning.
literary devices	Techniques used by a writer to convey or enhance the story (e.g., figures of speech, foreshadowing, flashback).
literature	The body of written works of a language, period, or culture; imaginative or creative writing, especially of recognized artistic value.
main idea	In informational writing, the most important thought or overall position. The main idea or thesis of a piece, written in sentence form, is supported by details and explanation.
make connections (as a strategic action)	To search for and use connection to knowledge gained through personal experience, learning about the world and reading other texts.
medial sound	The middle sound in a word.
medium	The material or form used by an artist, composer, or writer.
memoir	A history or record composed from personal observation and experience. Closely related to, and often confused with, autobiography, a memoir usually differs chiefly in the degree of emphasis placed on external events; whereas writers of autobiography are concerned primarily with themselves as subject matter, writers of memoir are usually persons who have played roles in, or have been close observers of, historical events and whose main purpose is to describe or interpret the events.
mentor text	Text that illustrate a particular aspect of craft, text structure, genre, etc.

metacognition	A reflection and understanding of how one thinks and uses strategies during reading and writing and problem solving.
metaphor	A figure of speech that makes a comparison between two things that are basically different but have something in common. Unlike a simile, a metaphor does not contain the words like or as. (e.g. "The sun is a lemon in the sky."). See figurative language, figure of speech, and simile.
meter	In poetry, the recurrence of a rhythmic pattern.
MLA	MLA (Modern Language Association) is a style of crediting the sources quoted or paraphrased in a particular piece of literature. MLA serves as a standard formatting for the citation of scholarly writings.
monitor (self-monitor)	When a reader independently pays attention to their reading, and is aware of a dissonance between what they are saying and what they are seeing.
monitor and correct (as a strategic action)	To check whether the reading sounds right, looks right and makes sense, and to solve problems when it does not.
mood	The feeling a reader gets from a story. (e.g., happy, sad, peaceful, etc.)
moral	The lesson a writer is trying to teach in his or her story (e.g. Do unto others as you would have them do unto you.).
morpheme	T he smallest unit of meaning in oral and written language. Unbreakable has three morphemes: -un, -break, -able.
morphology	In linguistics, the identification, analysis and description of the structure of morphemes and other units of meaning in a language like words, affixes, and parts of speech and intonation/stress, implied context.
motif	A recurring object, concept, or structure in a work of literature. A motif may also be two contrasting elements, such as good and evil, in a work.
multisyllabic	Having more than one syllable.
mystery text	A suspenseful story about a puzzling event that is not solved until the end of the story.
myth	Stories that answer questions about things people could not or cannot explain and may tell of heroic quests.
narrative	Writing which tells a story or recalls an experience.
narrator	The person or voice telling the story. The narrator can be a character in the story, a play, or a work of nonfiction.
nonfiction	Writing about real people, places, and events. Unlike fiction, nonfiction is largely concerned with factual information, although the writer shapes the information according to his or her purpose and viewpoint. Biography, autobiography, and news articles are examples of nonfiction.

non-verbal communication	Ways of conveying the meaning of an intended message other than oral speech (e.g., gestures, eye contact, facial expression).
noun	A word used to name a person, animal, place, thing, and abstract idea.
novel	A book-length story created from the author's imagination.
nuances	A subtle or slight degree of difference, as in meaning, feeling, or tone; a gradation.
objective summary	A succinct, accurate description of the content of a text without personal feelings. A stating of the facts only.
onomatopoeia	The use of a word whose sound suggests its meaning, as in "clang," "buzz," "crash."
onset	The part of the syllable that precedes the vowel. For example, /h/ in hop, and /sk/ in scotch. Some syllables have no onset, as in un or on.
opinion text	A type of writing in which an author states and then supports their opinion.
opposing claim	A counter claim made in response to a claim that came before it.
oral tradition	Customs, opinions, beliefs, and history passed from generation to generation by means of conversation or storytelling.
outcomes (writing process)	Opportunities for writers to share writing with intended audience. Writer seeks the response of readers, which is where learning takes place.
oxymoron	A paradox reduced to two opposing words, usually in an adjective-noun (<i>deafening silence</i>) or adverb-adjective (<i>shockingly boring</i>) relationship, and is used for effect, complexity, emphasis, or wit.
pace	To move or develop (something) at a particular and calculated rate or speed. Also, the reading rate (the number of words a child reads per minute); a component of fluency.
paragraph	A group of sentences that consists of one or more sentences, deals with one point or gives the words of one speaker, and begins on a new usually indented line.
parallelism	The phrasing of language in a way that balances ideas of equal importance. Parallelism may apply to phrases, sentences, paragraphs, or longer passages.
paraphrase	Restating ideas in different words to help clarify or explain the meaning of a text.
parts of speech	A category to which a word is assigned in accordance with its syntactic functions. Example: noun, pronoun, adjective, determiner, verb, adverb, preposition, conjunction, and interjection.
passive voice	One of the two voices of verbs. Indicates that the subject is being acted upon. (e.g. <i>The ball was hit by Kevin.</i>).

pencil grip	Proper pencil placement in hand.
period	Punctuation mark used at the end of a statement or used after abbreviations. (e.g. Dr. J. Wong is our veterinarian. Go to 312 So. Franklin St. to meet your friend.)
personification	A form of metaphor in which language relating to human action, motivation, and emotion is used to refer to non-human agents or objects or abstract concepts. (e.g. "The weather is smiling on us today;" "Love is blind.")
perspective	The state of one's ideas, the facts known to one, and the angle from which one views a situation.
persuasive text	Writing intended to convince the reader that a position is valid or that the reader should take a specific action. Differs from exposition in that it does more than explain; it takes a stand and endeavors to persuade the reader to take the same position.
phoneme	The smallest unit of sound in spoken language. There are approximately forty-four units of speech sounds in English.
phonemic awareness	The ability to hear individual sounds in words and to identify individual sounds.
phonics	The knowledge of letter-sound relationships and how they are used in reading and writing. Teaching phonics refers to helping children acquire this body of knowledge about the oral and written language systems; additionally, teaching phonics helps children use phonics knowledge as part of the reading and writing process.
phonological awareness	The awareness of words, rhyming words, onsets and rimes, syllables and individual sounds (phonemes).
phrase	Sequence of two or more words arranged to act as a unit in a sentence.
pitch	Appropriate sound level when speaking.
plagiarism	Presenting another author's works, words, or ideas as one's own. This is considered illegal.
planning (writing process)	Putting ideas down in an organized manner during the "forming intentions" process.
planning strategies	Process of defining direction, and making decisions about how to organize ideas in writing or a presentation based purpose and audience.
plot	The action or sequence of events in a story. Plot is usually a series of related incidents that builds and grows as the story develops. There are five basic elements in a plot line: (a) <i>exposition</i> ; (b) <i>rising action</i> ; (c) <i>climax</i> ; (d) <i>falling action</i> ; and (e) <i>resolution</i> .
plural noun	Two or more people, places, or things (e.g. We went to two beaches . I love to eat pancakes .)
poetry	Verse written to create a response of thought and feeling from the reader. It often uses vivid, concise language, and rhythm and rhyme.

point of view	The angle from which a story is told; depends on who is telling the story (e.g., First-Person, one of the characters is telling the story, uses "I". Third-Person, someone outside the story is telling the story, uses him or her).
predicate of a sentence	The verb that describes what the noun of the sentence is doing or being.
predict (as a strategic action)	To use what is known to think about what will follow while reading continuous text.
prefix	A word part that is added to the beginning of a base word that changes the sense or meaning of the root or base word. For example, re-, dis-, com-are prefixes.
preposition	A word that relates a noun or pronoun to another word in the sentence (e.g. The cat rested on the couch. The dog sat by the cat.)
prepositional phrase	A preposition followed by an object. (e.g. "I will hold the coins <i>in my hand</i> .")
primary source	First-hand documentation of events (e.g., autobiographies, diaries, interviews, logs, personal accounts, treaties, letters, photographs, drawings, etc.) that presents no "secondary" analysis or interpretation by historians or others removed from the action.
problem solving	A process that involves discovering, gathering information, analyzing, considering options, and solving problems. The ultimate goal of problem-solving is to overcome obstacles and find a solution or solutions that best resolve(s) an issue.
prompt	A question, direction or statement that compels and directs a writer to write about a particular topic.
pronoun	A word used to replace a noun (e.g. She found her kitty. - I, you, he, she, them, his, their, we, yourself, etc.)
pronoun-antecedent agreement	An antecedent is the word or word group a pronoun refers to. A pronoun and antecedent agree when there is correspondence in number or person of a subject and verb in a sentence.
pronunciation	The manner in which someone utters a word.
propaganda techniques	Methods of conveying information selectively to produce an opinion or action favorable to the source of the information.
proper noun	A word that names a specific person, place, or thing and begins with a capital letter (e.g., John ; Denver, Colorado ; the Washington Monument ; the Beatles)
prose	Written or spoken language in its ordinary form, without metrical structure.
protagonist	The main character in a novel, play, story, or poem; also known as the "hero" or "heroine."
proverb	A short well-known saying that expresses an obvious truth and often offers advice. (e.g. "All that glitters is not gold." This means that just because something looks good, does not necessarily mean that it is good.)

publishing (writing process)	Preparing and formatting writing for an audience.
pun	A joke that comes from a play on words. It can make use of a word's multiple meanings or a word's rhyme. Example: "Time flies like an arrow. Fruit flies like a banana," (Groucho Marx).
purpose	Reason for writing; an author's desired effect or result on an audience; intention.
question	A sentence worded or expressed so as to elicit information.
question mark	Punctuation mark used at the end of a question. (e.g. Did you walk the dog?)
realistic fiction	A story using made-up characters yet could happen in real life.
reason	Think, understand, and form judgments using a process of logic.
recount	To retell the events of an experience or story.
recursive writing	Writing that doubles back upon itself and leaps ahead. If you correct a spelling error as you write your first draft, you have done a proofreading act (a later stage) while you are drafting (an early to middle stage). We might cycle and recycle through numerous times when creating any single piece of writing.
red herring	A fallacy in which an irrelevant topic is presented in order to divert attention from the original issue. The basic idea is to "win" an argument by leading attention away from the argument and toward another topic.
reference materials	Resources used to find information on a subject (dictionary, thesaurus, encyclopedia, journals, both print and on-line sources, etc.).
register	In linguistics , one of many styles or varieties of language determined by such factors as social occasion, purpose, and audience. More generally, <i>register</i> is also used to indicate degrees of formality in language use.
relative adverbs	An adverb (<i>where, when, or why</i>) that introduces a relative clause , also known as a <i>relative adverb clause</i> .
relative pronouns	A part of speech referring to a noun mentioned before and of which we are adding more information. They are used to join two or more sentences and forming in that way what we call " relative sentences " (e.g., who, whom, that, which, whoever, whomever, whichever).
relevance	Term used to describe how pertinent, current, connected, or applicable something is to a given matter.
relevance	Relevance describes how pertinent, connected, or applicable something is to a given matter.
repetition	The action of repeating something that has already been said or written to produce a desired effect.

research	Research is an active, systematic process of inquiry in order to discover and interpret facts and events. The term "research" is also used to describe the collection of information about a particular subject.
research questions	Formal questions that set a goal(s) and guides study.
resolution	The end of a play or story when the problems are solved.
response	An answer or reply, as in words or in some action.
retell	To recount the sequence of events to a listener or put them writing after hearing or reading a story.
revise	To alter something written or printed, in order to make corrections, improve, or update, primarily in terms of style, content, structure and ideas, and details.
rhetoric	The art of using language effectively, especially for persuasion, in speaking or writing, especially in oratory.
rhyme	The ending part (rime) of a word that sounds like the ending part (rime) of another word (e.g., <i>m-ail</i> and <i>t-ale</i>).
rhythm	The way a poem and story writing flows from one sound or sentence pattern to the next as it creates a sound pattern or patterned story.
rime	The ending part of a word containing the vowel; the letters that represent the vowel sound and the consonant letters following it in a syllable - <i>dr-eam</i> .
rising action	The central part of the story during which various problems arise and lead up to the climax.
root word (base word)	A word or word element to which prefixes and suffixes may be added to make other words. For example, to the root <i>graph</i> , the prefix <i>bio-</i> and the suffix <i>-ic</i> can be added to create the word, <i>biographic</i> .
salient points	Facts or information that seem most important or significant to the argument.
scaffolding	Method of providing structure for students to access the information provided.
schema	Background, conceptual understandings that a student possesses.
science fiction text	A type of fantasy that uses science and technology (e.g., robots, time machines, etc.)
search for and use information (as a strategic action)	To look for and to think about a variety of content in order to make sense of text while reading.
secondary sources	Information or research that is written by someone other than the person who experienced the events. For example, a comment by a historian, an encyclopedia article, or a critical essay.
self-correction	When a reader stops and corrects his/her own error.
semantic cues	Semantic cues are hints based on meaning that help readers decode and comprehend a text.

sensory details	Details a writer uses to help the reader see, feel, smell, taste, and hear what is being writing about.
sensory imagery	The use of words to describe tastes, smells, textures, sounds and images in order to provide a sensory experience for the reader.
sentence	A group of words expressing one or more complete thoughts.
setting	Time and place where a story takes place.
short story	A brief fictional work that usually contains one major conflict and at least one main character.
signal words	A phrase, clause, or sentence that introduces a quotation , paraphrase , or summary . Common signal phrase verbs include the following: <i>argue, assert, claim, comment, emphasize, illustrate, respond, say, suggest, think, and write</i> . See transition words.
simile	A comparison of two unlike things in which a word of comparison using the words 'like' or 'as'. For example, 'She stood in front of the altar, shaking like a freshly caught trout,' (Maya Angelou).
singular noun	One person, place, or thing (e.g., a monkey ; the library ; your friend ; my pencil)
small-group instruction	The teacher working with children brought together because they are similar enough in reading/writing development to teach a skill most effectively in a small group.
soliloquy	A dramatic monologue spoken aloud by a character that is alone on the stage (or is under the impression of being alone). The soliloquist thus reveals his or her inner thoughts and feelings to the audience.
sounding out	Pronouncing the sounds of the letters in a word as a step in the reading word.
source	A place, person, or thing from which something comes or can be obtained.
stanza	A recurring grouping of verse lines in terms of length, metrical form, and, often, rhyme scheme.
stream of consciousness	The continuous flow of sense-perceptions, thoughts, feelings and memories in the human mind; a literary method of representing such a blending of mental processes in fictional characters, usually in an unpunctuated or disjointed form of internal monologue.
style	The particular way a piece of literature is written. Not only what is said but also how it is said, style is the writer's unique way of communicating ideas. Elements contributing to style include word choice, sentence length, tone, voice, figurative language, and use of dialogue.
subject of a sentence	A noun or pronoun that is performing the verb; the "do-er."
subject-verb agreement	The basic rule states that a singular subject takes a singular verb while a plural subject takes a plural verb.

subordinating conjunction	A subordinating conjunction joins a subordinate (dependent) clause to a main (independent) clause.
suffix	An affix or group of letters added at the end of a base word or root word to change its function or meaning (e.g., <i>handful</i> , <i>hopeless</i>).
summarize (as a strategic action)	To put together and remember main ideas and important information, while disregarding irrelevant information, during or after reading.
summary	<u>A shorter version of the original. Such a simplification highlights the major points from the much longer subject, such as a text, speech, film, or event. The purpose is to help the audience get the gist in a short period of time.</u>
supporting details	Secondary points which clarify a key point, illustrate a concept, or prove a point.
syllables	A unit of spoken language that consists of one or more vowel sounds alone or with one or more consonant sounds preceding or following (word chunks).
symbol	A word or object that stands for an object, event, or idea. The object, event, or idea thus represented may be concrete or abstract, visible or invisible.
synonym	A word that has a meaning identical with, or very similar to, another word.
synthesize	Combine or merge new information with existing knowledge or with information from multiple sources to create an original idea, see a new perspective, or form a new line of thinking to achieve insight. Synthesizing is the most complex of comprehension strategies.
synthesize (as a strategic action)	To combine new information or ideas from reading text with existing knowledge to create new understandings.
tall tale	Story that has exaggerated characteristics and accomplishments (e.g., Pecos Bill, Paul Bunyan).
technical writing	Technical writing is a method of researching and creating information about technical processes or "how to" manuals written so that the reader can perform tasks. Examples of technical writing could include such texts as - include a how to recycle poster, bike repair manual, instructions to play a game, etc.
temporal relationships	The relationship involving time between an event (the <i>cause</i>) and a second event (the <i>effect</i>), where the second event is understood as a consequence of the first.
tense	A category of the verb or verbal inflections, such as present, past, and future, that expresses the temporal relations between what is reported in a sentence and the time of its utterance.
text	Coherent set of symbols that transmit some kind of informative message.
text features	Various ways of manipulating and placing text to draw attention to or emphasize certain points or ideas in narrative (e.g., bolding or boxing questions, italicizing key vocabulary, listing, bulleting, numbering).
text structure	The organizational pattern an author uses to structure the ideas in a text (e.g. cause/effect, compare/contrast, description, problem/solution, sequential, goal/action/outcome, concept/definition, proposition/support).

textual evidence	Details from one or more resources to support an interpretation or analysis of literary and informative/expository work.
theme	The central idea or ideas explored by a literary work.
thesis statement	The basic argument advanced by a speaker or writer who then attempts to prove it by presenting compelling evidence; the subject or major argument of a speech or composition.
tone	An expression of a writer's attitude toward a subject. Unlike mood, which is intended to shape the reader's emotional response, tone reflects the feelings of the writer. Tone can be serious, humorous, sarcastic, playful, ironic, bitter, or objective.
topic	The specific subject of a piece of writing.
traditional literature	Stories that are passed down from one group to another in history; includes folktales, legends, fables, fairy tales, tall tales, and myths from different cultures.
tragic flaw	A defect in the protagonist that leads to his or her downfall.
transition words	Words that help tie thoughts together (e.g., when, next, after, finally; first, second, third; above, below, to the left of, to the right of).
understatement	A form of irony in which something is intentionally represented as less than it is.
verb	Shows action or links the subject to another word in the sentence. (e.g. The boys read often – action verb; I am happy about that - linking verb)
verb tense	Present (happening now) – I sneeze; Past (already happened) – I sneezed; Future (will happen later) – I will sneeze.
verse	Verse is a single metrical line of poetry (as opposed to prose which uses grammatical units like sentences and paragraphs).
visual aid	An instructional aide, such as a poster, scale model, digital image, artifact, etc. used to enhance a viewer's understanding or experience of presented content.
visual mapping	A graphical method of taking notes. The visual layout helps one to distinguish words or ideas, often with colors and symbols.
visualize	When a reader creates images that reflect or represent the ideas in the text. These images may include any of the five senses and serve to enhance understanding of the text. But for your students, try this: "Create a movie in your mind while reading."
vocabulary	Recognizing and understanding the meaning of words in reading and writing as well as oral language.
voice	The way a writer expresses ideas. A writer's unique use of language that allows a reader to perceive a human personality in the writing.

website	A set of interconnected web pages, usually including a homepage. It is usually prepared and maintained as a collection of information by a person, group, or organization.
works cited	When producing a works cited for an essay you only list the actual sources of information that you reference in your piece of work.
writing process	The stages of writing that produce a final, well-crafted piece. They are planning, drafting, revising, editing, polishing (proofreading), and publishing.

Common Core College & Career Readiness Anchor Standards

These are the Common Core Preschool through 5 College and Career Readiness Anchor Standards for Writing that connect to Research and Reasoning. These anchor standards and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Common Core Anchor Standards for Speaking & Listening

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated

Common Core Anchor Standards for Reading

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

Common Core Anchor Standards for Writing

Text Types and Purposes (*These broad types of writing include many subgenres.)

