Appendix B
Performance Level Descriptors

Grade 5 CMAS Science
Performance Level Descriptors

Students who Exceeded Expectations showed an advanced understanding of the Colorado Academic Standards' grade 5 science expectations and are ready for the next grade level. Students in the Exceeded Expectations level typically:

- Model that matter (particles too small to be seen) is always conserved, and mixing can result in new substances.
- Evaluate, measure, and observe materials to identify them based on their properties.
- Explain Earth's gravity as the cause of objects being pulled down toward its center.
- Model that all energy in food on Earth was once energy from the Sun.
- Model matter and energy cycles in an ecosystem, and explain plants get materials to grow from air and water.
- Evaluate the impact of star distance from Earth on the apparent brightness of stars.
- Analyze and explain patterns caused by Earth's orbit and rotation and the orbit of the Moon around Earth.
- Model and analyze the interactions between Earth's major systems and their impact on shaping Earth's surface.
- Evaluate the distribution of water among the different reservoirs on Earth using percentages.
- Evaluate solutions that communities use to protect Earth's environment and resources.

Students who Met Expectations showed a strong understanding of the Colorado Academic Standards' grade 5 science expectations and are ready for the next grade level. Students in the Met Expectations level typically:

- Describe matter (particles too small to be seen) as always conserved, and mixing can result in new substances.
- Make observations and measurements of properties used to identify materials.
- Describe evidence that demonstrates Earth's gravity as the cause of objects being pulled down toward its center.
- Demonstrate that all energy in food on Earth was once energy from the Sun.
- Explain matter and energy cycles in an ecosystem and explain that plants get materials to grow from air and water.
- Describe that a star's distance from Earth affects its apparent brightness.
- Demonstrate patterns caused by Earth's orbit and rotation and the orbit of the Moon around Earth.
- Model the interactions between Earth's major systems and their impact on shaping Earth's surface.
- Describe the relative proportions of salt water and fresh water in different reservoirs on Earth.
- Communicate ways that communities use scientific ideas to protect Earth's environment and resources.

Students who Approached Expectations showed a moderate understanding of the Colorado Academic Standards' grade 5 science expectations and will likely need additional academic support in the next grade level. Students in the Approached Expectations level typically:

- Describe matter (particles too small to be seen) as always conserved, and mixing can result in new substances.
- Observe the properties of an object to identify it.
- Describe evidence that demonstrates Earth's gravity as the cause of objects being pulled toward its center.
- Show the transfer of energy from the Sun to things animals use as food.
- Describe matter and energy cycles in an ecosystem and explain that plants get materials to grow from air and water.
- Relate the distance between a star and Earth to the star's apparent brightness.
- Demonstrate Earth's patterns using shadows, day and night, and the seasonal appearance of some stars.
- Describe Earth's major systems and how they interact.
- Identify the proportions of salt water and fresh water in different reservoirs on Earth.
- Summarize ways that communities protect Earth's environment and resources.

Students who Partially Met Expectations showed a limited understanding of the Colorado Academic Standards' grade 5 science expectations and will need additional academic support in the next grade level to successfully engage in further study. Students in this level typically:

- Describe matter as made up of small particles and changes caused by the mixing of substances.
- Identify materials as having different properties.
- Identify gravity as the cause of objects falling to the ground.
- Demonstrate that the Sun and plants contribute to animals' food.
- Describe matter and energy cycles in an ecosystem and explain that plants get materials to grow from air and water.
- Compare the brightness of the Sun and stars as seen from Earth.
- Describe daily changes in day and night and the characteristics of shadows.
- Identify the major interacting systems on Earth and describe an interaction between two of them.

- Identify the different reservoirs of salt water and fresh water on Earth.
- Describe human activities interacting with natural Earth systems and their impact.

Grade 8 CMAS Science
Performance Level Descriptors

Students who Exceeded Expectations showed an advanced understanding of the Colorado Academic Standards' middle school science expectations and are ready for the next grade level. Students in the Exceeded Expectations level typically:

- Use complex data sets and models to describe the structure and properties of matter under different conditions.
- Use Newton's Laws to design investigations to show the relationship between mass and force.
- Demonstrate the numerical relationships between variables relating to transfers among different forms of energy.
- Explain the properties and behavior of waves and their interaction with different materials.
- Use multiple methods to demonstrate the function of parts of and explain the effects of different environments on organisms.
- Explain multiple effects of resource availability, patterns within, and consequences of changes to an ecosystem.
- Illustrate how mutations affect an organism, and the genetic impact of asexual versus sexual reproduction.
- Analyze complex patterns in modern and fossil organisms to infer and explain relationships.
- Analyze, model, and compare the properties of solar system objects with a focus on scale, cyclic patterns in the Sun-Earth-Moon system, and the role of gravity in motion of planetary systems and galaxies.
- Explain how geoscience processes cycle matter and energy among Earth's systems to transform Earth's surface features and climate throughout history.
- Use complex data and evidence to illustrate geologic processes and how humans interact with and manage natural resources and hazards.

Students who Met Expectations showed a strong understanding of the Colorado Academic Standards' middle school science expectations and are ready for the next grade level. Students in the Met Expectations level typically:

- Describe the structure and properties of matter under different conditions, including the chemical composition.
- Use Newton's Laws to conduct conventional investigations to show the relationship between mass and force.
- Show the numerical relationships between variables relating to transfers among different forms of energy.
- Explain the properties and behavior of waves and their interaction with different materials.
- Explain the function of parts of and explain the effects of different environments on organisms.
- Explain an effect of resource availability, a predictable pattern, and a consequence of change to an ecosystem.
- Show how mutations affect an organism and the genetic impact of asexual versus sexual reproduction.
- Analyze routine patterns in modern and fossil organisms to infer and explain relationships.
- Describe properties of solar system objects with a focus on scale, routine cyclic patterns in the Sun-Earth-Moon system, and the role of gravity in motion of planetary systems and galaxies.
- Describe how geoscience processes cycle matter and energy among Earth's systems to transform Earth's surface features and climate throughout history.
- Describe geologic processes and how humans interact with and manage natural resources and hazards.

Students who Approached Expectations showed a moderate understanding of the Colorado Academic Standards' middle school science expectations and will likely need additional academic support in the next grade level. Students in the Approached Expectations level typically:

- Describe the structure and properties of matter under different conditions.
- Use Newton's Laws to show the relationship between mass and force.
- Show the numerical relationships between variables relating to transfers between different forms of energy.
- Use models to describe the properties and behavior of waves and their interaction with different materials.
- Illustrate the function of parts of, and explain the effects of different environments on, organisms.
- Identify an effect of resource availability, a predictable pattern, or consequence of change to an ecosystem.
- Describe how structural changes affect an organism and the genetic difference between reproduction types.
- Explain simple patterns among modern and fossil organisms to explain relationships between them.
- Identify and describe properties of solar system objects with a focus on scale, familiar cyclic patterns in the Sun-Earth-Moon system, and the role of gravity in motion of planetary systems and galaxies.
- Illustrate a basic explanation of how geoscience processes cycle matter and energy among Earth's systems to transform Earth's surface features and climate throughout history.

- Give a familiar explanation of geologic processes and how humans interact with and manage natural resources and hazards.

Students who Partially Met Expectations showed a limited understanding of the Colorado Academic Standards' middle school science expectations and will need additional academic support in the next grade level to successfully engage in further study. Students in this level typically:

- Partially label and identify familiar models showing the structure and properties of matter.
- Identify when Newton's Laws can be used to show the relationship between mass and force.
- Identify and observe examples, changes, and transfers of energy while describing the factors related to them.
- Use simple models to describe the properties and behavior of waves and their interaction with different materials.
- Use a model to show the parts of, and explain the effects of different environments on, organisms.
- Identify resources needed by organisms to live.
- Identify a pattern within or an effect of change to an ecosystem.
- Identify structural changes to genes and distinguish between asexual and sexual reproduction.
- Identify familiar patterns in fossils to infer simple relationships among organisms.
- Identify key properties of the major solar system objects with a focus on scale, cyclic patterns in the Sun-Earth-Moon system, and the importance of gravity in motion in planetary systems and galaxies.
- Identify major geoscience processes that cycle matter and energy among Earth's systems to transform Earth's surface features and climate throughout history.
- Communicate a basic explanation of geologic processes and how humans interact with and manage natural resources and hazards.