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Common Core Anchor Standards for Language

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Colorado: Prepared Graduate Competencies

These are Preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Oral

- Collaborate effectively as group members or leaders who listen actively and respectfully pose thoughtful questions, acknowledge the ideas of others, and contribute ideas to further the group's attainment of an objective
- Deliver organized and effective oral presentations for diverse audiences and varied purposes
- Use language appropriate for purpose and audience
- Demonstrate skill in inferential and evaluative listening
- Interpret how the structure of written English contributes to the pronunciation and meaning of complex vocabulary (Oral & Reading & Writing)

Reading

- Demonstrate comprehension of a variety of informational, literary, and persuasive texts
- Evaluate how an author uses words to create mental imagery, suggest mood, and set tone
- Read a wide range of literature (American and world literature) to understand important universal themes and the human experience
- Seek feedback, self-assess, and reflect on personal learning while engaging with increasingly more difficult texts
- Engage in a wide range of nonfiction and real-life reading experiences to solve problems, judge the quality of ideas, or complete daily tasks

Writing

- Write with a clear focus, coherent organization, sufficient elaboration, and detail
- Effectively use content-specific language, style, tone, and text structure to compose or adapt writing for different audiences and purposes
- Apply standard English conventions to effectively communicate with written language
- Implement the recursive writing process successfully to plan, draft, revise, and edit, publish & share written work
- Master the techniques of effective informational, literary, and persuasive writing
- Discriminate and justify a position using traditional lines of rhetorical argument and reasoning (Writing & Research)

Research

- Articulate the position of self and others using experiential and material logic
- Gather information from a variety of sources; analyze and evaluate the quality and relevance of the source; and use it to answer complex questions
- Use primary, secondary, and tertiary written sources to generate and answer research questions
- Evaluate explicit and implicit viewpoints, values, attitudes, and assumptions concealed in speech, writing, and illustration
- Demonstrate the use of a range of strategies, research techniques, and persistence when engaging with difficult texts or examining complex problems or issues (Reading & Research)
- Exercise ethical conduct when writing, researching, and documenting sources

4th Grade Mathematics Curriculum Essentials Document



**Boulder Valley School District
Department of Curriculum and Instruction
January 2012**

Boulder Valley School District Mathematics – An Introduction to The Curriculum Essentials Document

Background

The 2009 Common Core State Standards (CCSS) have brought about a much needed move towards consistency in mathematics throughout the state and nation. In December 2010, the Colorado Academic Standards revisions for Mathematics were adopted by the State Board of Education. These standards aligned the previous state standards to the Common Core State Standards to form the Colorado Academic Standards (CAS). The CAS include additions or changes to the CCSS needed to meet state legislative requirements around Personal Financial Literacy.

The Colorado Academic Standards Grade Level Expectations (GLE) for math are being adopted in their entirety and without change in the PK-8 curriculum. This decision was made based on the thorough adherence by the state to the CCSS. These new standards are specific, robust and comprehensive. Additionally, the essential linkage between the standards and the proposed 2014 state assessment system, which may include interim, formative and summative assessments, is based specifically on these standards. The overwhelming opinion amongst the mathematics teachers, school and district level administration and district level mathematics coaches clearly indicated a desire to move to the CAS without creating a BVSD version through additions or changes.

The High School standards provided to us by the state did not delineate how courses should be created. Based on information regarding the upcoming assessment system, the expertise of our teachers and the writers of the CCSS, the decision was made to follow the recommendations in the **Common Core State Standards for Mathematics- Appendix A: Designing High School Math Courses Based on the Common Core State Standards**. The writing teams took the High School CAS and carefully and thoughtfully divided them into courses for the creation of the 2012 BVSD Curriculum Essentials Documents (CED).

The Critical Foundations of the 2011 Standards

The expectations in these documents are based on mastery of the topics at specific grade levels with the understanding that the standards, themes and big ideas reoccur throughout PK-12 at varying degrees of difficulty, requiring different levels of mastery. The Standards are: 1) Number Sense, Properties, and Operations; 2) Patterns, Functions, and Algebraic Structures; 3) Data Analysis, Statistics, and Probability; 4) Shape, Dimension, and Geometric Relationships. The information in the standards progresses from large to fine grain, detailing specific skills and outcomes students must master: Standards to Prepared Graduate Competencies to Grade Level/Course Expectation to Concepts and Skills Students Master to Evidence Outcomes. The specific indicators of these different levels of mastery are defined in the Evidence Outcomes. It is important not to think of these standards in terms of "introduction, mastery, reinforcement." All of the evidence outcomes in a certain grade level must be mastered in order for the next higher level of mastery to occur. Again, to maintain consistency and coherence throughout the district, across all levels, adherence to this idea of mastery is vital.

In creating the documents for the 2012 Boulder Valley Curriculum Essentials Documents in mathematics, the writing teams focused on clarity, focus and understanding essential changes from the BVSD 2009 standards to the new 2011 CAS. To maintain the integrity of these documents, it is important that teachers throughout the district follow the standards precisely so that each child in every classroom can be guaranteed a viable education, regardless of the school they attend or if they move from another school, another district or another state. Consistency, clarity and coherence are essential to excellence in mathematics instruction district wide.

Components of the Curriculum Essentials Document

The CED for each grade level and course include the following:

- An At-A-Glance page containing:
 - approximately ten key skills or topics that students will master during the year
 - the general big ideas of the grade/course
 - the Standards of Mathematical Practices
 - assessment tools allow teachers to continuously monitor student progress for planning and pacing needs
 - description of mathematics at that level
- The Grade Level Expectations (GLE) pages. The advanced level courses for high school were based on the high school course with additional topics or more in-depth coverage of topics included in bold text.
- The Grade Level Glossary of Academic Terms lists all of the terms with which *teachers should be familiar and comfortable using during instruction*. *It is not a comprehensive list of vocabulary for student use.*
- PK-12 Prepared Graduate Competencies
- PK-12 At-A-Glance Guide from the CAS with notes from the CCSS
- CAS Vertical Articulation Guide PK-12

Explanation of Coding

In these documents you will find various abbreviations and coding used by the Colorado Department of Education.

MP – Mathematical Practices Standard

PFL – Personal Financial Literacy

CCSS – Common Core State Standards

Example: (CCSS: 1.NBT.1) – taken directly from the Common Core State Standards with an reference to the specific CCSS domain, standard and cluster of evidence outcomes.

NBT – Number Operations in Base Ten

OA – Operations and Algebraic Thinking

MD – Measurement and Data

G – Geometry

Standards for Mathematical Practice from The Common Core State Standards for Mathematics

The Standards for Mathematical Practice have been included in the Nature of Mathematics section in each Grade Level Expectation of the Colorado Academic Standards. The following definitions and explanation of the Standards for Mathematical Practice from the Common Core State Standards can be found on pages 6, 7, and 8 in the Common Core State Standards for Mathematics. Each Mathematical Practices statement has been notated with (MP) at the end of the statement.

Mathematics | Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy).

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete

referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction. The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices. In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

21st Century Skills and Readiness Competencies in Mathematics

Mathematics in Colorado's description of 21st century skills is a synthesis of the essential abilities students must apply in our rapidly changing world. Today's mathematics students need a repertoire of knowledge and skills that are more diverse, complex, and integrated than any previous generation. Mathematics is inherently demonstrated in each of Colorado 21st century skills, as follows:

Critical Thinking and Reasoning

Mathematics is a discipline grounded in critical thinking and reasoning. Doing mathematics involves recognizing problematic aspects of situations, devising and carrying out strategies, evaluating the reasonableness of solutions, and justifying methods, strategies, and solutions. Mathematics provides the grammar and structure that make it possible to describe patterns that exist in nature and society.

Information Literacy

The discipline of mathematics equips students with tools and habits of mind to organize and interpret quantitative data. Informationally literate mathematics students effectively use learning tools, including technology, and clearly communicate using mathematical language.

Collaboration

Mathematics is a social discipline involving the exchange of ideas. In the course of doing mathematics, students offer ideas, strategies, solutions, justifications, and proofs for others to evaluate. In turn, the mathematics student interprets and evaluates the ideas, strategies, solutions, justifications and proofs of others.

Self-Direction

Doing mathematics requires a productive disposition and self-direction. It involves monitoring and assessing one's mathematical thinking and persistence in searching for patterns, relationships, and sensible solutions.

Invention

Mathematics is a dynamic discipline, ever expanding as new ideas are contributed. Invention is the key element as students make and test conjectures, create mathematical models of real-world phenomena, generalize results, and make connections among ideas, strategies and solutions.

Colorado Academic Standards Mathematics

The Colorado academic standards in mathematics are the topical organization of the concepts and skills every Colorado student should know and be able to do throughout their preschool through twelfth-grade experience.

1. Number Sense, Properties, and Operations

Number sense provides students with a firm foundation in mathematics. Students build a deep understanding of quantity, ways of representing numbers, relationships among numbers, and number systems. Students learn that numbers are governed by properties and understanding these properties leads to fluency with operations.

2. Patterns, Functions, and Algebraic Structures

Pattern sense gives students a lens with which to understand trends and commonalities. Students recognize and represent mathematical relationships and analyze change. Students learn that the structures of algebra allow complex ideas to be expressed succinctly.

3. Data Analysis, Statistics, and Probability

Data and probability sense provides students with tools to understand information and uncertainty. Students ask questions and gather and use data to answer them. Students use a variety of data analysis and statistics strategies to analyze, develop and evaluate inferences based on data. Probability provides the foundation for collecting, describing, and interpreting data.

4. Shape, Dimension, and Geometric Relationships

Geometric sense allows students to comprehend space and shape. Students analyze the characteristics and relationships of shapes and structures, engage in logical reasoning, and use tools and techniques to determine measurement. Students learn that geometry and measurement are useful in representing and solving problems in the real world as well as in mathematics.

Modeling Across the Standards

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data. Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards, specific modeling standards appear throughout the high school standards indicated by a star symbol (*).

4th Grade Overview

Course Description		Topics at a Glance	
<p>In fourth grade instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.</p>		<ul style="list-style-type: none"> • Generalize place value understanding • Addition and subtraction of multi-digit numbers • Extend multiplication and division • Number patterns • Factors, multiples, and square, prime, and composite numbers • Represent, order and compare fraction • Factors and Multiples • Create line plots to display data • Attributes of geometric figures including angle measurement • Add and subtract fractions with like denominators 	
Assessments		Standards for Mathematical Practice	
<ul style="list-style-type: none"> • BVSD Universal Screeners for Elementary Mathematics • Add+Vantage Math Diagnostic Assessments • State Assessments • Assessment tasks from adopted instructional materials 		<ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 	
Grade Level Expectations			
Standard	Big Ideas for Fourth Grade		
1. Number Sense, properties, and operations	<ol style="list-style-type: none"> 1. The decimal number system to the hundredths place describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms 2. Different models and representations can be used to compare fractional parts 3. Formulate, represent, and use algorithms to compute with flexibility, accuracy, and efficiency 		
2. Patterns, Functions, & Algebraic Structures	<ol style="list-style-type: none"> 1. Number patterns and relationships can be represented by symbols 		
3. Data Analysis, Statistics, & Probability	<ol style="list-style-type: none"> 1. Visual displays are used to represent data 		
4. Shape, Dimension, & Geometric Relationships	<ol style="list-style-type: none"> 1. Appropriate measurement tools, units, and systems are used to measure different attributes of objects and time 2. Geometric figures in the plane and in space are described and analyzed by their attributes 		

1. Number Sense, Properties, and Operations

Number sense provides students with a firm foundation in mathematics. Students build a deep understanding of quantity, ways of representing numbers, relationships among numbers, and number systems. Students learn that numbers are governed by properties, and understanding these properties leads to fluency with operations.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Number Sense, Properties, and Operations Standard are:

- Understand the structure and properties of our number system. At their most basic level numbers are abstract symbols that represent real-world quantities
- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error
- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency
- Make both relative (multiplicative) and absolute (arithmetic) comparisons between quantities. Multiplicative thinking underlies proportional reasoning
- Understand that equivalence is a foundation of mathematics represented in numbers, shapes, measures, expressions, and equations
- Apply transformation to numbers, shapes, functional representations, and data

Content Area: Mathematics - Fourth Grade	
Standard: 1. Number Sense, Properties, and Operations	
Prepared Graduates: Understand the structure and properties of our number system. At their most basic level numbers are abstract symbols that represent real-world quantities.	
GRADE LEVEL EXPECTATION Concepts and skills students master: 1. The decimal number system to the hundredths place describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Generalize place value understanding for multi-digit whole numbers (CCSS: 4.NBT) i. Explain that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. (CCSS: 4.NBT.1) ii. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. (CCSS: 4.NBT.2) iii. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. (CCSS: 4.NBT.2) iv. Use place value understanding to round multi-digit whole numbers to any place. (CCSS: 4.NBT.3) b. Use decimal notation to express fractions, and compare decimal fractions (CCSS: 4.NF) i. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. ¹ (CCSS: 4.NF.5) ii. Use decimal notation for fractions with denominators 10 or 100. ² (CCSS: 4.NF.6) iii. Compare two decimals to hundredths by reasoning about their size. ³ (CCSS: 4.NF.7)	Inquiry Questions: 1. Why isn't there a "oneths" place in decimal fractions? 2. How can a number with greater decimal digits be less than one with fewer decimal digits? 3. Is there a decimal closest to one? Why?
	Relevance and Application: 1. Decimal place value is the basis of the monetary system and provides information about how much items cost, how much change should be returned, or the amount of savings that has accumulated. 2. Knowledge and use of place value for large numbers provides context for population, distance between cities or landmarks, and attendance at events.
	Nature of Discipline: 1. Mathematicians explore number properties and relationships because they enjoy discovering beautiful new and unexpected aspects of number systems. They use their knowledge of number systems to create appropriate models for all kinds of real-world systems. 2. Mathematicians reason abstractly and quantitatively. (MP) 3. Mathematicians look for and make use of structure. (MP)
	¹ For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$. (CCSS: 4.NF.6) ² For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram. (CCSS: 4.NF.6) ³ Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. (CCSS: 4.NF.7)

Content Area: Mathematics - Fourth Grade	
Standard: 1. Number Sense, Properties, and Operations	
Prepared Graduates: Understand that equivalence is a foundation of mathematics represented in numbers, shapes, measures, expressions, and equations.	
GRADE LEVEL EXPECTATION: Fourth Grade Concepts and skills students master: 2. Different models and representations can be used to compare fractional parts.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>a. Use ideas of fraction equivalence and ordering to: (CCSS: 4.NF)</p> <ol style="list-style-type: none"> i. Explain equivalence of fractions using drawings and models.⁴ ii. Use the principle of fraction equivalence to recognize and generate equivalent fractions. (CCSS: 4.NF.1) iii. Compare two fractions with different numerators and different denominators,⁵ and justify the conclusions.⁶ (CCSS: 4.NF.2) <p>b. Build fractions from unit fractions by applying understandings of operations on whole numbers. (CCSS: 4.NF)</p> <ol style="list-style-type: none"> i. Apply previous understandings of addition and subtraction to add and subtract fractions.⁷ <ol style="list-style-type: none"> 1. Compose and decompose fractions as sums and differences of fractions with the same denominator in more than one way and justify with visual models. 2. Add and subtract mixed numbers with like denominators.⁸ (CCSS: 4.NF.3c) 3. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.⁹ (CCSS: 4.NF.3d) ii. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (CCSS: 4.NF.4) <ol style="list-style-type: none"> 1. Express a fraction a/b as a multiple of $1/b$.¹⁰ (CCSS: 4.NF.4a) 2. Use a visual fraction model to express a/b as a multiple of $1/b$, and apply to multiplication of whole number by a fraction.¹¹ (CCSS: 4.NF.4b) 3. Solve word problems involving multiplication of a fraction by a whole number.¹² (CCSS: 4.NF.4c) 	<p>Inquiry Questions:</p> <ol style="list-style-type: none"> 1. How can different fractions represent the same quantity? 2. How are fractions used as models? 3. Why are fractions so useful? 4. What would the world be like without fractions? <p>Relevance and Application:</p> <ol style="list-style-type: none"> 1. The ability to read and write numbers allows communication about quantities such as the cost of items, number of students in a school, or number of people in a theatre. 2. Place value allows people to represent large quantities. For example, 725 can be thought of as $700 + 20 + 5$. <p>Nature Of Discipline:</p> <ol style="list-style-type: none"> 1. Mathematicians explore number properties and relationships because they enjoy discovering beautiful new and unexpected aspects of number systems. They use their knowledge of number systems to create appropriate models for all kinds of real-world systems. 2. Mathematicians reason abstractly and quantitatively. (MP) 3. Mathematicians look for and make use of structure. (MP) <p>⁴ Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. (CCSS: 4.NF.1)</p> <p>⁵ e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, (CCSS: 4.NF.2)</p> <p>⁶ e.g., by using a visual fraction model. (CCSS: 4.NF.2)</p>

	<p>⁷ Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (CCSS: 4.NF.3) Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. (CCSS: 4.NF.3a) Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$. (CCSS: 4.NF.3b)</p> <p>⁸e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. (CCSS: 4.NF.3c)</p> <p>⁹ e.g., by using visual fraction models and equations to represent the problem. (CCSS: 4.NF.3d)</p> <p>¹⁰ For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$. (CCSS: 4.NF.4a)</p> <p>¹¹ For example, $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.) (CCSS: 4.NF.4b)</p> <p>¹² e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? (CCSS: 4.NF.4c)</p>
--	---

Content Area: Mathematics - Fourth Grade	
Standard: 1. Number Sense, Properties, and Operations	
Prepared Graduates: Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency.	
GRADE LEVEL EXPECTATION Concepts and skills students master: 3. Formulate, represent, and use algorithms to compute with flexibility, accuracy, and efficiency.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Use place value understanding and properties of operations to perform multi-digit arithmetic. (CCSS: 4.NBT) i. Fluently add and subtract multi-digit whole numbers using standard algorithms. (CCSS: 4.NBT.4) ii. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. (CCSS: 4.NBT.5) iii. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. (CCSS: 4.NBT.6) iv. Illustrate and explain multiplication and division calculation by using equations, rectangular arrays, and/or area models. (CCSS: 4.NBT.6) b. Use the four operations with whole numbers to solve problems. (CCSS: 4.OA) i. Interpret a multiplication equation as a comparison. ¹³ (CCSS: 4.OA.1) ii. Represent verbal statements of multiplicative comparisons as multiplication equations. (CCSS: 4.OA.1) iii. Multiply or divide to solve word problems involving multiplicative comparison. ¹⁴ (CCSS: 4.OA.2) iv. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. (CCSS: 4.OA.3)	Inquiry Questions: 1. Is it possible to make multiplication and division of large numbers easy? 2. What do remainders mean and how are they used? 3. When is the "correct" answer not the most useful answer?
	Relevance and Application: 1. Multiplication is an essential component of mathematics. Knowledge of multiplication is the basis for understanding division, fractions, geometry, and algebra.
	Nature of Discipline: 1. Mathematicians envision and test strategies for solving problems. 2. Mathematicians develop simple procedures to express complex mathematical concepts. 3. Mathematicians make sense of problems and persevere in solving them. (MP) 4. Mathematicians construct viable arguments and critique the reasoning of others. (MP) 5. Mathematicians look for and express regularity in repeated reasoning. (MP)
	¹³ e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. (CCSS: 4.OA.1) ¹⁴ e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (CCSS: 4.OA.2)

- | | |
|--|--|
| <ul style="list-style-type: none">v. Represent multistep word problems with equations using a variable to represent the unknown quantity. (CCSS: 4.OA.3)vi. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (CCSS: 4.OA.3)vii. Using the four operations analyze the relationship between choice and opportunity cost. (PFL) | |
|--|--|

2. Patterns, Functions, and Algebraic Structures

Pattern sense gives students a lens with which to understand trends and commonalities. Being a student of mathematics involves recognizing and representing mathematical relationships and analyzing change. Students learn that the structures of algebra allow complex ideas to be expressed succinctly.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must have to ensure success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the 2. Patterns, Functions, and Algebraic Structures Standard are:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency
- Understand that equivalence is a foundation of mathematics represented in numbers, shapes, measures, expressions, and equations
- Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data
- Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics
- Use critical thinking to recognize problematic aspects of situations, create mathematical models, and present and defend solutions

Content Area: Mathematics - Fourth Grade	
Standard: 2. Patterns, Functions, and Algebraic Structures	
Prepared Graduates: Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics. Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data.	
GRADE LEVEL EXPECTATION: Fourth Grade Concepts and skills students master: 1. Number patterns and relationships can be represented by symbols.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <p>a. Generate and analyze patterns and identify apparent features of the pattern that were not explicit in the rule itself.¹ (CCSS: 4.OA.5)</p> <p>i. Use number relationships to find the missing number in a sequence</p> <p>ii. Use a symbol to represent and find an unknown quantity in a problem situation</p> <p>iii. Complete input/output tables</p> <p>iv. Find the unknown in simple equations</p> <p>b. Apply concepts of squares, primes, composites, factors, and multiples to solve problems</p> <p>i. Find all factor pairs for a whole number in the range 1–100. (CCSS: 4.OA.4)</p> <p>ii. Recognize that a whole number is a multiple of each of its factors. (CCSS: 4.OA.4)</p> <p>iii. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. (CCSS: 4.OA.4)</p> <p>iv. Determine whether a given whole number in the range 1–100 is prime or composite. (CCSS: 4.OA.4)</p>	<p>Inquiry Questions:</p> <ol style="list-style-type: none"> 1. What characteristics can be used to classify numbers into different groups? 2. How can we predict the next element in a pattern? 3. Why do we use symbols to represent missing numbers? 4. Why is finding an unknown quantity important?
	<p>Relevance and Application:</p> <ol style="list-style-type: none"> 1. Use of an input/output table helps to make predictions in everyday contexts such as the number of beads needed to make multiple bracelets or number of inches of expected growth. 2. Symbols help to represent situations from everyday life with simple equations such as finding how much additional money is needed to buy a skateboard, determining the number of players missing from a soccer team, or calculating the number of students absent from school. 3. Comprehension of the relationships between primes, composites, multiples, and factors develop number sense. The relationships are used to simplify computations with large numbers, algebraic expressions, and division problems, and to find common denominators.
	<p>Nature of Discipline:</p> <ol style="list-style-type: none"> 1. Mathematics involves pattern seeking. 2. Mathematicians use patterns to simplify calculations. 3. Mathematicians model with mathematics. (MP) <p>¹ For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (CCSS: 4.OA.5)</p>

3. Data Analysis, Statistics, and Probability

Data and probability sense provides students with tools to understand information and uncertainty. Students ask questions and gather and use data to answer them. Students use a variety of data analysis and statistics strategies to analyze, develop and evaluate inferences based on data. Probability provides the foundation for collecting, describing, and interpreting data.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the 3. Data Analysis, Statistics, and Probability Standard are:

- Recognize and make sense of the many ways that variability, chance, and randomness appear in a variety of contexts
- Solve problems and make decisions that depend on understanding, explaining, and quantifying the variability in data
- Communicate effective logical arguments using mathematical justification and proof. Mathematical argumentation involves making and testing conjectures, drawing valid conclusions, and justifying thinking
- Use critical thinking to recognize problematic aspects of situations, create mathematical models, and present and defend solutions

Content Area: Mathematics - Fourth Grade	
Standard: 3. Data Analysis, Statistics, and Probability	
Prepared Graduates: Solve problems and make decisions that depend on understanding, explaining, and quantifying the variability in data.	
GRADE LEVEL EXPECTATION	
Concepts and skills students master: 1. Visual displays are used to represent data.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). (CCSS: 4.MD.4) b. Solve problems involving addition and subtraction of fractions by using information presented in line plots. ¹ (CCSS: 4.MD.4)	Inquiry Questions: 1. What can you learn by collecting data? 2. What can the shape of data in a display tell you?
	Relevance and Application: 1. The collection and analysis of data provides understanding of how things work. For example, measuring the weather every day for a year helps to better understand weather.
	Nature of Discipline: 1. Mathematics helps people use data to learn about the world. 2. Mathematicians model with mathematics. (MP) 3. Mathematicians use appropriate tools strategically. (MP) 4. Mathematicians attend to precision. (MP)
	¹ For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. (CCSS: 4.MD.4)

4. Shape, Dimension, and Geometric Relationships

Geometric sense allows students to comprehend space and shape. Students analyze the characteristics and relationships of shapes and structures, engage in logical reasoning, and use tools and techniques to determine measurement. Students learn that geometry and measurement are useful in representing and solving problems in the real world as well as in mathematics.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the 4. Shape, Dimension, and Geometric Relationships standard are:

- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error
- Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data
- Apply transformation to numbers, shapes, functional representations, and data
- Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics
- Use critical thinking to recognize problematic aspects of situations, create mathematical models, and present and defend solutions

Content Area: Mathematics - Fourth Grade	
Standard: 4. Shape, Dimension, and Geometric Relationships	
Prepared Graduates: Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error.	
GRADE LEVEL EXPECTATION Concepts and skills students master: 1. Appropriate measurement tools, units, and systems are used to measure different attributes of objects and time.	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. (CCSS: 4.MD) i. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. (CCSS: 4.MD.1) ii. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. ¹ (CCSS: 4.MD.1) iii. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. (CCSS: 4.MD.2) iv. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (CCSS: 4.MD.2) v. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. ² (CCSS: 4.MD.3) b. Use concepts of angle and measure angles. (CCSS: 4.MD)	Inquiry Questions: 1. How do you decide when close is close enough? 2. How can you describe the size of geometric figures?
	Relevance and Application: 1. Accurate use of measurement tools allows people to create and design projects around the home or in the community such as flower beds for a garden, fencing for the yard, wallpaper for a room, or a frame for a picture.
	Nature of Discipline: 1. People use measurement systems to specify the attributes of objects with enough precision to allow collaboration in production and trade. 2. Mathematicians make sense of problems and persevere in solving them. (MP) 3. Mathematicians use appropriate tools strategically. (MP) 4. Mathematicians attend to precision. (MP)
	¹ For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), (CCSS: 4.MD.1) ² For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. (CCSS: 4.MD.3)

- i. Describe angles as geometric shapes that are formed wherever two rays share a common endpoint, and explain concepts of angle measurement.³ (CCSS: 4.MD.5)
- ii. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (CCSS: 4.MD.6)
- iii. Demonstrate that angle measure as additive.⁴ (CCSS: 4.MD.7)
- iv. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems.⁵ (CCSS: 4.MD.7)

³ An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles. (CCSS: 4.MD.5a) An angle that turns through n one-degree angles is said to have an angle measure of n degrees. (CCSS: 4.MD.5b)

⁴ When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. (CCSS: 4.MD.7)

⁵ e.g., by using an equation with a symbol for the unknown angle measure. (CCSS: 4.MD.7)

Content Area: Mathematics - Fourth Grade

Standard: 4. Shape, Dimension, and Geometric Relationships

Prepared Graduates:

Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics.

GRADE LEVEL EXPECTATION

Concepts and skills students master:

2. Geometric figures in the plane and in space are described and analyzed by their attributes.

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <ul style="list-style-type: none">a. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. (CCSS: 4.G.1)b. Identify points, line segments, angles, and perpendicular and parallel lines in two-dimensional figures. (CCSS: 4.G.1)c. Classify and identify two-dimensional figures according to attributes of line relationships or angle size.⁶ (CCSS: 4.G.2)d. Identify a line of symmetry for a two-dimensional figure.⁷ (CCSS: 4.G.3)	<p>Inquiry Questions:</p> <ul style="list-style-type: none">1. How do geometric relationships help us solve problems?2. Is a square still a square if it's tilted on its side?3. How are three-dimensional shapes different from two-dimensional shapes?4. What would life be like in a two-dimensional world?5. Why is it helpful to classify things like angles or shapes? <p>Relevance and Application:</p> <ul style="list-style-type: none">1. The understanding and use of spatial relationships helps to predict the result of motions such as how articles can be laid out in a newspaper, what a room will look like if the furniture is rearranged, or knowing whether a door can still be opened if a refrigerator is repositioned.2. The application of spatial relationships of parallel and perpendicular lines aid in creation and building. For example, hanging a picture to be level, building windows that are square, or sewing a straight seam <p>Nature of Discipline:</p> <ul style="list-style-type: none">1. Geometry is a system that can be used to model the world around us or to model imaginary worlds.2. Mathematicians look for and make use of structure. (MP)3. Mathematicians look for and express regularity in repeated reasoning. (MP) <p>⁶ Based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. (CCSS: 4.G.2)</p> <p>⁷ as a line across the figure such that the figure can be folded along the line into matching parts. (CCSS: 4.G.3) Identify line-symmetric figures and draw lines of symmetry. (CCSS;4.G.3)</p>

Fourth Grade Academic Vocabulary for students

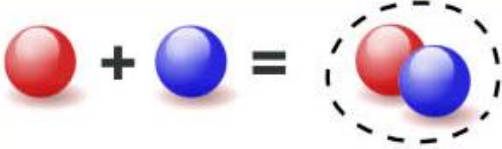
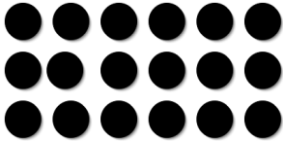
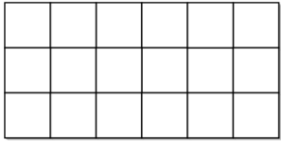
Standard 1: algorithm, approximate, array, base ten, benchmark numbers, benchmark fractions, change (from a purchase), choice and opportunity cost, common denominator, compare, compose, composite, decimal number, decimal fraction, decimal notation, decimal number, decompose, denominator, difference, digit, dividend, division, divisor, divisible, equal, equality, equivalent, estimate, estimation strategies, expanded form, factors, fraction equivalence, greater than, improper fraction, landmark number, less than (fewer than), minuend, mixed number, multiple, multiplication, multiplicative comparison, number line, number sentence, numerator, operation, pictorial representation, place value, powers of ten, product, proper fraction, quotient, rational number, remainder, rounding, square number, standard form, sum, variable, whole number

Standard 2: composite number, distributive property, expression, factor, input/output table, inverse operation, number sentence/equation, operation, prime number, quantity, rule, square number, table, unknown, variable

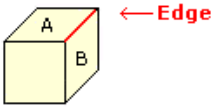
Standard 3: data, key, line plot, scale

Standard 4: 2-dimensional, angle (acute, right, obtuse), analog clock, area, attribute, capacity, conversion, degree, diagram, edge, hexagon, interval, length, line, line segment, mass, metric system, parallel, perimeter, perpendicular, point, polygon, protractor, quadrilateral, ray, regular polygon, segment, side, solid, standard units of measurement (know names), symmetry, vertex, vertices, volume, weight


Math Reference Global Glossary for Pre-K – 5 Teachers

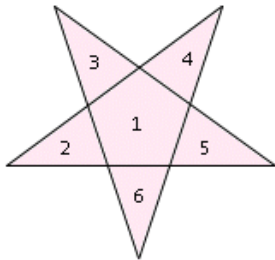
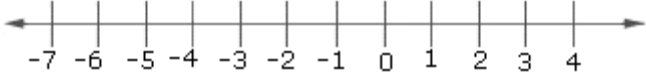
<u>Word</u>	<u>Definition</u>
Acute Angle	An angle smaller than 90 degrees.
Add	To bring two or more numbers (or things) together to make a new total. <div style="text-align: center;">  </div>
Addend	Any number being added.
Adding And Subtracting Through Ten	A non-unitary addition and subtraction strategy that uses ten and its multiples as landmark numbers. (e.g., 8+5 is thought of as 8+2=10 and 10+3=13; 23-7 is thought of 23-3=20 and 20-4=16).
Additive	Marked by, produced by, or involving addition.
Algorithm	A standardized step-by-step procedure for solving a problem.
Analog Clock	A clock with a face and hands.
Angle	Two rays that share an endpoint.
Area	The measure, in square units, of the inside of a plane figure.
Array	A rectangular arrangement of objects in rows and columns. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>dot array (discrete array)</p> </div> <div style="text-align: center;">  <p>area model array</p> </div> </div>
Associative Property	For any rational numbers: $(a + b) + c = a + (b + c)$ and $(a \times b) \times c = a \times (b \times c)$. The associative property does not apply to subtraction and division.
Attribute	A characteristic or quality.
Bar Graph	A graph that uses the height or length of rectangles to compare data.

Base (Geometric)	The base is the side or face that is perpendicular to the height of the figure. In a solid figure it is the polygon that defines the shape (i.e, the circular base of a cylinder or the triangles of a triangular prism).
Base Ten	A number system in which each place has 10 times the value of the next place to its right.
Benchmark Fractions	Fractions used in estimation and mental calculation; commonly halves and whole numbers. (e.g. 0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2)
Benchmark Numbers	Numbers used in estimation and mental calculation; most commonly multiples of 10, but also including numbers like 25 with which can be readily manipulated.
Braces	A symbol used outside of parentheses [] to denote order of operations.
Brackets	A symbol used to denote order of operations used outside of braces. { }
Capacity	The maximum amount that can be contained by an object, usually measured in liquid units. (i.e. tablespoons, cups, gallons. "A vase can hold 3 cups of water.)
Cardinal Number	A number that is used in simple counting and that indicates how many elements there are in a set.
Cardinality	The cardinality of a set is the number of elements or members (numerosity) of a set. The Cardinality Principal is the connection that the last number word of the count indicates the amount of the set.
Categorical Data	Data that is grouped by category or attribute (e.g., What kind of pets do you have? Cats, dogs, rabbits, etc.).
Circle	A 2-dimensional shape made by drawing a curve that is always the same distance from the center.
Clusters	Data that are grouped around a value in a set of values.
Combination	A pair or group of items or events. Placing these items or events in a different order does not create a new combination.
Combine	Put together.
Common Denominator	A denominator that is the same for two or more fractions.
Commutative Property	For any rational numbers: $a + b = b + a$ and $a \times b = b \times a$. (changing the order of the addends or factors does not affect the sum or product (e.g. $7 + 5 = 5 + 7$ and $7 \times 5 = 5 \times 7$))
Compare	Estimate, measure, or note similarities or differences.
Compose	Put together or combine quantities.
Composite Number	A positive whole number that has more than two factors (e.g., The factors of 10 are 1, 2, 5, and 10).
Computation Algorithm	A set of predefined steps applicable to a class of problems that gives the correct result in every case when the steps are carried out correctly.
Computation Strategy	Purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another.
Cone	A solid (3-dimensional) object that has a circular base and one vertex.
Congruent	Having exactly the same size and shape.
Conjecture	A mathematical hypothesis that has not been proved or disproved.
Constant	Consistent or unchanging. Constant change refers to linear change.
Conversion	To change the form but not the value of a particular number or quantity.
Coordinates	An ordered pair of numbers that identify a point on the coordinate plane. (coordinate pair)
Count	To tell or name one by one or by groups, for the purpose of determining the whole number of units in a collection; to number or enumerate. (see also cardinality, number word sequence, order irrelevance, and one to one correspondence)

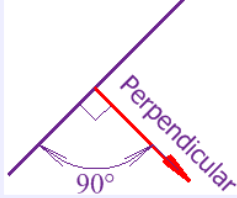
Counting Back	Counting back from or to a number. Example of counting back from: 11-3 is solved by counting back from 11: "10, 9, 8." Example of counting back to: 11- __=8 is solved by counting back to 8 and keeping track of three counts.
Counting On	Counting up from or to a number. Example of counting up from: 7+5 is solved by counting up 5 from 7: 8, 9, 10, 11, 12. Example of counting up to: 7 +__=12 is solved by counting from 7 up to 12 and keeping track of 5 counts.
Cube	A box-shaped solid object that has six identical square faces.
Cubic Unit	A unit such as a cubic meter used to measure volume or capacity.
Cylinder	A solid object with two identical flat ends that are circular and one curved face. It has the same cross-section from one end to the other.
Data	Information, usually numerical information.
Decimal Fraction	A fraction or decimal number (as $0.25 = \frac{25}{100}$ or $0.025 = \frac{25}{1000}$) or mixed number (as $3.025 = 3 \frac{25}{1000}$) in which the denominator is a power of 10 usually expressed by the use of a decimal point.
Decimal Number	A number that uses a decimal point to indicate parts of a whole (e.g., 3.25).
Decompose	Breaking quantities into useful chunks.
Degrees	A unit of measurement as of an angle or temperature.
Denominator	The number below or to the right of the line in a fraction, indicating the number of equal parts into which one whole is divided. For example, in the fraction $\frac{2}{7}$, 7 is the denominator.
Diagram	A visual representation.
Difference	The amount that remains after one quantity is subtracted from another.
Digit	Any one of the ten symbols: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
Dimension	The property of an object that is measureable in space. A line has one dimension because it can only be measured once. A rectangle has two dimensions that can be measured.
Directional And Positional	Words that describe a position or place of an object or number in space
Distributive Property	$a(b + c) = ab + ac$ and $a(b - c) = ab - ac$, where a, b, and c are any real numbers. The distributive property is used to multiply multi-digit numbers $3 \times 34 = (3 \times 30) + (3 \times 4)$
Dividend	In a division problem, the number of items you are separating - "the whole" (see also partitive and quotative division)
Division	The action of separating something into parts, or the process of being separated.
Divisor	The number by which a dividend is divided
Doubles Plus One	An addition strategy that utilizes knowledge of doubles facts to add two numbers that are one away from each other (e.g., $5 + 6$ can be found by knowing that $5 + 5 = 10$ and one more would be 11.)
Edge	The segment on a three-dimensional geometric figure that is formed by the intersection of two faces. 
Elements (Of A Pattern)	The individual items in a set.
Equal	Exactly the same amount or value.
Equality	Represented by an equal sign. In an equation, the equal sign represents a relationship between two expressions that have the same value
Equal Partitions/Part	Pieces of an object or set that are equivalent in amount.
Equivalence	Capable of being put into a one-to-one relationship. Having virtually identical

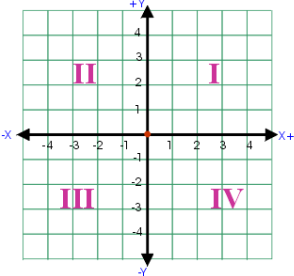
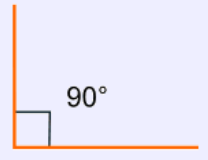
	or corresponding parts.
Equivalent	Equal partitions/parts, equal to each other, the same amount.
Equivalent Fractions	Fractions that represent the same amount but have different numerators and denominators. For example $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10}$

Estimate	(noun) A number close to an exact amount. An estimate tells about how much or about how many. (verb) To find a number close to an exact amount
Even Number	A whole number that has 2 as a factor. All even numbers are divisible by two and have 0, 2, 4, 6, or 8 in the ones place.
Expanded Form	A way to write numbers that shows the place value of each digit (e.g., $789 = 700 + 80 + 9$).
Exponents	A number used to tell how many times a number or variable is used as a factor. (i.e., 5^3 indicates that 5 is a factor 3 times, that is, $5 \times 5 \times 5$. The value of 5^3 is 125. 5 is the base number and 3 is the exponent.)
Expression	A group of characters or symbols representing a quantity (example: $5 + 6 = 11$, 7×8 , $3x + 6$).
Face	A face is a flat surface of a three-dimensional figure. 
Factors	Numbers that are multiplied together to form a product (e.g., $6 \times 7 = 42$, 6 and 7 are factors).
Fluency	Efficiency, accuracy, and flexibility in solving computation problems.
Fraction	A number that describes a part of a whole or group, usually in the form a/b where "a" is any real number and "b" is any real number > 0 .
Frequency Table	A table that depicts the number of times that something occurs in an interval or set of data.
Function Table	A table that matches each input value with an output value. The output values are determined by the function. Couldn't paste diagrams
Generalizable	The ability to extend a number of results to form a rule. For example $5 + 3 = 3 + 5$ and $1.5 + 2.7 = 2.7 + 1.5$ can be generalized to $a + b = b + a$.
Graph	A drawing that shows a relationship between sets of data.
Greater Than	Larger. The special symbol used to show one number is larger than another is $>$. $a > b$ indicates that a is larger than b.
Height	The vertical distance from top to bottom.
Hexagon	A polygon with six sides.
Horizontal	Parallel to the horizon.
Identify (Numeral Identification)	To give the name of a written numeral or other symbol in isolation (e.g., When presented a card with the numeral 563, the child says "five hundred sixty-three"). (compare to recognize)
Identity Property	Of Addition: for any number n ; $n + 0 = n$ Of Subtraction: for any number n ; $n - 0 = n$ Of Multiplication: for any number n , $n \times 1 = n$ Of Division: for any number n , $n / 1 = n$
Improper Fraction	A fraction with a value greater than 1 that is not written as a mixed number.
In And Out Tables (Function Tables)	A table that matches each input value with an output value. The output values are determined by the function.
Integer	Any positive or negative whole number and the number zero.
Interval Of Time	A definite length of time marked off by two instants.
Inverse Operation	An operation that undoes another operation (e.g. addition and subtraction are inverse operations).
Landmark Number	Numbers that are familiar landing places that make for simple calculations and to which other numbers can be related (e.g., 10, 50, and 100 are commonly used landmarks).
Length	The distance along a line or figure from one point to another. One dimension of a two- or three-dimensional figure.
Less Than	Smaller. The special symbol used to show one number is smaller than