Grade 11 CMAS Science
Performance Level Descriptors

Students who Exceeded Expectations showed an advanced understanding of the Colorado Academic Standards' middle school science expectations and are ready for the next grade level. Students in the Exceeded Expectations level typically:

- Predict outcomes of chemical reactions using patterns and describe energy released during nuclear processes.
- Explain, predict, and evaluate how forces can affect the motion and momentum of objects in a system.
- Evaluate changes, transformations, and conservation of all types of energy in a complex system or device.
- Evaluate wave properties and electromagnetic radiation and the benefit to technological devices that use them.
- Explain how macromolecules are connected and how differentiation of cells leads to multiple levels of organization in complex organisms.
- Model complex interactions involved in ecosystems, including how matter and energy cycle through them.
- Explain the role of DNA and chromosomes in both common and complex scenarios.
- Analyze and explain the variation and impact of expressed traits relative to environmental conditions.
- Create and evaluate complex models and evidence about the size of the universe and changes in stars over their lifetimes.
- Illustrate how the geologic record shows that Earth's internal and surface processes and systems are interconnected.
- Explain, evaluate, and propose solutions to human interactions with Earth.

Students who Met Expectations showed a strong understanding of the Colorado Academic Standards' middle school science expectations and are ready for the next grade level. Students in the Met Expectations level typically:

- Describe patterns in the chemical and nuclear properties of elements and characteristics of reactions.
- Use math to demonstrate how forces can affect the motion and momentum of objects in a system.
- Describe and/or evaluate changes, transformations, and conservation of all types of energy in a simple system.
- Explain wave properties and electromagnetic radiation and the benefit to technological devices that use them.
- Explain connections among macromolecules and the multiple levels of organization in complex organisms.
- Analyze and explain complex interactions involved in ecosystems, including the cycling of matter and energy through them.
- Explain the role of DNA and chromosomes in common scenarios.
- Analyze and explain the variation and impact of expressed traits relative to environmental conditions.
- Model and communicate routine scientific ideas about the size of the universe and changes in stars over their lifetimes.
- Use models and data to illustrate how Earth's internal and surface processes and systems are interconnected.
- Explain and evaluate human interactions with Earth.

Students who Approached Expectations showed a moderate understanding of the Colorado Academic Standards' middle school science expectations and will likely need additional academic support in the next grade level. Students in the Approached Expectations level typically:

- Use models to identify patterns in chemical and nuclear reactions and describe properties using the periodic table.
- Describe or calculate how forces affect the motion and momentum of an object in a system.
- Illustrate and evaluate the energy of objects and the direction of the flow of energy in a system.
- Identify wave properties and electromagnetic radiation in technological devices.
- Communicate simple explanations of how macromolecules are related and how structures in complex organisms follow multiple levels of organization.
- With given models, describe interactions involved in ecosystems, including the cycling of matter and energy through them.
- Describe familiar examples of the role of DNA and chromosomes.
- Relate simple and familiar explanations, evidence, and statistics to the variation and impact of expressed traits relative to environmental conditions.
- Identify and use familiar details, evidence, and models about the size of the universe and changes in stars over their lifetimes.
- Use familiar models to illustrate how Earth's internal and surface processes and systems are interconnected.
- Provide familiar explanations and solutions about the availability, usage, and management of natural resources.