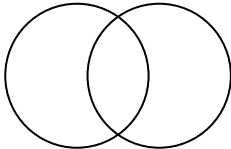
	another is $<$. $a < b$ indicates that a is smaller than b .
Linear Measurement	A unit or system of units for the measurement of length.
Line	An Infinite Set Of Points Forming A Straight Path In 2 Directions.
Line Plot	A Graph Showing Frequency Of Data On A Number Line.
Line Segment	A Part Of A Line Defined By 2 End Points.
Line Of Symmetry	A Line That Divides A Figure Into Two Halves That Are Mirror Images Of Each Other.
Mass	Quantity Of Matter In An Object. Usually Measured In Weight.
Mean	The average of a set of data. It is the number found by dividing the sum of the numbers in a set of data by the number of addends. (calculation of the mean is not a expectation of this elementary curriculum)
Measure	To find the quantity, length, area, volume, capacity, weight, duration, etc. of something.
Measurement Words	Words used to describe differences in objects being measured (i.e. heavier/lighter, shorter/longer).
Median	In a set of data, the number in the middle when the data is organized from least to greatest. When there are an even number of data, the median is the mean of the two middle values. (e.g. For the set of numbers 2, 4, 6, 8, 10, 12 the median is 7)
Mental Computation	Computing an exact answer without using paper and pencil or other physical aids.
Metric System	An international system of measurement based on tens. The basic units of measure are meter, liter, gram, degrees Celsius.
Minuend	The number you subtract from (e.g., $8 - 3 = 5$; 8 is the minuend).
Mixed Number	A number consisting of an integer and a fraction.
Mode	The number or item that appears most often in a set of data. There may be one, more than one, or no mode. (when there are 2 modes we say that the data set is bimodal. When there are more than 2 modes we say that there is no mode.)
More Than	Greater than (informal)
Multiple	The product of the number and any whole number (e.g., The multiples of 4 are 0, 4, 8, 12, 16...).
Multiplicative Comparison	Interpret that $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.
Net	A two-dimensional shape that can be folded into a three-dimensional figure. The following is the net of a pentagonal pyramid. 
Non-Standard Units	Units other than customary or metric units used for measurement (e.g. a paper clip might be used as a non-standard unit of length).
Number Line	A diagram that represents numbers as points on a line, marked at intervals. 
Number Sentence	An equation or inequality with numbers (e.g., $6 + 3 = 9$ or $8 + 1 < 12$).
Number Sense	A person's ability to use and understand numbers: knowing relative values; how to use numbers to make judgments; how to use numbers in flexible ways when adding, subtracting, multiplying or dividing; how to develop useful

	strategies when counting, measuring, or estimating. This would include number meanings, number relationships, number size, and the relative effect of operations on numbers.
Number Word Sequence	A regular sequence of number words, typically, but not necessarily, by ones. (both forward and backward). An element of counting.
Numeral	A symbol used to represent a number.
Numerator	A number written above or to the left of the line in a common fraction to indicate the number of parts of the whole. For example, 2 is the numerator in the fraction $\frac{2}{7}$.
Numeric Expression	A mathematical combination of numbers, variables, and operations. (e.g., a box with an amount of pencils, x , with 3 missing is $x-3$).
Numerical Data	Data expressed in or involving numbers.
Obtuse Angle	An angle greater than 90 and less than 180 degrees.
Odd Number	A whole number that is not divisible by 2. All odd numbers have 1, 3, 5, 7, or 9 in the ones place.
Open Number Sentence	A number sentence in which one or more numerical values is missing (e.g., $__+6=13$).
Off-Century Counting	Counting forward or backward by 100, starting at any number that is not a multiple of one hundred (e.g., 125, 225, 325...).
Off-Decade Counting	Counting forward or backward by 10, starting at any number that is not a multiple of 10 (e.g. 54, 44, 34 . . .).
On-Century Counting	Counting forward or backward by 100 starting at any multiple of 100. (e.g. 100, 200, 300 ...)
On-Decade Counting	Counting forward or backward by 10, starting at any multiple of ten (e.g. 10, 20. 30 . . .).
One-To-One Correspondence	In counting, assigning one counting number for each object counted in order to determine how many in a set.
Open Number Sentence	A number sentence in which one or more numerical values is missing (e.g., $__+6=13$).
Operation	A mathematical process; addition, subtraction, multiplication, division, and raising a number to a power are some mathematical operations.
Order	The arrangement of people or things in relation to each other according to a particular sequence, pattern or method.
Order Of Operations	The customary order in which operations must be performed in order to arrive at the intended result. They are, in order, brackets, braces, parentheses, multiplication and division, addition and subtraction. Calculations always move from left to right when no other indication is made, for instance $8 - 3 + 5 = (8-3)+5$.
Order Irrelevance (In Counting)	The understanding that the number of objects in a set is unchanged regardless of the order in which the members of the set are counted. (an element of counting)
Ordered Pair	A pair of numbers used to name a location on coordinate plane (x,y); the first number is the horizontal distance from the origin, the second is the vertical distance from the origin. (see also coordinates)
Ordinal Number	Indicates the relative position of an object in an ordered set (e.g., 1st, 2nd, 5th).
Origin	The intersection of the x and y axes in a coordinate plane. Its coordinates are (0,0).
Outcome	A possible result of a random process (e.g., Heads and tails are the two possible outcomes of flipping a coin.)
Outlier	An item of data that is significantly greater or less than all the other items of data.

Oval	Any curve that looks like an egg or an ellipse.												
Parallel Lines	Lines that are always the same distance apart; never meeting.												
Parallelogram	A polygon with opposite sides that are parallel and equal in length, and opposite angles that are equal. NOTE: squares, rectangles and rhombuses are all parallelograms.												
Partition	Breaking quantities into useful chunks in order to solve problems.												
Partitive Division	A partitive division problem is one where you know the total number of groups, and you are trying to find the number of items in each group. If you have 30 popsicles and want to divide them equally among 5 friends you are figuring out how many popsicles each friend would get. (see also quotative division)												
Part-Part-Whole	See Elementary Math Curriculum, Table A.												
Pattern	An ordered set of numbers, shapes or other mathematical objects, arranged according to a rule.												
Pentagon	A geometric figure with five sides.												
Perimeter	The sum of the measures of the lines forming a polygon.												
Perpendicular	When two lines intersect to make a right angle. 												
Pictograph	A graph using pictures or symbols to show data. <table border="1"> <thead> <tr> <th colspan="2">HOW WE GET TO SCHOOL</th> </tr> </thead> <tbody> <tr> <td>Walk</td> <td>3 icons</td> </tr> <tr> <td>Ride a Bike</td> <td>5 icons</td> </tr> <tr> <td>Ride the Bus</td> <td>7 icons</td> </tr> <tr> <td>Ride in a Car</td> <td>2 icons</td> </tr> <tr> <td colspan="2">Key: Each icon = 10 students.</td> </tr> </tbody> </table>	HOW WE GET TO SCHOOL		Walk	3 icons	Ride a Bike	5 icons	Ride the Bus	7 icons	Ride in a Car	2 icons	Key: Each icon = 10 students.	
HOW WE GET TO SCHOOL													
Walk	3 icons												
Ride a Bike	5 icons												
Ride the Bus	7 icons												
Ride in a Car	2 icons												
Key: Each icon = 10 students.													
Pictorial Representation	Using a picture to model a solution strategy or mathematical idea.												
Place Value	The value of the place of a digit of a number (e.g., In the number 7324, 4 is 4×1 , 2 is 2×10 , 3 is 3×100 , and 7 is $7 \times 1,000$) The understanding that each place to the left of the next is valued at $10 \times$ the place to then right, and conversely that those to the right are $1/10$ of those to the left. Place value understandings are a key element of number sense.												
Plane Figure	A two-dimensional shape.												
Polygon	A closed figure formed by three or more line segments that do not cross.												
Powers Of Ten	Any number that can be expressed as repeated multiplication of 10 (e.g., 10, 100, 1000)												
Prime Number	A whole number that has exactly two different positive factors, itself and 1 (e.g., 7 is a prime number because its only factors are 7 and 1). 1 is not a prime number because it does not have 2 factors.												
Prism	A polyhedron with two polygonal faces lying in parallel planes and with the other faces parallelograms												
Problem-Solving Situations	Contexts in which problems are presented that apply mathematics to practical situations in the real world, or problems that arise from the investigation of mathematical ideas												
Product	The result of multiplication												
Proper Fraction	A fraction less than one.												
Property (Geometry)	A defining attribute of a geometric figure. Parallel opposite sides is a property of rectangles.												

Protractor	A measurement tool used to measure an angle.
Quadrant One	<p>The x and y axes of the coordinate plane divide the plane into four regions called quadrants. These regions are labeled counter-clockwise, starting from the top-right.</p> 
Quadrilateral	A polygon with four sides.
Qualitative	Of, or relating to descriptions based on some quality rather than quantity. (e.g. "Today is hotter than yesterday." "It is very likely to rain today")
Quantitative	Data of, relating to, or expressible in numeric terms. (e.g. "It is 98° outside." "There is an 85% chance of rain today")
Quantity	How much there is of something.
Quotative Division	Quotative division is when you know the total number of each set and you are determining how many sets you can make. If you have 30 students and you need to make groups of 5, how many groups will you make? (see also partitive division)
Quotient	The result of division.
Range	The difference between the least and greatest values in a set of data.
Rational Number	A number that can be expressed in the form a/b , where a and b are integers and $b \neq 0$, for example, $3/4$, $2/1$, or $11/3$. Every integer is a rational number, since it can be expressed in the form a/b , for example, $5 = 5/1$. Rational numbers may be expressed as fractional or decimal numbers, for example, $3/4$ or $.75$. Finite decimals, repeating decimals, and mixed numbers all represent rational numbers.
Ray	A part of a line that has one endpoint and extends indefinitely in one direction.
Real-World Problems (Also Called Real-World Experiences)	Quantitative problems that arise from a wide variety of human experience which may take into consideration contributions from various cultures (for example, Mayan or American pioneers), problems from abstract mathematics, and applications to various careers (for example, making change or calculating the sale price of an item). These may also be called real-world experiences, story problems, story contexts and word problems.
Rectangle	A quadrilateral with two pairs of congruent, parallel sides and four right angles.
Rectilinear Figure	Consisting of, bounded by, or formed by a straight line or lines. (rectilinear means having straight lines)
Regular Polygon	A polygon with all sides the same length and all angles the same measure.
Remainder	What is left over when the dividend is not a multiple of the divisor.
Repeating Pattern	A pattern of items, shapes or numbers, that repeats itself.
Rhombus	A parallelogram with all four sides equal in length.
Right Angle	<p>An angle with a measure of 90°; a square corner.</p> 
Round	To express a number in a simplified form by finding the nearest whole

	number, ten, hundred, thousand, etc. (e.g., 537 to the nearest hundred rounds to 500, to the nearest 10 rounds to 540).
Rule	A principle to which an action conforms or is required to conform. In mathematical relationships rules are often described or defined by operations. (e.g. add 6) (see also in and out tables)
Sample Space	The set of all possible outcomes of an experiment.
Scale	The ratio between the actual size of an object and a proportional representation. A system of marks at fixed intervals used in measurement or graphing.
Separate	See Table A below
Shape (Plane)	A two-dimensional figure having length and width.
Shape (Solid)	A three-dimensional figure having length, width and height. (examples include, spheres, cubes, pyramids and cylinders).
Side	Any one of the line segments that make up a polygon.
Skip Counting	When you count forwards or backwards by a number other than 1.
Solid	A geometric figure with three dimensions, length, width and height.
Sort	To arrange or group in a special way (such as by size, type, or alphabetically).
Sphere	A 3-dimensional object shaped like a ball. Every point on the surface is the same distance from the center.
Square	A parallelogram with four congruent sides and four right angles.
Square Number	A number that is the result of multiplying an integer by itself.
Standard Form	A number written with one digit for each place value (e.g., The standard form for the number two hundred six is 206).
Standard Units	Units from the customary system or metric system used for measurement (e.g. inch and centimeter are standard units of length).
Standards For Mathematical Practice	The working practices of mathematicians. In the Common Core State Standards they are: <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Stress Counting	Counting by ones, emphasizing a multiplicative pattern (1, 2, 3 , 4, 5, 6). (related to and often preliminary to skip counting)
Subitize	Instantly quantifying a small collection without counting.
Subtrahend	In subtraction, the number being subtracted (e.g., In $8 - 5 = 3$, 5 is the subtrahend).
Sum	The result of addition.
Symmetry	The property of exact balance in a figure; having the same size and shape across a dividing line (line/mirror symmetry) or around a point (rotational).
Symbolic Notation	A mathematical idea represented with symbols.
Table	An organized way to list data. Tables usually have rows and columns of data.

Tally Marks	Marks used to keep track of things being counted, usually organized in groups of five. 
Take Away	Subtract – to take one number away from another.
T-Chart	A chart showing the relationship between two variables.
Three-Dimensional Transformation	An object that has height, width and depth. A rule for moving every point in a plane figure to a new location. Three types of transformations are Slides (Translations) A transformation that moves a figure a given distance in a given direction. Flips (Reflections) A transformation that creates a mirror image of a figure on the opposite side of a line. Turns (Rotations) A transformation in which a figure is turned a given angle and direction around a point.
Trapezoid	A quadrilateral with one pair of parallel sides.
Tree Diagram	An organized way of listing all the possible outcomes of an experiment.
Triangle	A 3-sided polygon.
Two-Dimensional	A shape that only has two dimensions (such as width and height) and no thickness.
Unit Fraction	A rational number written as a fraction where the numerator is one and the denominator is a positive integer. For example, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{8}$
Unit Of Measurement	A quantity used as a standard of measurement. For example units of time are second, minute, hour, day, week, month, year and decade.
Unknown	A value that is missing in a problem.
Variable	A value represented by a symbol, most often a letter, in an expression, equation, or formula. (e.g. in the expression $y+3$, y is the variable).
Venn Diagram	A drawing that uses circles to show relationships among sets. 
Vertex	The point where two or more straight lines meet.
Vertices	Plural of vertex.
Vertical	Upright; perpendicular to the horizon.
Volume	A measure of the amount of space occupied by a three-dimensional figure, generally expressed in cubic units.
Weight	The measure of the heaviness of an object.
Whole Numbers	The set of natural numbers plus the number zero (0, 1, 2, 3 . . .).
Width	The distance from side to side.

PK-12 Alignment of Mathematical Standards

The following pages will provide teachers with an understanding of the alignment of the standards from Pre-Kindergarten through High School. An understanding of this alignment and each grade level's role in assuring that each student graduates with a thorough understanding of the standards at each level is an important component of preparing our students for success in the 21st century. Provided in this section are the Prepared Graduate Competencies in Mathematics, an At-a-glance description of the Grade Level Expectations for each standard at each grade level, and a thorough explanation from the CCSS about the alignment of the standards across grade levels.

Prepared Graduate Competencies in Mathematics

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared graduates in mathematics:

- Understand the structure and properties of our number system. At their most basic level numbers are abstract symbols that represent real-world quantities
- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error
- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency
- Make both relative (multiplicative) and absolute (arithmetic) comparisons between quantities. Multiplicative thinking underlies proportional reasoning
- Recognize and make sense of the many ways that variability, chance, and randomness appear in a variety of contexts
- Solve problems and make decisions that depend on understanding, explaining, and quantifying the variability in data
- Understand that equivalence is a foundation of mathematics represented in numbers, shapes, measures, expressions, and equations
- Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data
- Apply transformation to numbers, shapes, functional representations, and data
- Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics
- Communicate effective logical arguments using mathematical justification and proof. Mathematical argumentation involves making and testing conjectures, drawing valid conclusions, and justifying thinking
- Use critical thinking to recognize problematic aspects of situations, create mathematical models, and present and defend solutions

Mathematics

Prepared Graduate Competencies at Grade Levels PK-12 Scope and Sequence

Understand the structure and properties of our number system. At the most basic level numbers are abstract symbols that represent real-world quantities.

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.1-GLE.1	The complex number system includes real numbers and imaginary numbers
Eighth Grade	MA10-GR.8-S.1-GLE.1	In the real number system, rational and irrational numbers are in one to one correspondence to points on the number line
Sixth Grade	MA10-GR.6-S.1-GLE.3	In the real number system, rational numbers have a unique location on the number line and in space
Fifth Grade	MA10-GR.5-S.1-GLE.1	The decimal number system describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms
	MA10-GR.5-S.1-GLE.4	The concepts of multiplication and division can be applied to multiply and divide fractions
Fourth Grade	MA10-GR.4-S.1-GLE.1	The decimal number system to the hundredths place describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms
Third Grade	MA10-GR.3-S.1-GLE.1	The whole number system describes place value relationships and forms the foundation for efficient algorithms
Second Grade	MA10-GR.2-S.1-GLE.1	The whole number system describes place value relationships through 1,000 and forms the foundation for efficient algorithms
First Grade	MA10-GR.1-S.1-GLE.1	The whole number system describes place value relationships within and beyond 100 and forms the foundation for efficient algorithms
Kindergarten	MA10-GR.K-S.1-GLE.1	Whole numbers can be used to name, count, represent, and order quantity

Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error.

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.1-GLE.2	Quantitative reasoning is used to make sense of quantities and their relationships in problem situations
Seventh Grade	MA10-GR.7-S.4-GLE.2	Linear measure, angle measure, area, and volume are fundamentally different and require different units of measure
Fifth Grade	MA10-GR.5-S.4-GLE.1	Properties of multiplication and addition provide the foundation for volume an attribute of solids.
Fourth Grade	MA10-GR.4-S.4-GLE.1	Appropriate measurement tools, units, and systems are used to measure different attributes of objects and time
Third Grade	MA10-GR.3-S.4-GLE.2	Linear and area measurement are fundamentally different and require different units of measure
	MA10-GR.3-S.4-GLE.3	Time and attributes of objects can be measured with appropriate tools
Second Grade	MA10-GR.2-S.4-GLE.2	Some attributes of objects are measurable and can be quantified using different tools
First Grade	MA10-GR.1-S.4-GLE.2	Measurement is used to compare and order objects and events
Kindergarten	MA10-GR.K-S.4-GLE.2	Measurement is used to compare and order objects
Preschool	MA10-GR.P-S.1-GLE.1	Quantities can be represented and counted
	MA10-GR.P-S.4-GLE.2	Measurement is used to compare objects

Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.2-GLE.4	Solutions to equations, inequalities and systems of equations are found using a variety of tools
Eight Grade	MA10-GR.8-S.2-GLE.2	Properties of algebra and equality are used to solve linear equations and systems of equations
Seventh Grade	MA10-GR.7-S.1-GLE.2	Formulate, represent, and use algorithms with rational numbers flexibly, accurately, and efficiently
Sixth Grade	MA10-GR.6-S.1-GLE.2	Formulate, represent, and use algorithms with positive rational numbers with flexibility, accuracy, and efficiency
Fifth Grade	MA10-GR.5-S.1-GLE.2	Formulate, represent, and use algorithms with multi-digit whole numbers and decimals with flexibility, accuracy, and efficiency
	MA10-GR.5-S.1-GLE.3	Formulate, represent, and use algorithms to add and subtract fractions with flexibility, accuracy, and efficiency
Fourth Grade	MA10-GR.4-S.1-GLE.3	Formulate, represent, and use algorithms to compute with flexibility, accuracy, and efficiency
Third Grade	MA10-GR.3-S.1-GLE.3	Multiplication and division are inverse operations and can be modeled in a variety of ways
Second Grade	MA10-GR.2-S.1-GLE.2	Formulate, represent, and use strategies to add and subtract within 100 with flexibility, accuracy, and efficiency

Make both relative (multiplicative) and absolute (arithmetic) comparisons between quantities. Multiplicative thinking underlies proportional reasoning.

Grade Level	Numbering System	Grade Level Expectations
Seventh Grade	MA10-GR.7-S.1-GLE.1	Proportional reasoning involves comparisons and multiplicative relationships among ratios
Sixth Grade	MA10-GR.6-S.1-GLE.1	Quantities can be expressed and compared using ratios and rates

Recognize and make sense of the many ways that variability, chance, and randomness appear in a variety of contexts

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.3-GLE.3	Probability models outcomes for situations in which there is inherent randomness
Seventh Grade	MA10-GR.7-S.3-GLE.2	Mathematical models are used to determine probability

Solve problems and make decisions that depend on understanding, explaining, and quantifying the variability in data

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.3-GLE.1	Visual displays and summary statistics condense the information in data sets into usable knowledge
Eighth Grade	MA10-GR.8-S.3-GLE.1	Visual displays and summary statistics of two-variable data condense the information in data sets into usable knowledge
Sixth Grade	MA10-GR.6-S.3-GLE.1	Visual displays and summary statistics of one-variable data condense the information in data sets into usable knowledge
Fifth Grade	MA10-GR.5-S.3-GLE.1	Visual displays are used to interpret data
Fourth Grade	MA10-GR.4-S.3-GLE.1	Visual displays are used to represent data
Third Grade	MA10-GR.3-S.3-GLE.1	Visual displays are used to describe data
Second Grade	MA10-GR.2-S.3-GLE.1	Visual displays of data can be constructed in a variety of formats to solve problems
First Grade	MA10-GR.1-S.3-GLE.1	Visual displays of information can be used to answer questions

Understand that equivalence is a foundation of mathematics represented in numbers, shapes, measures, expressions, and equations

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.2-GLE.3	Expressions can be represented in multiple, equivalent forms
High School	MA10-GR.HS-S.2-GLE.1	Linear functions model situations with a constant rate of change and can be represented numerically, algebraically, and graphically
Seventh Grade	MA10-GR.7-S.2-GLE.1	Properties of arithmetic can be used to generate equivalent expressions
Fourth Grade	MA10-GR.4-S.1-GLE.2	Different models and representations can be used to compare fractional parts
Third Grade	MA10-GR.3-S.1-GLE.2	Parts of a whole can be modeled and represented in different ways

Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.2-GLE.1	Functions model situations where one quantity determines another and can be represented algebraically, graphically, and using tables
Fifth Grade	MA10-GR.5-S.2-GLE.1	Number patterns are based on operations and relationships
Fourth Grade	MA10-GR.4-S.2-GLE.1	Number patterns and relationships can be represented by symbols
Preschool	MA10-GR.P-S.4-GLE.1	Shapes can be observed in the world and described in relation to one another

Apply transformation to numbers, shapes, functional representations, and data

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.4-GLE.1	Objects in the plane can be transformed, and those transformations can be described and analyzed mathematically
High School	MA10-GR.HS-S.4-GLE.3	Objects in the plane can be described and analyzed algebraically
Eighth Grade	MA10-GR.8-S.4-GLE.1	Transformations of objects can be used to define the concepts of congruence and similarity
Seventh Grade	MA10-GR.7-S.4-GLE.1	Modeling geometric figures and relationships leads to informal spatial reasoning and proof
Second Grade	MA10-GR.2-S.4-GLE.1	Shapes can be described by their attributes and used to represent part/whole relationships
First Grade	MA10-GR.1-S.1-GLE.2	Number relationships can be used to solve addition and subtraction problems
Kindergarten	MA10-GR.K-S.1-GLE.2	Composing and decomposing quantity forms the foundation for addition and subtraction

Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.4-GLE.4	Attributes of two- and three-dimensional objects are measurable and can be quantified
Sixth Grade	MA10-GR.6-S.2-GLE.1	Algebraic expressions can be used to generalize properties of arithmetic
	MA10-GR.6-S.2-GLE.2	Variables are used to represent unknown quantities within equations and inequalities
	MA10-GR.6-S.4-GLE.1	Objects in space and their parts and attributes can be measured and analyzed
Fifth Grade	MA10-GR.5-S.4-GLE.2	Geometric figures can be described by their attributes and specific locations in the plane
Fourth Grade	MA10-GR.4-S.4-GLE.2	Geometric figures in the plane and in space are described and analyzed by their attributes
Third Grade	MA10-GR.3-S.4-GLE.1	Geometric figures are described by their attributes
First Grade	MA10-GR.1-S.4-GLE.1	Shapes can be described by defining attributes and created by composing and decomposing
Kindergarten	MA10-GR.K-S.4-GLE.1	Shapes can be described by characteristics and position and created by composing and decomposing

Communicate effective logical arguments using mathematical justification and proof. Mathematical argumentation involves making and testing conjectures, drawing valid conclusions, and justifying thinking.

This prepared graduate competency is addressed through all of the grade level expectations and is part of the mathematical practices.

Use critical thinking to recognize problematic aspects of situations, create mathematical models, and present and defend solutions

Grade Level	Numbering System	Grade Level Expectations
High School	MA10-GR.HS-S.2-GLE.2	Quantitative relationships in the real world can be modeled and solved using functions
	MA10-GR.HS-S.3-GLE.2	Statistical methods take variability into account supporting informed decisions making through quantitative studies designed to answer specific questions
	MA10-GR.HS-S.4-GLE.2	Concepts of similarity are foundational to geometry and its applications
	MA10-GR.HS-S.4-GLE.5	Objects in the real world can be modeled using geometric concepts
Eighth Grade	MA10-GR.8-S.2-GLE.3	Graphs, tables and equations can be used to distinguish between linear and nonlinear functions
	MA10-GR.8-S.4-GLE.2	Direct and indirect measurement can be used to describe and make comparisons
Seventh Grade	MA10-GR.7-S.2-GLE.2	Equations and expressions model quantitative relationships and phenomena
	MA10-GR.7-S.3-GLE.1	Statistics can be used to gain information about populations by examining samples

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
High School	
1. Number Sense, Properties, and Operations	1. The complex number system includes real numbers and imaginary numbers 2. Quantitative reasoning is used to make sense of quantities and their relationships in problem situations
2. Patterns, Functions, and Algebraic Structures	1. Functions model situations where one quantity determines another and can be represented algebraically, graphically, and using tables 2. Quantitative relationships in the real world can be modeled and solved using functions 3. Expressions can be represented in multiple, equivalent forms 4. Solutions to equations, inequalities and systems of equations are found using a variety of tools
3. Data Analysis, Statistics, and Probability	1. Visual displays and summary statistics condense the information in data sets into usable knowledge 2. Statistical methods take variability into account supporting informed decisions making through quantitative studies designed to answer specific questions 3. Probability models outcomes for situations in which there is inherent randomness
4. Shape, Dimension, and Geometric Relationships	1. Objects in the plane can be transformed, and those transformations can be described and analyzed mathematically 2. Concepts of similarity are foundational to geometry and its applications 3. Objects in the plane can be described and analyzed algebraically 4. Attributes of two- and three-dimensional objects are measurable and can be quantified 5. Objects in the real world can be modeled using geometric concepts

From the Common State Standards for Mathematics, Pages 58, 62, 67, 72-74, and 79.

Mathematics | High School—Number and Quantity

Numbers and Number Systems. *During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, "number" means "counting number": 1, 2, 3... Soon after that, 0 is used to represent "none" and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 8, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers.*

With each extension of number, the meanings of addition, subtraction, multiplication, and division are extended. In each new number system—integers, rational numbers, real numbers, and complex numbers—the four operations stay the same in two important ways: They have the commutative, associative, and distributive properties and their new meanings are consistent with their previous meanings.

Extending the properties of whole-number exponents leads to new and productive notation. For example, properties of whole-number exponents suggest that $(5^{1/3})^3$ should be $5^{(1/3)3} = 5^1 = 5$ and that $5^{1/3}$ should be the cube root of 5.

Calculators, spreadsheets, and computer algebra systems can provide ways for students to become better acquainted with these new number systems and their notation. They can be used to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities. In real world problems, the answers are usually not numbers but quantities: numbers with units, which involves measurement. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, and volume. In high school, students encounter a wider variety of units in modeling, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. Such a conceptual process is sometimes called quantification. Quantification is important for science, as when surface area suddenly "stands out" as an important variable in evaporation. Quantification is also important for companies, which must conceptualize relevant attributes and create or choose suitable measures for them.

Mathematics | High School—Algebra

Expressions. An expression is a record of a computation with numbers, symbols that represent numbers, arithmetic operations, exponentiation, and, at more advanced levels, the operation of evaluating a function. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a different but equivalent way of writing the expression that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p . Rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by the properties of operations and exponents, and the conventions of algebraic notation. At times, an expression is the result of applying operations to simpler expressions. For example, $p + 0.05p$ is the sum of the simpler expressions p and $0.05p$. Viewing an expression as the result of operation on simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a computer algebra system (CAS) can be used to experiment with algebraic expressions, perform complicated algebraic manipulations, and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement of equality between two expressions, often viewed as a question asking for which values of the variables the expressions on either side are in fact equal. These values are the solutions to the equation. An identity, in contrast, is true for all values of the variables; identities are often developed by rewriting an expression in an equivalent form.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs of numbers, which can be plotted in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively deducing from it one or more simpler equations. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, but have a solution in a larger system. For example, the solution of $x + 1 = 0$ is an integer, not a whole number; the solution of $2x + 1 = 0$ is a rational number, not an integer; the solutions of $x^2 - 2 = 0$ are real numbers, not rational numbers; and the solutions of $x^2 + 2 = 0$ are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = ((b_1 + b_2)/2)h$, can be solved for h using the same deductive process.

Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

Connections to Functions and Modeling. Expressions can define functions, and equivalent expressions define the same function. Asking when two functions have the same value for the same input leads to an equation; graphing the two functions allows for finding approximate solutions of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Mathematics | High School—Functions

Functions describe situations where one quantity determines another. For example, the return on \$10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because we continually make theories about dependencies between quantities in nature and society, functions are important tools in the construction of mathematical models.

In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a car to drive 100 miles is a function of the car's speed in miles per hour, v ; the rule $T(v) = 100/v$ expresses this relationship algebraically and defines a function whose name is T .

The set of inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context.

A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city;" by an algebraic expression like $f(x) = a + bx$; or by a recursive rule. The graph of a function is often a useful way of visualizing the relationship of the function models, and manipulating a mathematical expression for a function can throw light on the function's properties.

Functions presented as expressions can model many important phenomena. Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with a constant term of zero describe proportional relationships.

A graphing utility or a computer algebra system can be used to experiment with properties of these functions and their graphs and to build computational models of functions, including recursively defined functions.

Connections to Expressions, Equations, Modeling, and Coordinates.

Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the

same value for the same input lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Mathematics | High School—Modeling

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social, and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player.
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car.
- Modeling savings account balance, bacterial colony growth, or investment growth.
- Engaging in critical path analysis, e.g., applied to turnaround of an aircraft at an airport.
- Analyzing risk in situations such as extreme sports, pandemics, and terrorism.
- Relating population statistics to individual predictions.

In situations like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.

One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can sometimes model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example, as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.

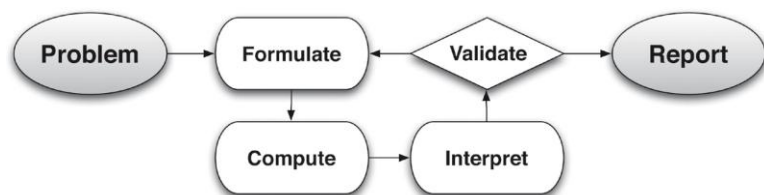
The basic modeling cycle is summarized in the diagram (below). It involves (1) identifying variables in the situation and selecting those that represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions, and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model— for example, graphs of global temperature and atmospheric CO₂ over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems.

Graphing utilities, spreadsheets, computer algebra systems, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Modeling Standards. *Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (*).*



Mathematics | High School—Geometry

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Although there are many types of geometry, school mathematics is devoted primarily to plane Euclidean geometry, studied both synthetically (without coordinates) and analytically (with coordinates). Euclidean geometry is characterized most importantly by the Parallel Postulate, that through a point not on a given line there is exactly one parallel line. (Spherical geometry, in contrast, has no parallel lines.)

During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.

The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally). Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent.

In the approach taken here, two geometric figures are defined to be congruent if there is a sequence of rigid motions that carries one onto the other. This is the principle of superposition. For triangles, congruence means the equality of all corresponding pairs of sides and all corresponding pairs of angles. During the middle grades, through experiences drawing triangles from given conditions, students notice ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent. Once these triangle congruence criteria (ASA, SAS, and SSS) are established using rigid motions, they can be used to prove theorems about triangles, quadrilaterals, and other geometric figures.

Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence, thereby formalizing the similarity ideas of "same shape" and "scale factor" developed in the middle grades. These transformations lead to the criterion for triangle similarity that two pairs of corresponding angles are congruent.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity, and, with the Pythagorean Theorem, are fundamental in many real-world and theoretical situations. The Pythagorean Theorem is generalized to nonright triangles by the Law of Cosines. Together, the Laws of Sines and Cosines embody the triangle congruence criteria for the cases where three pieces of information suffice to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that Side-Side-Angle is not a congruence criterion.

Analytic geometry connects algebra and geometry, resulting in powerful methods of analysis and problem solving. Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof. Geometric transformations of the graphs of equations correspond to algebraic changes in their equations.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same way as computer algebra systems allow them to experiment with algebraic phenomena.

Connections to Equations. *The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof.*

Mathematics | High School—Statistics and Probability*

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account.

Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports, it is important to

consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the Addition and Multiplication Rules. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two-way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling. *Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.*

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Eighth Grade	
1. Number Sense, Properties, and Operations	1. In the real number system, rational and irrational numbers are in one to one correspondence to points on the number line
2. Patterns, Functions, and Algebraic Structures	1. Linear functions model situations with a constant rate of change and can be represented numerically, algebraically, and graphically 2. Properties of algebra and equality are used to solve linear equations and systems of equations 3. Graphs, tables and equations can be used to distinguish between linear and nonlinear functions
3. Data Analysis, Statistics, and Probability	1. Visual displays and summary statistics of two-variable data condense the information in data sets into usable knowledge
4. Shape, Dimension, and Geometric Relationships	1. Transformations of objects can be used to define the concepts of congruence and similarity 2. Direct and indirect measurement can be used to describe and make comparisons

From the Common State Standards for Mathematics, Page 52.

Mathematics | Grade 8

In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

(1) Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ($y/x = m$ or $y = mx$) as special linear equations ($y = mx + b$), understanding that the constant of proportionality (m) is the slope, and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x -coordinate changes by an amount A , the output or y -coordinate changes by the amount $m \cdot A$. Students also use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and y -intercept) in terms of the situation. Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another. They can translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Seventh Grade	
1. Number Sense, Properties, and Operations	1. Proportional reasoning involves comparisons and multiplicative relationships among ratios 2. Formulate, represent, and use algorithms with rational numbers flexibly, accurately, and efficiently
2. Patterns, Functions, and Algebraic Structures	1. Properties of arithmetic can be used to generate equivalent expressions 2. Equations and expressions model quantitative relationships and phenomena
3. Data Analysis, Statistics, and Probability	1. Statistics can be used to gain information about populations by examining samples 2. Mathematical models are used to determine probability
4. Shape, Dimension, and Geometric Relationships	1. Modeling geometric figures and relationships leads to informal spatial reasoning and proof 2. Linear measure, angle measure, area, and volume are fundamentally different and require different units of measure

From the Common State Standards for Mathematics, Page 46.

Mathematics | Grade 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

(1) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(2) Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

(3) Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

(4) Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Sixth Grade	
1. Number Sense, Properties, and Operations	1. Quantities can be expressed and compared using ratios and rates 2. Formulate, represent, and use algorithms with positive rational numbers with flexibility, accuracy, and efficiency 3. In the real number system, rational numbers have a unique location on the number line and in space
2. Patterns, Functions, and Algebraic Structures	1. Algebraic expressions can be used to generalize properties of arithmetic 2. Variables are used to represent unknown quantities within equations and inequalities
3. Data Analysis, Statistics, and Probability	1. Visual displays and summary statistics of one-variable data condense the information in data sets into usable knowledge
4. Shape, Dimension, and Geometric Relationships	1. Objects in space and their parts and attributes can be measured and analyzed

From the Common State Standards for Mathematics, Pages 39-40

Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

(3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and

they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

(4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected. Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Fifth Grade	
1. Number Sense, Properties, and Operations	<ol style="list-style-type: none"> 1. The decimal number system describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms 2. Formulate, represent, and use algorithms with multi-digit whole numbers and decimals with flexibility, accuracy, and efficiency 3. Formulate, represent, and use algorithms to add and subtract fractions with flexibility, accuracy, and efficiency 4. The concepts of multiplication and division can be applied to multiply and divide fractions
2. Patterns, Functions, and Algebraic Structures	<ol style="list-style-type: none"> 1. Number patterns are based on operations and relationships
3. Data Analysis, Statistics, and Probability	<ol style="list-style-type: none"> 1. Visual displays are used to interpret data
4. Shape, Dimension, and Geometric Relationships	<ol style="list-style-type: none"> 1. Properties of multiplication and addition provide the foundation for volume an attribute of solids 2. Geometric figures can be described by their attributes and specific locations in the plane

From the Common State Standards for Mathematics, Page 33.

Mathematics | Grade 5

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Fourth Grade	
1. Number Sense, Properties, and Operations	4. The decimal number system to the hundredths place describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms 5. Different models and representations can be used to compare fractional parts 6. Formulate, represent, and use algorithms to compute with flexibility, accuracy, and efficiency
2. Patterns, Functions, and Algebraic Structures	1. Number patterns and relationships can be represented by symbols
3. Data Analysis, Statistics, and Probability	1. Visual displays are used to represent data
4. Shape, Dimension, and Geometric Relationships	3. Appropriate measurement tools, units, and systems are used to measure different attributes of objects and time 4. Geometric figures in the plane and in space are described and analyzed by their attributes

From the Common State Standards for Mathematics, Page 27.

Mathematics | Grade 4

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., $15/9 = 5/3$), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Third Grade	
1. Number Sense, Properties, and Operations	1. The whole number system describes place value relationships and forms the foundation for efficient algorithms 2. Parts of a whole can be modeled and represented in different ways 3. Multiplication and division are inverse operations and can be modeled in a variety of ways
2. Patterns, Functions, and Algebraic Structures	1. Expectations for this standard are integrated into the other standards at this grade level.
3. Data Analysis, Statistics, and Probability	1. Visual displays are used to describe data
4. Shape, Dimension, and Geometric Relationships	1. Geometric figures are described by their attributes 2. Linear and area measurement are fundamentally different and require different units of measure 3. Time and attributes of objects can be measured with appropriate tools

From the Common State Standards for Mathematics, Page 21.

Mathematics | Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, $\frac{1}{2}$ of the paint in a small bucket could be less paint than $\frac{1}{3}$ of the paint in a larger bucket, but $\frac{1}{3}$ of a ribbon is longer than $\frac{1}{5}$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Second Grade	
1. Number Sense, Properties, and Operations	<ol style="list-style-type: none"> The whole number system describes place value relationships through 1,000 and forms the foundation for efficient algorithms Formulate, represent, and use strategies to add and subtract within 100 with flexibility, accuracy, and efficiency
2. Patterns, Functions, and Algebraic Structures	<ol style="list-style-type: none"> Expectations for this standard are integrated into the other standards at this grade level.
3. Data Analysis, Statistics, and Probability	<ol style="list-style-type: none"> Visual displays of data can be constructed in a variety of formats to solve problems
4. Shape, Dimension, and Geometric Relationships	<ol style="list-style-type: none"> Shapes can be described by their attributes and used to represent part/whole relationships Some attributes of objects are measurable and can be quantified using different tools

From the Common State Standards for Mathematics, Page 17.

Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
First Grade	
1. Number Sense, Properties, and Operations	<ol style="list-style-type: none"> The whole number system describes place value relationships within and beyond 100 and forms the foundation for efficient algorithms Number relationships can be used to solve addition and subtraction problems
2. Patterns, Functions, and Algebraic Structures	<ol style="list-style-type: none"> Expectations for this standard are integrated into the other standards at this grade level.
3. Data Analysis, Statistics, and Probability	<ol style="list-style-type: none"> Visual displays of information can be used to answer questions
4. Shape, Dimension, and Geometric Relationships	<ol style="list-style-type: none"> Shapes can be described by defining attributes and created by composing and decomposing Measurement is used to compare and order objects and events

From the Common State Standards for Mathematics, Page 13.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.¹

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry

¹Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Kindergarten	
1. Number Sense, Properties, and Operations	1. Whole numbers can be used to name, count, represent, and order quantity 2. Composing and decomposing quantity forms the foundation for addition and subtraction
2. Patterns, Functions, and Algebraic Structures	1. Expectations for this standard are integrated into the other standards at this grade level.
3. Data Analysis, Statistics, and Probability	1. Expectations for this standard are integrated into the other standards at this grade level.
4. Shape, Dimension, and Geometric Relationships	1. Shapes are described by their characteristics and position and created by composing and decomposing 2. Measurement is used to compare and order objects

From the Common State Standards for Mathematics, Page 9.

Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

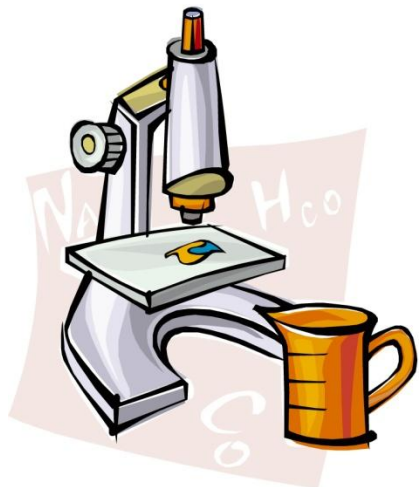
(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Mathematics

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Preschool	
1. Number Sense, Properties, and Operations	1. Quantities can be represented and counted
2. Patterns, Functions, and Algebraic Structures	1. Expectations for this standard are integrated into the other standards at this grade level.
3. Data Analysis, Statistics, and Probability	1. Expectations for this standard are integrated into the other standards at this grade level.
4. Shape, Dimension, and Geometric Relationships	1. Shapes can be observed in the world and described in relation to one another 2. Measurement is used to compare objects

4th Grade Science Curriculum Essentials Document



**Boulder Valley School District
Department of Curriculum and Instruction
May 2012**

Introduction

Science Curriculum Essentials in BVSD

In 2009, the Colorado Department of Education published the most recent version of the Colorado Academic Standards.

This revision of the Boulder Valley School District Science Curriculum had three main goals:

- align with the revised Colorado Academic Standards
- maintain unique elements of our BVSD curriculum that reach beyond the standards
- maintain a viable list of concepts and skills that students should master in each grade level or course

Inquiry

A new organizational feature of the Colorado Academic Standards is the integration of science inquiry skills with specific scientific concepts. Instead of having a separate standard for inquiry, the skills associated with the process of scientific inquiry are embedded in the Evidence Outcomes for each Grade Level Expectation. In addition, the nature and history of science has been integrated into the Grade Level Expectations under "Nature of the Discipline". This approach is echoed by the *Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* which states that the skills or practices of inquiry and the core ideas "must be woven together in standards, curricula, instruction, and assessments."

Scientific inquiry remains a central focus of the revised BVSD Science Curriculum Essentials Documents. The following definition from the *National Science Education Standards* serves as the basis for our common understanding of how scientific inquiry is defined.

Scientific inquiry refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. Inquiry also refers to the activities of students in which they develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world.

The following points serve to clarify the vision of what inquiry means in BVSD.

Inquiry involves five essential features, which are heavily integrated into the wording of Evidence Outcomes in the Colorado Academic Standards. Students engaged in scientific inquiry should:

- ask or respond to scientifically oriented questions
 - give priority to evidence
 - formulate explanations based on evidence
 - connect explanations to scientific knowledge
 - communicate and justify explanations
- (*Inquiry and the National Science Education Standards*)

Inquiry based science instruction involves a continuum of learning experiences from teacher-led to learner self-directed activities, including but not limited to hand-on labs. Hence, both a structured assignment involving reading and written reflection and an open-ended, hands-on investigation could be considered inquiry as long as they involve the five essential features identified above.

The ultimate goals of inquiry-based instruction are to engage learners, develop their conceptual understanding of the natural world around them, and to overcome misconceptions in science.

Inquiry-based activities should balance students' application of content knowledge, creativity and critical thinking in order to analyze data, solve a problem or address a unique question.

4th Grade Overview

Course Description		Topics at a Glance	
<p>In fourth grade science, students will be practicing scientific skills such as writing questions, making predictions, organizing data and developing logical conclusions. Students will write about investigations in science notebooks and represent data using graphs and tables. Science content in fourth grade will include electricity, magnetism, adaptation and variation in organisms, fossils, ecosystems, the Solar System, and the nature of science.</p>		<ul style="list-style-type: none"> • Energy • Fossils • Variation • Ecosystems • Magnetism • Adaption • Solar System • Electricity 	
Assessments		Notes on Instructional Materials	
<ul style="list-style-type: none"> • Teacher created assessments • Foss Kit Assessments • Science Notebooks 		<ul style="list-style-type: none"> • New <i>Seeds of Science and Roots of Reading Variation and Adaptation</i> kit addresses Life Science standard on variation and adaptation. • Fossils is a brand new concept to fourth grade (2013-2014) (<i>The Fossil Kit- CU Museum and Investigation 2 of Seeds and Roots Variation and Adaptation</i> address these standards) 	
Grade Level Expectations			
Standard	Big Ideas for Fourth Grade		
1. Physical Science	1. Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical		
2. Life Science	1. All living things share similar characteristics, but they also have differences that can be described and classified 2. Comparing fossils to each other or to living organisms reveals features of prehistoric environments and provides information about organisms today 3. There is interaction and interdependence between and among living and nonliving components of systems		
3. Earth Systems Science	1. Earth is part of the Solar System, which includes the Sun, Moon, and other bodies that orbit the Sun in predictable patterns that lead to observable paths of objects in the sky as seen from Earth		

1. Physical Science

Students know and understand common properties, forms and changes in matter and energy.

Prepared Graduates

The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Physical Science standard:

- Observe, explain, and predict natural phenomena governed by Newton's laws of motion, acknowledging the limitations of their application to very small or very fast objects
- Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
- Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable
- *Engage in scientific inquiry by asking or responding to scientifically oriented questions, collecting and analyzing data, giving priority to evidence, formulating explanations based on evidence, connecting explanations to scientific knowledge, and communicating and justifying explanations.*

Content Area: Science - Fourth Grade	
Standard: 1. Physical Science	
Prepared Graduates: Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable	
GRADE LEVEL EXPECTATION Concepts and skills students master: 1. Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> Identify and describe the variety of energy sources Show that electricity in circuits requires a complete loop through which current can pass <i>Describe the effect of magnetic force on different objects</i> <i>Recognize that magnets are attracted to objects containing iron</i> Describe the energy transformation that takes place in electrical circuits where light, heat, sound, and magnetic effects are produced Use multiple resources – including print, electronic, and human – to locate information about different sources of renewable and nonrenewable energy 	Inquiry Questions: <ol style="list-style-type: none"> How do we know that energy exists within a system such as in an electrical circuit? How can heat be transferred from one object to another? <i>How does using energy impact the environment?</i> <i>How does the effect on the environment change when using more/ or using less energy?</i>
	Relevance and Application: <ol style="list-style-type: none"> There are multiple energy sources, both renewable and nonrenewable. Energy can be used or stored. For example, it can be stored in a battery and then used when running a portable media player such as an iPod. Transportation, manufacturing, and technology are driven by energy.
	Nature of Discipline: <ol style="list-style-type: none"> Ask testable questions about energy, make a falsifiable hypothesis, design an inquiry based method of finding the answer, collect data, and form a conclusion. Understand that models are developed to explain and predict phenomena that cannot be directly observed. Critically evaluate models of energy, identifying the strengths and weaknesses of the model in representing what happens in the real world. Create plans to decrease electrical energy use for one week and evaluate the results. <i>(for example, a tally chart of lights on and off, energy bill, etc.)</i>

2. Life Science

Students know and understand the characteristics and structure of living things, the processes of life and how living things interact with each other and their environment.

Prepared Graduates

The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Life Science standard:

- Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
- Explain and illustrate with examples how living systems interact with the biotic and abiotic environment
- Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
- Explain how biological evolution accounts for the unity and diversity of living organisms

Content Area: Science - Fourth Grade	
Standard: 2. Life Science	
Prepared Graduates: Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment	
GRADE LEVEL EXPECTATION	
Concepts and skills students master: 1. All living things share similar characteristics, but they also have differences that can be described and classified	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> Use evidence to develop a scientific explanation of what plants and animals need to survive Use evidence to develop a scientific explanation for similarities and/or differences among different organisms (species) Analyze and interpret data representing variation in a trait <i>Classify organisms based on their traits and justify the classification.</i> Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate questions about characteristics of living things 	Inquiry Questions: <ol style="list-style-type: none"> How have classification systems changed over time? <i>(i.e. as we get more information about an organism its classification could change.)</i> How are individuals in a related species similar and different?
	Relevance and Application: <ol style="list-style-type: none"> Human beings use technology, such as heating and air conditioning, in order to live comfortably in a variety of climates. <i>Outdoor habitats (for example: Sombrero Marsh or the school yard) provide rich opportunities to study variation and adaptation in the local ecosystem.</i>
	Nature of Discipline: <ol style="list-style-type: none"> Understand that all scientific knowledge is subject to new findings and that the presence of reproducible results yields a scientific theory. Evaluate and provide feedback on evidence used by others to justify how they classified organisms.

Content Area: Science - Fourth Grade	
Standard: 2. Life Science	
Prepared Graduates: Explain how biological evolution accounts for the unity and diversity of living organisms	
GRADE LEVEL EXPECTATION	
Concepts and skills students master: 2. Comparing fossils to each other or to living organisms reveals features of prehistoric environments and provides information about organisms today	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Use evidence to develop a scientific explanation for: <ol style="list-style-type: none"> 1. What fossils tell us about a prehistoric environment 2. What conclusions can be drawn from similarities between fossil evidence and living organisms b. Analyze and interpret data to generate evidence about the prehistoric environment c. Evaluate whether reasoning and conclusions about given fossils are supported by evidence d. Use computer simulations that model and recreate past environments for study and entertainment 	Inquiry Questions: <ol style="list-style-type: none"> 1. What are some things fossils <i>can tell us about the past</i>? 2. What conditions would most likely lead to something becoming a fossil?
	Relevance and Application: <ol style="list-style-type: none"> 1. Computers are used to model and recreate past environments for study and entertainment.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Ask testable questions about past environments. 2. Make predictions about past environments based on fossil evidence. 3. Recognize that different interpretations of evidence are possible.

Content Area: Science - Fourth Grade	
Standard: 2. Life Science	
Prepared Graduates: Explain and illustrate with examples how living systems interact with the biotic and abiotic environment	
GRADE LEVEL EXPECTATION Concepts and skills students master: 3. There is interaction and interdependence between and among living and nonliving components of ecosystems	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> Use evidence to develop a scientific explanation on how organisms adapt to their habitat Identify the components that make a habitat type unique Compare and contrast different habitat types Create and evaluate models of the flow of nonliving components or resources through an ecosystem (<i>for example, food web</i>) Make a plan to positively impact a local ecosystem Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate endangered habitats 	Inquiry Questions: <ol style="list-style-type: none"> How are resources shared among organisms in a specific ecosystem or habitat? How do nonliving components (<i>soil, sun, weather, water, etc.</i>) of an ecosystem <i>or habitat</i> influence living components? What would happen if the Sun's energy no longer reached Earth? What would happen if water were removed from an ecosystem?
	Relevance and Application: <ol style="list-style-type: none"> Humans can have positive and negative impacts on an ecosystem. Nonliving components are cycled and recycled through ecosystems and need to be protected and conserved. <i>Outdoor habitats (for example: Sombrero Marsh or the school yard) provide rich opportunities to study the interaction and interdependence among organisms.</i>
	Nature of Discipline: <ol style="list-style-type: none"> Understand that models are developed to explain and predict natural phenomena that cannot be directly observed because they happen over long periods of time. Evaluate models that show interactions between living and nonliving components of ecosystems, identifying the strengths and weaknesses of the model in representing what happens in the real world.

3. Earth Systems Science

Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.

Prepared Graduates:

The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Earth Systems Science standard:

- Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet
- Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system
- Describe how humans are dependent on the diversity of resources provided by Earth and Sun

Content Area: Science - Fourth Grade	
Standard: 3. Earth Systems Science	
Prepared Graduates: Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet	
GRADE LEVEL EXPECTATION	
Concepts and skills students master: 1. Earth is part of the Solar System, which includes the Sun, Moon, and other bodies that orbit the Sun in predictable patterns that lead to observable paths of objects in the sky as seen from Earth	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> Gather, analyze, and interpret data about components of the Solar System Utilize direct and indirect evidence to investigate the components of the Solar System Gather, analyze, and interpret data about the sunrise and sunset, and Moon movements and phases <i>Explain the tilt of the Earth on its axis causes the seasons</i> <i>Identify that gravity is the force that holds the parts of the Solar System together</i> Develop a scientific explanation regarding relationships of the components of the Solar System 	Inquiry Questions: <ol style="list-style-type: none"> What are the patterns of movement for the Sun and Moon across the sky as <i>observed from Earth</i>? How does Earth compare to other objects orbiting the Sun? How do we study the Solar System? (<i>i.e. models, photographs, space observation from Earth, etc.</i>)
	Relevance and Application: <ol style="list-style-type: none"> Space exploration has produced data to answer questions about the Solar System. Comets are observable objects seen from Earth which provide scientists data about the Solar System. Orbits in a predictable pattern in space influence season's on Earth.
	Nature of Discipline: <ol style="list-style-type: none"> Understand that models are developed to explain and predict natural phenomena that cannot be directly observed because they happen over long periods of time. Critically evaluate models of the Solar System, identifying the strengths and weaknesses of the model in representing what happens in the real Solar System.

Prepared Graduate Competencies in Science

The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates:

- Observe, explain, and predict natural phenomena governed by Newton's laws of motion, acknowledging the limitations of their application to very small or very fast objects
- Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
- Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable
- Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
- Explain and illustrate with examples how living systems interact with the biotic and abiotic environment
- Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
- Explain how biological evolution accounts for the unity and diversity of living organisms
- Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet
- Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system
- Describe how humans are dependent on the diversity of resources provided by Earth and Sun
- *Engage in scientific inquiry by asking or responding to scientifically oriented questions, collecting and analyzing data, giving priority to evidence, formulating explanations based on evidence, connecting explanations to scientific knowledge, and communicating and justifying explanations.*

Standard**Grade Level Expectation**

High School	
1. Physical Science	<ol style="list-style-type: none">1. Newton's laws of motion and gravitation describe the relationships among forces acting on and between objects, their masses, and changes in their motion – but have limitations2. Matter has definite structure that determines characteristic physical and chemical properties3. Matter can change form through chemical or nuclear reactions abiding by the laws of conservation of mass and energy4. Atoms bond in different ways to form molecules and compounds that have definite properties5. Energy exists in many forms such as mechanical, chemical, electrical, radiant, thermal, and nuclear, that can be quantified and experimentally determined6. When energy changes form, it is neither created nor destroyed; however, because some is necessarily lost as heat, the amount of energy available to do work decreases
2. Life Science	<ol style="list-style-type: none">1. Matter tends to be cycled within an ecosystem, while energy is transformed and eventually exits an ecosystem2. The size and persistence of populations depend on their interactions with each other and on the abiotic factors in an ecosystem3. Cellular metabolic activities are carried out by biomolecules produced by organisms4. The energy for life primarily derives from the interrelated processes of photosynthesis and cellular respiration. Photosynthesis transforms the sun's light energy into the chemical energy of molecular bonds. Cellular respiration allows cells to utilize chemical energy when these bonds are broken.5. Cells use the passive and active transport of substances across membranes to maintain relatively stable intracellular environments6. Cells, tissues, organs, and organ systems maintain relatively stable internal environments, even in the face of changing external environments7. Physical and behavioral characteristics of an organism are influenced to varying degrees by heritable genes, many of which encode instructions for the production of proteins8. Multicellularity makes possible a division of labor at the cellular level through the expression of select genes, but not the entire genome9. Evolution occurs as the heritable characteristics of populations change across generations and can lead populations to become better adapted to their environment

Standard	Grade Level Expectation
----------	-------------------------

High School (continued)	
--------------------------------	--

3. Earth Systems Science	<ol style="list-style-type: none"> 1. The history of the universe, solar system and Earth can be inferred from evidence left from past events 2. As part of the solar system, Earth interacts with various extraterrestrial forces and energies such as gravity, solar phenomena, electromagnetic radiation, and impact events that influence the planet's geosphere, atmosphere, and biosphere in a variety of ways 3. The theory of plate tectonics helps to explain geological, physical, and geographical features of Earth 4. Climate is the result of energy transfer among interactions of the atmosphere, hydrosphere, geosphere, and biosphere 5. There are costs, benefits, and consequences of exploration, development, and consumption of renewable and nonrenewable resources 6. The interaction of Earth's surface with water, air, gravity, and biological activity causes physical and chemical changes 7. Natural hazards have local, national and global impacts such as volcanoes, earthquakes, tsunamis, hurricanes, and thunderstorms
--------------------------	--

Eighth Grade	
---------------------	--

3. Earth Systems Science	<ol style="list-style-type: none"> 1. Weather is a result of complex interactions of Earth's atmosphere, land and water, that are driven by energy from the sun, and can be predicted and described through complex models 2. Earth has a variety of climates defined by average temperature, precipitation, humidity, air pressure, and wind that have changed over time in a particular location 3. The solar system is comprised of various objects that orbit the Sun and are classified based on their characteristics 4. The relative positions and motions of Earth, Moon, and Sun can be used to explain observable effects such as seasons, eclipses, and Moon phases 5. Major geologic events such as earthquakes, volcanic eruptions, mid-ocean ridges, and mountain formation are associated with plate boundaries and attributed to plate motions 6. Geologic time, history, and changing life forms are indicated by fossils and successive sedimentation, folding, faulting, and uplifting of layers of sedimentary rock 7. Complex interrelationships exist between Earth's structure and natural processes that over time are both constructive and destructive 8. Water on Earth is distributed and circulated through oceans, glaciers, rivers, ground water, and the atmosphere 9. Earth's natural resources provide the foundation for human society's physical needs. Many natural resources are nonrenewable on human timescales, while others can be renewed or recycled
--------------------------	---

Standard	Grade Level Expectation
----------	-------------------------

Seventh Grade	
----------------------	--

- | | |
|-----------------|--|
| 2. Life Science | <ol style="list-style-type: none"> 1. Individual organisms with certain traits are more likely than others to survive and have offspring in a specific environment 2. The human body is composed of atoms, molecules, cells, tissues, organs, and organ systems that have specific functions and interactions 3. Cells are the smallest unit of life that can function independently and perform all the necessary functions of life 4. Photosynthesis and cellular respiration are important processes by which energy is acquired and utilized by organisms 5. Multiple lines of evidence show the evolution of organisms over geologic time 6. Human activities can deliberately or inadvertently alter ecosystems and their resiliency 7. Organisms reproduce and transmit genetic information (genes) to offspring, which influences individuals' traits in the next generation 8. Changes in environmental conditions can affect the survival of individual organisms, populations, and entire species 9. Organisms interact with each other and their environment in various ways that create a flow of energy and cycling of matter in an ecosystem |
|-----------------|--|