Students who Partially Met Expectations showed a limited understanding of the Colorado Academic Standards' middle school science expectations and will need additional academic support in the next grade level to successfully engage in further study. Students in this level typically:

- Recognize that the periodic table organizes the elements based on patterns, and chemical reactions involve electrons, while nuclear reactions involve changes in the nucleus.
- Apply simple math to describe how forces affect the motion and momentum of objects in a system.
- Identify the type of energy an object has and describe the flow and transformations of energy in a system.
- Describe how a change in one wave property affects other wave properties and identify technological devices that use electromagnetic radiation.
- Describe DNA structure, cell division, systems of structures in complex organisms, and how organisms grow.
- Identify the factors to describe interactions involved in simple ecosystems, including the cycling of matter and energy through them.
- Identify the importance of DNA and chromosomes.
- Describe how advantageous and disadvantageous expressed traits vary within a population.
- Identify the size of the universe as dynamic, and label basic models of stars producing the elements.
- Use simple models and data to illustrate how Earth's internal and surface processes and systems cycle matter and energy, shape Earth's surface, and affect life.
- Identify and summarize common human interactions with Earth regarding the availability, usage, and management of natural resources.

Grade 5 CoAlt Science
Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

Student showed an initial understanding of the EEOs of Colorado' s grade 5 science standards and will likely need extensive academic support to successfully engage in the next grade level. Students in the Emerging level typically:

- Identify that matter is made of particles and that adding or removing matter from a sample changes the mass of the sample.
- Identify matter as solid, liquid, or gas.
- Identify down as the direction gravity causes objects to move.
- Identify that the Sun is the source of energy for plants and identify air and water as what plants need to grow.
- Identify an animal's source of food.
- Identify that the Sun appears brighter than other stars.
- Identify the length of shadows as something that changes at different times of the day and the amount of daylight as something that changes across seasons.
- Identify a living or nonliving thing involved in an interaction between any two of Earth's systems.
- Identify a source of salt water or fresh water.
- Identify a way to protect Earth's resources and environment.

Student showed a limited understanding of the EEOs of Colorado' s grade 5 science standards and will likely need moderate academic support to successfully engage in the next grade level. Students in the Approaching Target level typically:

- Identify that matter is made of particles whose behavior has observable effects.
- Identify that heating, cooling, and mixing substances does not change the total mass of the substances.
- Use an example to identify a material based on its properties.
- Identify gravity as the force that causes an object to move down toward Earth.
- Identify that the energy in animals' food was once energy from the Sun.
- Identify what living components of a food chain or web make their own food or must eat food.
- Identify that the Sun is a star that appears brighter than other stars because of their different distances from Earth.
- Identify an interaction between any two of Earth's systems (geosphere, biosphere, hydrosphere, and atmosphere).
- Identify that there is much more salt water than fresh water on Earth.
- Identify a way to protect Earth's resources and environment.

Student showed a foundational understanding of the EEOs of Colorado' s grade 5 science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Classify materials based on similarities and differences in their properties.
- Identify that heating, cooling, and mixing substances does not change the total mass of the substances but can change the properties of the substances.
- Describe that the force of gravity pulls all objects down toward Earth.
- Describe that air and water, but not soil, are sources of matter that plants need to grow.
- Describe the movement of matter between two components of a food chain or web.
- Identify that the Sun is a star that appears brighter than other stars because of different distances of the stars from Earth.
- Interpret daily changes in the amount of daylight across seasons and of the length of shadows at different times of the day.
- Describe an interaction between any two of Earth's systems (geosphere, biosphere, hydrosphere, and atmosphere).
- Describe the relative amounts of salt water and fresh water on Earth.
- compare ways to protect Earth's resources and environment.

Student showed a foundational understanding of the EEOs of Colorado' s grade 5 science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Classify and identify materials based on similarities and differences in their properties.
- Compare the properties of two substances before and after mixing.
- Describe that the force of gravity pulls all objects down toward Earth but that not all objects demonstrate downward movement toward Earth.

- Describe that the energy in animals' food was once energy from the Sun but that the matter in animal's food is not from the Sun.
- Describe that nutrients from soil can help a plant grow, but air and water are the sources of matter that make up the new mass that plants gain as they grow.
- Describe the movement of matter between three or more components of a food chain or web.
- Identify that the Sun is a star that appears brighter than other stars because of their different distances from Earth and that distance is proportional to apparent brightness.
- Graph daily changes in the amount of daylight across seasons and of the length of shadows across time and at different times of the day.
- Explain an interaction between any two of Earth's systems (geosphere, biosphere, hydrosphere, and atmosphere).
- Compare the relative amounts of salt water and fresh water on Earth found in oceans, lakes, rivers, glaciers, groundwater, and polar ice caps.
- Compare ways to protect Earth's resources and environment and describe why one way may be better than another.