Sixth Grade	
--------------------	--

- | | |
|---------------------|--|
| 1. Physical Science | <ol style="list-style-type: none"> 1. Identify and calculate the direction and magnitude of forces that act on an object, and explain the results in the object's change of motion 2. There are different forms of energy, and those forms of energy can be changed from one form to another – but total energy is conserved 3. Distinguish between physical and chemical changes, noting that mass is conserved during any change 4. Recognize that waves such as electromagnetic, sound, seismic, and water have common characteristics and unique properties 5. Mixtures of substances can be separated based on their properties such as solubility, boiling points, magnetic properties, and densities 6. All matter is made of atoms, which are far too small to see directly through a light microscope. Elements have unique atoms and thus, unique properties. Atoms themselves are made of even smaller particles 7. Atoms may stick together in well-defined molecules or be packed together in large arrangements. Different arrangements of atoms into groups compose all substances. 8. The physical characteristics and changes of solid, liquid, and gas states can be explained using the particulate model 9. Distinguish among, explain, and apply the relationships among mass, weight, volume, and density |
|---------------------|--|

Standard	Grade Level Expectation
----------	-------------------------

Fifth Grade	
1. Physical Science	1. Mixtures of matter can be separated regardless of how they were created; all weight and mass of the mixture are the same as the sum of weight and mass of its parts
2. Life Science	1. All organisms have structures and systems with separate functions 2. Human body systems have basic structures, functions, and needs
3. Earth Systems Science	1. Earth and sun provide a diversity of renewable and nonrenewable resources 2. Earth's surface changes constantly through a variety of processes and forces 3. Weather conditions change because of the uneven heating of Earth's surface by the Sun's energy. Weather changes are measured by differences in temperature, air pressure, wind and water in the atmosphere and type of precipitation
Fourth Grade	
1. Physical Science	1. Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical
2. Life Science	1. All living things share similar characteristics, but they also have differences that can be described and classified 2. Comparing fossils to each other or to living organisms reveals features of prehistoric environments and provides information about organisms today 3. There is interaction and interdependence between and among living and nonliving components of systems
3. Earth Systems Science	1. Earth is part of the solar system, which includes the Sun, Moon, and other bodies that orbit the Sun in predictable patterns that lead to observable paths of objects in the sky as seen from Earth
Third Grade	
1. Physical Science	1. Matter exists in different states such as solids, liquids, and gases and can change from one state to another by heating and cooling
2. Life Science	1. The duration and timing of life cycle events such as reproduction and longevity vary across organisms and species
3. Earth Systems Science	1. Earth's materials can be broken down and/or combined into different materials such as rocks, minerals, rock cycle, formation of soil, and sand – some of which are usable resources for human activity
Second Grade	
1. Physical Science	1. Changes in speed or direction of motion are caused by forces such as pushes and pulls.
2. Life Science	1. Organisms depend on their habitat's nonliving parts to satisfy their needs 2. Each plant or animal has different structures or behaviors that serve different functions
3. Earth Systems Science	1. Weather and the changing seasons impact the environment and organisms such as humans, plants, and other animals

Standard	Grade Level Expectation
----------	-------------------------

First Grade	
1. Physical Science	1. Solids and liquids have unique properties that distinguish them
2. Life Science	1. Offspring have characteristics that are similar to but not exactly like their parents' characteristics 2. An organism is a living thing that has physical characteristics to help it survive
3. Earth Systems Science	1. Earth's materials can be compared and classified based on their properties
Kindergarten	
1. Physical Science	1. Objects can move in a variety of ways that can be described by speed and direction 2. Objects can be sorted by physical properties, which can be observed and measured
2. Life Science	1. Organisms can be described and sorted by their physical characteristics
3. Earth Systems Science	1. The sun provides heat and light to Earth
Preschool	
1. Physical Science	1. Objects have properties and characteristics 2. There are cause-and-effect relationships in everyday experiences
2. Life Science	1. Living things have characteristics and basic needs 2. Living things develop in predictable patterns
3. Earth Systems Science	1. Earth's materials have properties and characteristics that affect how we use those materials 2. Events such as night, day, the movement of objects in the sky, weather, and seasons have patterns

Glossary of Terms

Academic Vocabulary
This is the list of words students should know and understand the meaning of.
Standard 1: attract, battery, circuit, closed circuit, component, conductor, d-cell, direction, electricity, energy, filament, force, heat, insulator, light, magnet, magnetism, mass, matter, property, receiver, repel, sound, source, substance, switch, transfer, work
Standard 2: characteristic, classify, ecosystem, fossil, habitat, living, non-living, nutrient, organism, trait
Standard 3: axis, day, earth, gravity, moon, moon phases, night, orbit, planet, revolution, rotation, solar system, star, sun, year
General science vocabulary: conclusion, data, evidence, explanation, observation, prediction, record

Glossary	
The purpose of this list is to provide words and definitions for teachers to use to help make these concepts clear for students.	
Word	Definition
Attract	to cause to draw near or adhere by physical force
Axis	an imaginary line through a body, about which it rotates
Battery	a single cell, such as a D-cell, that produces an electric current
Characteristic	a feature that helps to identify, tell apart, or describe recognizably; a distinguishing trait
Circuit	a path followed or capable of being followed by an electric current
Classify	group organisms into categories on the basis of evolutionary or structural relationships between them
Closed circuit	a closed path followed or capable of being followed by an electric current
Component	a single part of a larger system
Conclusion	a judgment or decision reached by reasoning
Conductor	a substance or medium that conducts an electric charge
Data	factual information (as measurements or statistics) used as a basis for reasoning, discussion, or calculation
Day	the period of light between dawn and nightfall; the interval from sunrise to sunset; the 24-hour period during which the earth completes one rotation on its axis
D-cell	a source of electricity; also known as a battery
Direction	the line or course along which a thing moves
Earth	the third planet from the sun
Ecosystem	a biological community of interacting organisms and their physical environment
Electricity	a form of energy resulting from the existence of charged particles (such as electrons or protons), either statically as an accumulation of charge or dynamically as a current
Energy	the capacity of a physical system to do work
Evidence	information acquired through objective experience
Explanation	a statement based on scientific evidence and logical argument about causes and effects or relationships between variables
Filament	the material in a light bulb (usually a thin wire) that glows when heated by an electric current
Force	an influence tending to change the motion of a body or produce motion or stress in a stationary body; a push or a pull
Fossil	a remnant or trace of an organism of a past geologic age, such as a skeleton or leaf imprint, embedded and preserved in the Earth's crust
Gravity	the force that attracts a body towards the center of the earth, or towards any other physical body having mass

Habitat	the area or environment where an organism or ecological community normally lives or occurs
Heat	a form of energy associated with the motion of atoms or molecules and capable of being transmitted through solid and fluid media by conduction, through fluid media by convection, and through empty space by radiation
Insulator	a material that prevents the flow of electricity
Light	electromagnetic radiation that can produce a visual sensation
Living	alive, having life, not dead
Magnet	an object that sticks to iron
Magnetism	the property displayed by magnets and produced by the motion of electric charges, which results in attraction or repulsion between objects
Mass	the quantity of matter which a body contains, as measured by its acceleration under a given force or by the force exerted on it by a gravitational field
Matter	physical substance or material in general, that which occupies space and possesses mass
Moon	the natural satellite of the earth
Moon Phases	one of the cyclically recurring apparent forms of the moon
Night	the period between sunset and sunrise, especially the hours of darkness
Non-Living	not alive; referring to something that has never been alive
Nutrient	any substance that can be metabolized by an organism to give energy and build tissue
Observation	the act of making and recording a measurement
Orbit	the path of a celestial body or an artificial satellite as it revolves around another body
Organism	a living thing that has (or can develop) the ability to act or function independently
Planet	a living thing that makes its own food and usually has leaves, stems and roots
Prediction	a statement about what one thinks will happen in an investigation
Property	something that can be known by looking at or feeling an object; something one can observe
Record	to set down for preservation in writing or other permanent form
Repel	push away, as similar poles of two magnets push away from one another
Revolution	the action by a celestial body of going round in an orbit or elliptical course
Rotation	the act or process of turning around a center or an axis
Solar System	a system of planets or other bodies orbiting another star
Sound	vibrations transmitted through an elastic solid or a liquid or gas, capable of being detected by human organs of hearing
Source	the point or device from which electricity flows
Star	a celestial body of hot gases that radiates energy derived from thermonuclear reactions in the interior
Substance	a particular kind of matter with uniform properties
Sun	the star round which the earth orbits
Switch	device used to open and close circuits
Trait	a characteristic or condition such as eye color
Transfer	to convey or cause to pass from one place or thing to another
Work	the transfer of energy from one physical system to another, especially the transfer of energy to a body by the application of a force that moves the body in the direction of the force
Year	the time taken by the earth to make one revolution around the sun

4th Grade Social Studies Curriculum Essentials Document



**Boulder Valley School District
Department of Curriculum and Instruction
August 2011**

Introduction

The Social Studies curriculum council began meeting in the Fall of 2007. This curriculum is a result of their focused attention and ability to examine and incorporate research about best practices in education. The work that follows incorporates the ideas of many researchers-including Robert Marzano, Joseph Kahne, Virginia Gay, Christine Sleeter, and Randall Lindsey. Each of whom addressed one or more of our goals:

- Viability
- Culturally Proficiency
- Currency
- Incorporates New Century Graduate
- Characteristics
- Addresses the Democracy Divide

Viability

In order to create a curriculum that can be taught using the teaching learning cycle, each content area was trimmed, in order to emphasize depth in our instruction. Creating a viable curriculum will help us in our efforts to close the achievement gap.

Cultural Proficiency

Just as the goals of BVSD embrace increasing the cultural proficiency of the district, this curriculum is designed to do so for the learner. Lindsey identifies 5 strategies for moving toward cultural proficiency: Know your differences, value difference, manage conflict, adapt to diversity and teach about culture. These skills are built into every grade level curricula. By introducing cultures not previously emphasized in our curriculum, allowing for cultural relevancy by bringing the students' culture into the classroom, and by incorporating a variety of perspectives on essential issues, this curriculum will be a step in moving our system forward in embracing difference, and narrowing our achievement gap.

Currency

What does a current curriculum look like? Our current students will face a world very unlike our own. We addressed five issues to bring currency into the curriculum:

1. Change- In the fast paced world our students encounter there is one theme that they will need the skills to address in their lives: Change. The theme of change: observing change, predicting change, adapting to change and creating change are imbedded ideas at every level.
2. Regional Focus- Additionally, the content focus has shifted to increase attention on Asia.
3. Current Events- Each grade level will be responsible for bringing in grade appropriate discussion of current events.
4. Technology- An up-to-date social studies curriculum will embrace the technological tools that not only enhance the social studies but make new learning possible. The US department of Labor states that careers involving the use of Geospatial technologies are one of the top 14 careers of the future. These careers will be as diverse as remote sensing, data collection, environment and urban planning, and digital cartography. The opening of Geospatial technologies to students as young as kindergarten will open new avenues to understanding and analyzing our world.
5. Economics- As a final update, we have increased the amount and frequency of economic content at every level. As our students enter a world of complex economics, we responded to the needs shown in our society.

4th Grade Overview

Course Description		Topics at a Glance
<p>In fourth grade, students continue their study of social studies using the State of Colorado as a point of comparison to investigate change. The context for investigation is reflected in the inquiry cycle: discover difference, manage difference, examine the impact of science and technology, explore spatially, economically and through civic engagement. Students will examine the people and cultures of Colorado and its geography. Students will chronologically organize events examining cause and effect. Students analyze the structure of Colorado government and the roles of responsible citizens.</p>		<ul style="list-style-type: none"> • Colorado historical events in relationship to key events in the United States • Timeline of Colorado history (cause and effect) • Relationship between choice and opportunity costs • Geographic connections • Geographic Tools • Cultural development and diversity in state settlement • Economic history of Colorado • Function and structure of Colorado government • Responsible citizenship
Assessments		4 th Grade Notes
<ul style="list-style-type: none"> • Teacher Made • Formative and Summative Assessments 		<ol style="list-style-type: none"> 1. Social Studies provide an opportunity to celebrate and explore the diversity of language, culture, ability, family structures, class, ethnicity, and gender. Every opportunity should be made to infuse the uniqueness of individuals, families, communities and regions. Critical thinking skills are inherent when exploring, describing, and comparing and contrasting people then and now. 2. Field trips to consider: Local history museums (Boulder, Louisville, etc.)The Littleton History Museum, Argo Gold Mine (Idaho Springs) Henderson Mine (Nederland) 3. Trapper, Mountain Man, Pioneer Lady, Denver Museum of Nature and Science (historical artifact boxes)
Grade Level Expectations		
Standard	Big Ideas for Fourth Grade (Grade Level Expectations)	
1. History	<ol style="list-style-type: none"> 1. Organize a sequence of events to understand the concepts of chronology and cause and effect in the history of Colorado 2. The historical eras, individuals, groups, ideas, and themes in Colorado history and their relationships to key events in the United States 	
2. Geography	<ol style="list-style-type: none"> 1. Use several types of geographic tools to answer questions about the geography of Colorado 2. Connections within and across human and physical systems are developed 	
3. Economics	<ol style="list-style-type: none"> 1. People responded to positive and negative incentives 2. The relationship between choice and opportunity cost (PFL) 	
4. Civics	<ol style="list-style-type: none"> 1. Analyze and debate multiple perspectives on an issue 2. The origins, structure, and functions of the Colorado government 	

1. History

The study of history prepares students to develop critical thinking skills in an effort to explain the human experience through events of the past. Discerning clarity from the jumble of conflicting facts and sources, students get a clearer picture of how individuals, communities, and the world connect, both past and present. History develops moral understanding, defines identity and creates an appreciation of how things change, while building judgment and decision-making skills. History enhances the ability to read varied sources and develop the skills necessary to analyze, interpret, and communicate.

History inspires by exposing students to the wonders and beauty of the past. The historical perspective prepares for an ever-changing future by helping to understand changes in the past. It allows students to gain perspective and develop better judgment by discovering and uncovering the complexity of human beings. This allows students to better understand themselves as individuals and their place in a complex and often confusing society. History provides examples of ethical behavior and the context for change, and illustrates the importance of responsible members of society in both our country and our world.

History is a critical component in the future success of a student in the 21st century world. Inquiry is the central component of historical thinking. Students learn the skills of reading, interpreting and analyzing historical sources and develop the ability to craft a well-constructed and communicated historical argument. History teaches the interpretive, analytical, and critical thinking skills that will allow students to become productive citizens in the future.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the History standards are:

- Develop an understanding of how people view, construct, and interpret history
- Analyze key historical periods and patterns of change over time within and across nations and cultures

Content Area: Social Studies – Fourth Grade	
Standard: 1. History	
Prepared Graduates: Develop an understanding of how people view, construct, and interpret history	
Grade Level Expectation Concepts and skills students master: 1. Organize and sequence events to understand the concepts of chronology and cause and effect in the history of Colorado	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Construct a timeline of events showing the relationship of events in Colorado history with events in United States and world history b. Analyze primary source historical accounts related to Colorado history to understand cause-and-effect relationships c. Explain the cause-and-effect relationships in the interactions among people and cultures that have lived in or migrated to Colorado d. Identify and describe how major political and cultural groups have affected the development of the region 	Inquiry Questions: <ol style="list-style-type: none"> 1. How have past events influenced present day Colorado and the Rocky Mountain region? 2. Why is it important to know the sequence of events and people in Colorado history? 3. How can primary sources help us learn about the past or create more questions about our state's history? 4. What social and economic decisions caused people to locate in various regions of Colorado?
	Relevance and Application: <ol style="list-style-type: none"> 1. Individuals recognize important events and can put them in chronological in order to understand cause and effect such as migration west and clashes with Native Americans; discovery of gold and the Gold Rush; the growth of cities and towns and the development of law; the development of the state Constitution; and prohibition of slavery.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Historical thinkers analyze patterns and themes throughout time. 2. Historical thinkers use chronology to organize time and to study cause-and-effect relationships. 3. Historical thinkers use primary sources as references for research.

Content Area: Social Studies – Fourth Grade	
Standard: 1. History	
Prepared Graduates: Analyze key historical periods and patterns of change over time within and across nations and cultures	
Grade Level Expectation Concepts and skills students master: 2. The historical eras, individuals, groups, ideas and themes in Colorado history and their relationships to key events in the United States	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Analyze various eras in Colorado history and the relationship between these eras and eras in United States history, and the changes in Colorado over time b. Describe interactions among people and cultures that have lived and currently live in Colorado c. Describe the development of the political structure in Colorado history. Topics to include but not limited to an understanding of the Colorado Constitution and the relationship between state and national government d. Describe the impact of various technological developments. Topics to include but not limited to the state of Colorado, including changes in mining technology; changes in transportation; early 20th century industrial changes; and mid- to late 20th century nuclear and computer technological changes 	Inquiry Questions: <ol style="list-style-type: none"> 1. In what ways have geographic, economic, cultural, and technological changes influenced Colorado today? 2. Why did people of various cultures migrate to and settle in Colorado? 3. To what extent; how have unity and diversity shaped Colorado? 4. How have various individuals, groups, and ideas affected the development of Colorado?
	Relevance and Application: <ol style="list-style-type: none"> 1. The context and information from the past is used to make connections and inform current decisions. For example, Colorado has had a history of boom and bust cycles that should influence the decisions of city and state planners. 2. Technological developments continue to evolve and affect the present. For example, environmental issues have had an impact on Colorado from the Gold Rush to modern pollution.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Historical thinkers analyze patterns and themes across time periods. 2. Historical thinkers seek accounts of history from multiple perspectives and from multiple sources.

2. Geography

The study of geography creates an informed person with an understanding of spatial perspective and technologies for spatial analysis; and an awareness of the interdependence of the world regions and resources, and how places are connected at the local, national, and global scales. Students understand the complexity and interrelatedness of people, places, and environments. Geography helps students appreciate the dynamic relationships and complexity of the world.

The skills, concepts, and knowledge acquired in geography are fundamental literacy components for a 21st century student. Use of critical thinking, information literacy, collaboration, self-direction, and invention are apparent in every facet of geographic education. Geography helps students develop a framework for understanding the world, ultimately contributing to the creation of informed citizens.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Geography standard are:

- Develop spatial understanding, perspectives, and personal connections to the world
- Examine places and regions and the connections among them

Content Area: Social Studies – Fourth Grade	
Standard: 2. Geography	
Prepared Graduates: Develop spatial understanding, perspectives, and personal connections to the world	
Grade Level Expectation	
Concepts and skills students master: 1. Use several types of geographic tools to answer questions about the geography of Colorado	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> Answer questions about Colorado regions using maps and other geographic tools Use geographic grids to locate places on maps and images to answer questions Create and investigate geographic questions about Colorado in relation to other places Illustrate, using geographic tools, how places in Colorado have changed and developed over time due to human activity Describe similarities and differences between the physical geography of Colorado and its neighboring states 	Inquiry Questions: <ol style="list-style-type: none"> Which geographic tools are best to locate information about a place? Why did settlements and large cities develop where they did in Colorado? How are the regions of Colorado defined by geography? How does the physical location of Colorado affect its relationship with other regions of the United States and the world?
	Relevance and Application: <ol style="list-style-type: none"> Individuals and businesses learn how to use geographic tools to answer questions about their state and region to make informed choices. For example, a family reads a weather map and researches road conditions to inform their decision to go to the mountains in the winter. Individuals and businesses use geographic tools to collect and analyze data regarding the area where they live.
	Nature of Discipline: <ol style="list-style-type: none"> Spatial thinkers gather appropriate tools to formulate and answer questions related to space and place. Spatial thinkers use tools to compare and contrast geographic locations.