Grade 8 CoAlt Science
Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

Student showed an initial understanding of the EEOs of Colorado' s middle school science standards and will likely need extensive academic support to successfully engage in the next grade level. Students in the Emerging level typically:

- Identify that a molecule is made up of atoms and that atoms have mass.
- Identify a property that changes because of a chemical change.
- Identify a force as what makes objects move, change direction, or become damaged.
- Identify a change in temperature as evidence of energy transfer.
- Identify a cell as the smallest living part of a living thing and that organs and organisms are made up of cells.
- Identify that offspring have similar characteristics to their parents.
- Identify that the appearance of Earth's Moon changes, or Earth's seasons change, because of their relative positions in space.
- Identify that heat energy from Earth's interior can change and form rocks.
- Identify a change that makes more water vapor, liquid water, or ice.
- Identify that humans use natural resources, can affect the environment, and need to prepare for natural hazards.
- Identify that all solar system objects are affected by gravity.

Student showed a limited understanding of the EEOs of Colorado' s middle school science standards and will likely need moderate academic support to successfully engage in the next grade level. Students in the Approaching Target level typically:

- Identify that the amount of or the mass of atoms does not change in a chemical reaction.
- Identify simple molecules, such as water or oxygen gas.
- Identify a device that releases or absorbs heat energy by chemical processes and a device that either minimizes or maximizes heat energy transfer.
- Identify the relative amounts of kinetic and potential energy in a system.
- Identify that different materials can affect the reflection, absorption, or transmission of a light or sound wave.
- Identify how characteristic animal behaviors and specialized plant structures help the plants and animals survive, and identify examples of competitive, predatory, and mutually beneficial relationships between organisms.
- Identify an example of the cycling of matter and energy among living and nonliving parts of an ecosystem.
- Identify that variations of traits in populations increase some individuals' probability of surviving and reproducing and that natural selection works over many generations.
- Identify two locations of similar or different climates.
- Identify that regional climate is based on the region's landforms and latitude.
- Identify that Earth's resources are limited and unevenly distributed.
- Identify gravity as what keeps Earth and the Moon in their orbits and as what draws and holds together the matter making up Earth and the Moon.

Student showed a foundational understanding of the EEOs of Colorado' s middle school science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Describe the similarities and differences of the properties of a substance before and after a chemical change or a change in state.
- Explain the operation of a device that releases or absorbs thermal energy by chemical processes or a device that minimizes or maximizes thermal energy transfer from one object to another.
- Identify that electric or magnetic fields exist between objects exerting forces on each other even though the objects are not in contact.
- Identify factors that affect the strength of electric or magnetic forces.
- Describe how loudness or brightness is related to the energy in the sound wave.
- Identify that major organs are made up of cells.
- Describe the primary roles of at least three major components of a plant or animal cell.
- Describe how food supports growth and releases energy in an organism.
- Identify that organisms detect, process, and use information via the nervous system.
- Identify similarities and differences among modern organisms and fossilized organisms.
- Identify how the layering of fossils in rock strata reveals their chronological order of appearance.
- Describe the distribution of fossils as evidence of past tectonic plate motions.
- Describe that the motion and interaction of air masses cause changes in weather conditions and to describe how some natural hazards can be predicted, prepared for, and mitigated.
- Describe the cyclic patterns of the Moon's common phases and Earth's seasons.
- Identify at least one similarity and one difference among objects in the solar system.