Content Area: Social Studies – Fourth Grade	
Standard: 2. Geography	
Prepared Graduates: Examine places and regions and the connections among them	
Grade Level Expectation	
Concepts and skills students master: 2. Connections within and across human and physical systems are developed	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Describe how the physical environment provides opportunities for and places constraints on human activities b. Explain how physical environments influenced and limited immigration into the state c. Analyze how people use geographic factors in creating settlements and have adapted to and modified the local physical environment d. Describe how places in Colorado are connected by movement of goods and services and technology 	Inquiry Questions: <ol style="list-style-type: none"> 1. What physical characteristics led various cultural groups to select the places they did for settlement in Colorado? (example: water) 2. How did Colorado settlers alter their environment to facilitate communication and transportation? (example: water) 3. How does the physical environment affect human activity? 4. How does human activity affect the environment? (example: deforestation & reforestation)
	Relevance and Application: <ol style="list-style-type: none"> 1. Individuals and businesses consider geographic factors in making settlement decisions. For example, Colorado Springs has a dry climate that is favorable for computer companies, and ski resorts developed in the Rocky Mountains. 2. Individuals and businesses adapt to and modify the environment. For example, businesses and resorts have been created near hot springs throughout the state.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Spatial thinkers evaluate how physical features affect the development of a sense of place.

3. Economics

Economics and personal financial literacy teach students the skills, knowledge, and habits that they must master in order to contribute in a positive manner to society. Economics and personal financial literacy teach how to understand personal responsibility, set goals, create plans, evaluate choices, value entrepreneurship, comprehend globalization and international connections, and learn to make rational decisions through critical analysis.

Economics teaches students how society manages its scarce resources, how people make decisions, how people interact in the domestic and international markets, and how forces and trends affect the economy as a whole. Personal financial literacy applies the economic way of thinking to help understand how to manage scarce resources using a logical decision-making process that involves prioritization based on analysis of the costs and benefits of every choice.

Economics and personal financial literacy are essential to function effectively in personal lives, as participants in a global economy, and as citizens contributing to a strong national economy. As citizens, workers, consumers, savers, and investors, members of society must have a level of economic and personal financial literacy that enables them to understand how economies function and to apply economic analysis in their own lives.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Economics Standard are:

- Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy
- Acquire the knowledge and economic reasoning skills to make sound financial decisions

Content Area: Social Studies – Fourth Grade	
Standard: 3. Economics	
Prepared Graduates: Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy	
Grade Level Expectation	
Concepts and skills students master: 1. People respond to positive and negative incentives	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Define positive and negative economic incentives b. Give examples of the kinds of goods and services produced in Colorado in different historical periods and their connection to economic incentives c. Explain how the productive resources – natural, human, and capital – of Colorado have influenced the types of goods produced and services provided 	Inquiry Questions: <ol style="list-style-type: none"> 1. Why are different goods and services important at different times in Colorado’s history? 2. How have science and technology changed the economy of Colorado? 3. How have natural, human, and capital resources had both positive and negative impacts on the development of Colorado? 4. How does settlement impact water availability and water rights? 5. How does the availability of water impact settlement?(example: environmental impact)
	Relevance and Application: <ol style="list-style-type: none"> 1. Positive incentives influence behavior predictably over time. For example, responsible individuals save for the future and move for better job opportunities. 2. Negative incentives influence behavior predictably over time. For example, people move or refuse to relocate due to poor climate or resource shortages. 3. Groups use both positive and negative incentives to affect behavior. For example, the tourism industry uses incentives to attract tourists and government agencies use tickets to discourage speeding. and fines for not following regulations
	Nature of Discipline: <ol style="list-style-type: none"> 1. Economic thinkers consider the influence of changing resources and demand on the productivity of a state economy. 2. Economic thinkers study changes in the relationship between the availability of resources and the production of goods and services.

Content Area: Social Studies – Fourth Grade	
Standard: 3. Economics	
Prepared Graduates: Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)	
Grade Level Expectation Concepts and skills students master: 2. The relationship between choice and opportunity cost (PFL)	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Define choice and opportunity cost b. Analyze different choices and their opportunity costs c. Give examples of the opportunity costs for individual decisions d. Identify risks that individuals face (PFL) e. Analyze methods of limiting financial risk (PFL) 	Inquiry Questions: <ol style="list-style-type: none"> 1. In what ways can information be obtained to make a decision? 2. How do you know when you've made a good decision? 3. How do you know when you've made a bad decision?
	Relevance and Application: <ol style="list-style-type: none"> 1. Knowledge of the relationship between choice and opportunity cost leads to good decision-making. For example, a business may have an opportunity to purchase inexpensive land, but the cost may be in the travel time. 2. Decisions are made daily regarding risks such as riding a bicycle, skiing, riding in a car, and spending all of an allowance immediately rather than saving. 3. Businesses make choices about risk. For example, a company locates in a country that has an unstable government or extends credit to individuals.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Economic thinkers analyze opportunity costs associated with making decisions. 2. Economic thinkers analyze data to forecast possible outcomes. 3. Financially responsible individuals understand and categorize the components of risk. 4. Financially responsible individuals mitigate and analyze potential risk.

4. Civics

Civics has an impact on every individual daily through the work of city councils, state legislatures, Congress and school boards. Civics teaches students the complexity of the origins, structure, and functions of governments; the rights, roles, and responsibilities of ethical citizenship; the importance of law; and the skills necessary to participate in all levels of government.

Civics is a foundational component of the educational experience and critical to the continued success of our society. A democratic and free society relies on the skills, intelligence, engagement and virtue of its citizens. Our students will one day be responsible for strengthening our civic culture based on the knowledge they learn at school, their own values, and their choices for action. Democracy demands that they have these tools to be responsible contributors to civic culture.

Prepared Graduates

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduate Competencies in the Civics standard are:

- Analyze and practice rights, roles, and responsibilities of citizens
- Analyze the origins, structure, and functions of governments and their impacts on societies and citizens

Content Area: Social Studies – Fourth Grade	
Standard: 4. Civics	
Prepared Graduates: Analyze and practice rights, roles, and responsibilities of citizens	
Grade Level Expectation	
Concepts and skills students master: 1. Analyze and debate multiple perspectives on an issue	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Give examples of issues faced by the state and develop possible solutions b. Provide supportive arguments for both sides of a current public policy debate c. Discuss how various individuals and groups influence the way an issue affecting the state is viewed and resolved 	Inquiry Questions: <ol style="list-style-type: none"> 1. How can government answer questions about issues in a state in various ways? 2. How do diverse opinions enrich a community? 3. How does an individual's experience and background influence perception of an issue? 4. Why is it important to research issues and engage in civil debates?
	Relevance and Application: <ol style="list-style-type: none"> 1. The art of debate, critical reasoning, and active listening are skills that foster informed choices. For example, school boards review the pros and cons of an issue such as dress code and make a policy decision. 2. The ability to critically analyze multiple perspectives for solutions allows for improved problem-solving. For example, members of a social organization review multiple proposals to select a philanthropic cause for the year.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Responsible community members recognize opportunities to study the effectiveness of various ways to influence state public policy or help industry create an environmentally conscious development. 2. Responsible community members understand the relationships between state government and citizens.

Content Area: Social Studies – Fourth Grade	
Standard: 4. Civics	
Prepared Graduates: Analyze origins, structure, and functions of governments and their impacts on societies and citizens	
Grade Level Expectation	
Concepts and skills students master: 2. The origins, structure, and functions of the Colorado government	
Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: <ol style="list-style-type: none"> a. Explain the origins, structure, and functions of the three branches of the state government and the relationships among them b. Identify and explain a variety of roles leaders, citizens, and others play in state government c. Identify and explain the services state government provides and how those services are funded d. Explain the historical foundation and the events that led to the formation of the Colorado government e. Describe how the decisions of the state government affect local government and interact with federal law 	Inquiry Questions: <ol style="list-style-type: none"> 1. Why is Colorado’s Constitution important to individuals? 2. What would state government look like if one of the branches had more power than the others? 3. What would Colorado be like without a state government? 4. To what extent were various individuals and organizations in the state important in the development of Colorado’s government?
	Relevance and Application: <ol style="list-style-type: none"> 1. Knowledge of the origins, structure, and functions of Colorado’s government provides for participation, influence and benefits. For example, individuals can vote on ballot issues that affect taxes. 2. Technology helps to investigate resources and ask for government support and services. For example, someone wanting to open a restaurant can visit the Department of Health website to get information.
	Nature of Discipline: <ol style="list-style-type: none"> 1. Responsible community members understand the structure, function, and origin of the state government.

Prepared Graduate Competencies in Social Studies

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared graduates in social studies:

1. Use the tools, thinking, and practices of history, geography, economics, and civics to:
 - a. Solve problems, make decisions and analyze issues from multiple perspectives as a responsible member of society
 - b. Read, write, and communicate ideas

Prepared graduates in history:

1. Develop an understanding of how people view, construct, and interpret history
2. Analyze key historical periods and patterns of change over time within and across nations and cultures

Prepared graduates in geography:

1. Develop spatial understanding, perspectives, and personal connections to the world
2. Examine places and regions and the connections among them

Prepared graduates in economics:

1. Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy
2. Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Prepared graduates in civics:

1. Analyze and practice rights, roles, and responsibilities of citizens
2. Analyze the origins, structure, and functions of governments and their impacts on societies and citizens

Social Studies
Grade Level Expectations at a Glance
Grade Level Expectation

Standard	
High School	
1. History	<ol style="list-style-type: none"> 1. The historical method of inquiry to ask questions, evaluate primary and secondary sources, critically analyze and interpret data, and develop interpretations defended by evidence from a variety of primary and secondary sources 2. Analyze the key concepts of continuity and change, cause and effect, complexity, unity and diversity over time 3. The significance of ideas as powerful forces throughout history
2. Geography	<ol style="list-style-type: none"> 1. Use different types of maps and geographic tools to analyze features on Earth to investigate and solve geographic questions 2. Explain and interpret geographic variables that influence the interaction of people, places, and environments 3. The interconnected nature of the world, its people and places
3. Economics	<ol style="list-style-type: none"> 1. Productive resources - natural, human, capital - are scarce; therefore choices are made about how individuals, businesses, governments, and societies allocate these resources 2. Economic policies impact markets 3. Government and competition impact markets 4. Design, analyze, and apply a financial plan based on short- and long-term financial goals (PFL) 5. Analyze strategic spending, saving, and investment options to achieve the objectives of diversification, liquidity, income, and growth (PFL) 6. The components of personal credit to manage credit and debt (PFL) 7. Identify, develop, and evaluate risk-management strategies (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Research, formulate positions, and engage in appropriate civic participation to address local, state, or national issues or policies 2. Purposes of and limitations on the foundations, structures and functions of government 3. Analyze how public policy - domestic and foreign - is developed at the local, state, and national levels and compare how policy-making occurs in other forms of government
Eighth Grade	
1. History	<ol style="list-style-type: none"> 1. Formulate appropriate hypotheses about United States history based on a variety of historical sources and perspectives 2. The historical eras, individuals, groups, ideas and themes from the origins of the American Revolution through Reconstruction and their relationships with one another
2. Geography	<ol style="list-style-type: none"> 1. Use geographic tools to analyze patterns in human and physical systems 2. Conflict and cooperation occur over space and resources
3. Economics	<ol style="list-style-type: none"> 1. Economic freedom, including free trade, is important for economic growth 2. Manage personal credit and debt(PFL)
4. Civics	<ol style="list-style-type: none"> 1. Analyze elements of continuity and change in the United States government and the role of citizens over time 2. The place of law in a constitutional system

Social Studies
Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Seventh Grade	
1. History	<ol style="list-style-type: none"> 1. Seek and evaluate multiple historical sources with different points of view to investigate a historical question and to formulate and defend a thesis with evidence 2. The historical eras, individuals, groups, ideas and themes within regions of the Eastern Hemisphere and their relationships with one another
2. Geography	<ol style="list-style-type: none"> 1. Use geographic tools to gather data and make geographic inferences and predictions 2. Regions have different issues and perspectives
3. Economics	<ol style="list-style-type: none"> 1. Supply and demand influence price and profit in a market economy 2. The distribution of resources influences economic production and individual choices (PFL)
4. Civics	<ol style="list-style-type: none"> 1. The different forms of government and international organizations and their influence in the world community 2. Compare how various nations define the rights, responsibilities and roles of citizens
Sixth Grade	
1. History	<ol style="list-style-type: none"> 1. Analyze and interpret historical sources to ask and research historical questions 2. The historical eras, individuals, groups, ideas and themes in regions of the Western Hemisphere and their relationships with one another
2. Geography	<ol style="list-style-type: none"> 1. Use geographic tools to solve problems 2. Human and physical systems vary and interact
3. Economics	<ol style="list-style-type: none"> 1. Identify and analyze different economic systems 2. Saving and investing are key contributors to financial well being (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Analyze the interconnected nature of the United States to other nations 2. Compare multiple systems of governments
Fifth Grade	
1. History	<ol style="list-style-type: none"> 1. Analyze historical sources from multiple points of view to develop an understanding of historical context 2. The historical eras, individuals, groups, ideas, and themes in North America from 1491 through the founding of the United States government
2. Geography	<ol style="list-style-type: none"> 1. Use various geographic tools and sources to answer questions about the geography of the United States 2. Causes and consequences of movement
3. Economics	<ol style="list-style-type: none"> 1. Government and market structures influence financial institutions 2. Utilizing financial institutions to manage personal finances (PFL)
4. Civics	<ol style="list-style-type: none"> 1. The foundations of citizenship in the United States 2. The origins, structure, and functions of the United States government

Social Studies
Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Fourth Grade	
1. History	<ol style="list-style-type: none"> 1. Organize a sequence of events to understand the concepts of chronology and cause and effect in the history of Colorado 2. The historical eras, individuals, groups, ideas, and themes in Colorado history and their relationships to key events in the United States
2. Geography	<ol style="list-style-type: none"> 1. Use several types of geographic tools to answer questions about the geography of Colorado 2. Connections within and across human and physical systems are developed
3. Economics	<ol style="list-style-type: none"> 1. People responded to positive and negative incentives 2. The relationship between choice and opportunity cost (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Analyze and debate multiple perspectives on an issue 2. The origins, structure, and functions of the Colorado government
Third Grade	
1. History	<ol style="list-style-type: none"> 1. Use a variety of sources to distinguish historical fact from fiction 2. People in the past influenced the development and interaction of different communities and regions
2. Geography	<ol style="list-style-type: none"> 1. Use various types of geographic tools to develop spatial thinking 2. The concept of regions is developed through an understanding of similarities and differences in places
3. Economics	<ol style="list-style-type: none"> 1. Describe producers and consumers and how goods and services are exchanged 2. Describe how to meet short-term financial goals (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Respecting the views and rights of others as components of a democratic society 2. The origin, structure and function of local government
Second Grade	
1. History	<ol style="list-style-type: none"> 1. Identify historical sources and utilize the tools of a historian 2. People in the past influenced the history of neighborhoods and communities
2. Geography	<ol style="list-style-type: none"> 1. Use geographic terms and tools to describe space and place 2. People in communities manage, modify, and depend on their environment
3. Economics	<ol style="list-style-type: none"> 1. The scarcity of resources affects the choices of individuals and communities 2. Apply decision-making processes to financial decision making(PFL)
4. Civics	<ol style="list-style-type: none"> 1. Responsible community members advocate for their ideas 2. People use multiple ways to resolve conflicts or differences

Social Studies
Grade Level Expectations at a Glance

Standard	Grade Level Expectation
First Grade	
1. History	<ol style="list-style-type: none"> 1. Describe patterns and chronological order of events of the recent past 2. Family and cultural traditions in the United States in the past
2. Geography	<ol style="list-style-type: none"> 1. Geographic tools such as maps and globes to represent places 2. People in different groups and communities interact with each other and the environment
3. Economics	<ol style="list-style-type: none"> 1. People work at different types of jobs and in different types of organizations in order to produce goods and services and receive an income 2. Identify short term financial goals (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Effective groups have responsible leaders and team members 2. Notable people, places, holidays and patriotic symbols
Kindergarten	
1. History	<ol style="list-style-type: none"> 1. Ask questions, share information and discuss ideas about the past 2. The first component in the concept of chronology is to place information in sequential order
2. Geography	<ol style="list-style-type: none"> 1. People belong to different groups and live in different settings around the world that can be found on a map or globe
3. Economics	<ol style="list-style-type: none"> 1. Ownership as a component of economics 2. Discuss how purchases can be made to meet wants and needs (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Participate in making decisions using democratic traditions 2. Civic participation takes place in multiple groups
Preschool	
1. History	<ol style="list-style-type: none"> 1. Change and sequence over time
2. Geography	<ol style="list-style-type: none"> 1. Develop spatial understanding, perspectives, and connections to the world
3. Economics	<ol style="list-style-type: none"> 1. People work to meet wants 2. Recognize money and identify its purpose (PFL)
4. Civics	<ol style="list-style-type: none"> 1. Individuals have unique talents but also work with others in groups 2. Rules and their purpose in allowing groups to work effectively

Glossary of Terms

Academic Vocabulary
Standard 1: History
Standard 2: Geography
Standard 3: Economics
Standard 4: Civics

History	
Word	Definition
Cause and effect	Interaction between what happens and what makes it happen
Chronology	Events arranged in order by time
Constitution/	Written document defining how a government is organized, rights and laws for the people. A written or unwritten plan for government.
Culture	Learned behavior of people, which includes their belief systems and languages, their social relationships, their institutions and organizations, and their material goods – food, clothing, buildings, tools, and machines. Ancestors of Colorado, the people and the way they live, relationships, what they believe and value.
Era	Segment of a Timeline in history
Federal government	National government
Gold Rush	Time period when people came to find gold in Colorado
Government	Decision / political structure The system or form by which a community or other political unit is ruled.
Immigration	People coming from other countries
Migration	People moving from place to place (state to state)
Mining	Digging into the ground and panning the water to find rare resources such as gold and silver.
Native Americans	First inhabitants of the North American continent. Colorado Tribes: Arapahoe, Cheyenne, Ute, Anasazi, etc.)
Perspectives	Seeing issues or situations through the eyes of others. Building relationship by understanding other views.
Settlement	People coming together to create a community, town, or city.
Technology	Invention to simplify and improve life.

Geography	
Word	Definition
Climate	Long-term trends in weather elements and atmospheric conditions
Community	A place where people live, work, and play, such as a town or city
Environment	Everything around you at all times. Physical parts of your world. Everything in and on Earth's surface and its atmosphere within which organisms, communities, or objects exist. The natural or physical environment refers to those aspects of the environment produced by natural or physical processes; the human or cultural environment refers to those aspects of the environment produced by human or cultural processes.

Geographic tools	Items used to investigate and record information about geography. A device used to compile, organize, manipulate, store, report, or display geographic information, including maps, globes, graphs, diagrams, aerial and other photographs, satellite-produced images, geographic information systems, and computer databases as well as other software.
Influence	To have an effect on a decision or action
Settlement	Locations in Colorado where people gather to stay.

Civics	
Word	Definition
Branches of government	Legislative – law making body (General Assembly or Congress) Executive – governor or president Judicial – court system
Community	People living in a given area with something in common (such as: history, religion, interests)
Constitution*	Written document defining how a government is organized, rights and laws for the people. A written or unwritten plan for government.
Culture*	Ancestors of Colorado, the people and the way they live, relationships, what they believe and value. Learned behavior of people, which includes their belief systems and languages, their social relationships, their institutions and organizations, and their material goods – food, clothing, buildings, tools, and machines.
Federal	National government
Influence*	To have an effect on a decision or action
Perspectives*	Seeing issues or situations through the eyes of others. Building relationship by understanding other views.
Political structure	How the decision making system is organized and executed.
Taxes	Money collected by the government to provide for the community. A non-voluntary payment to a government for which no good or service is directly received in turn.

*Also defined in prior sections

Economics	
Word	Definition
Boom and Bust cycle	Economic success and decline repeated overtime during different eras
Business	Company that focuses on services or products.
Economic	Social science concerned chiefly with the way society chooses to employ its limited resources, which have alternative uses, to produce goods and services for present and future consumption.
Finances	To do with money
Goods	objects that can satisfy people's wants.
Incentive	something that incites
Industry	Manufacturing to mass produce and organize labor
Opportunity cost	the highest valued alternative that must be given up when another option is chosen.
Resources	resources Capital - (man-made resources). resources Human - workers or labor resources. resources Natural - things in a natural state that are used to produce goods and services. For example: land, minerals, and trees. inputs or factors used in the production of goods and services. Resources are generally categorized as land (natural resources), labor, and capital man-made resources).

Risk	Chance of a negative outcome.
Services	Activities that can satisfy human wants; something that one person does for someone else, usually for a wage.