Student showed a solid understanding of the EEOs of Colorado' s middle school science expectations and is well prepared to successfully engage in the next grade level with appropriate support. Students in the Advanced level typically:

- Describe that the number of or the mass of atoms does not change in a chemical reaction, but that the atoms are just rearranged.
- Design a solution to reduce the force of impact in a collision of two objects.
- Demonstrate that when the position of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
- Identify that digitized signals are a reliable way to encode and transmit information.
- Explain how photosynthesis plays a role in the cycling of matter and the flow of energy between plants and animals.
- Explain how food supports growth and releases energy in an organism.
- Explain how the genetic characteristics of a generation produced by asexual or sexual reproduction relate to the previous generation.
- Identify the relationship between genetic variations among individuals and advantages or disadvantages those individuals have for surviving and reproducing.
- Describe how the state of water changes as it moves through the water cycle.
- Describe how a natural resource can be transformed to make a new, synthetic material.
- Identify how a change in environmental conditions, such as resource availability, can affect organisms and populations in an ecosystem.
- Develop a solution to an environmental problem to minimize the impact of the problem.

Grade 11 CoAlt Science
Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

Student showed an initial understanding of the EEOs of Colorado' s high school science standards and will likely need extensive academic support to successfully engage in the next grade level. Students in the Emerging level typically:

- Identify that matter is made of atoms that have mass.
- Identify that energy can be transferred but not created or destroyed, including in chemical reactions.
- Identify that waves are carriers of energy and information.
- Identify DNA as the molecule that carries instructions and cell division as what allows an organism to grow.
- Identify that offspring traits resemble parent traits and that those traits vary within a population.

- Identify that the energy and material resources, as well as the events and hazards in an environment, affect the organisms living there.
- Identify that energy from sunlight, water, and living things influence Earth systems.
- Identify a proposal that will protect a threatened or endangered species.
- Identify examples of conserving, recycling, and reusing limited energy and mineral resources.
- Identify that orbiting objects follow roughly circular orbital paths.

Student showed a limited understanding of the EEOs of Colorado' s high school science standards and will likely need moderate academic support to successfully engage in the next grade level. Students in the Approaching Target level typically:

- Identify elements in the periodic table based on properties.
- Describe changes in energy and matter that occur because of physical or chemical changes.
- Describe the Law of Conservation of mass, object motion, temperature changes, or the operation of a device.
- Describe the relationship between the properties of waves, energy, and information.
- Identify that the structure of DNA determines the characteristics of anatomical structures and that genes carry traits from parents to offspring.
- Identify that organisms use energy and matter obtained from the environment for growth.
- Identify how the quantity of resources, events, and hazards in an environment affect the organisms living there and identify that organisms that are better able to survive in the environment are better able to reproduce and increase in number.
- Describe an internal Earth process or external process that influences the characteristics of Earth's atmosphere, surface, or ocean floor, or changes in living organisms.
- Identify relationships between the management of natural resources, the sustainability of human populations, natural hazards, and biodiversity.
- Identify Earth as the object that pulls other objects on it down.
- Identify the universe as a space containing galaxies, which are collections of stars, and that stars produce elements.

Student showed a foundational understanding of the EEOs of Colorado' s high school science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Describe how mass and electrical charge affect force, the relationship between mass, speed, and momentum, and the relationship between forces and electric or magnetic fields.
- Identify energy transformations, such as light energy to heat energy, or energy transfer within a device.
- Calculate the inputs and outputs of energy from different components of a system or device.
- Compare the wave and particle models of electromagnetic radiation.
- Identify the advantages and disadvantages of using and storing digital information.
- Evaluate how a technological device uses wave energy to perform its function.
- Describe the function of an organ system.
- Identify a mechanism a body uses to stay in balance during environmental changes.
- Identify changes in the number of individuals in an animal population when conditions in their environment change.
- Describe the changes in the amount of matter or energy as it travels through an energy pyramid, a food web, or nutrient cycle.
- Describe the distribution of a trait within a population, how organisms with advantageous traits tend to increase in number, and how species with disadvantageous traits can become extinct.
- Describe a change in Earth's climate or a change to Earth's surface, atmosphere, or hydrosphere.
- Identify that the Sun has a life cycle during which its energy output changes and different elements are produced.
- Identify that galaxies move within space.
- Describe relationships between orbiting objects in the solar system.

Student showed a solid understanding of the EEOs of Colorado' s high school science expectations and is well prepared to successfully engage in the next grade level with appropriate support. Students in the Advanced level typically:

- Identify properties of groups and families of elements and the uses of commonly found elements.
- Explain or predict the relationship between changes in experimental conditions, the rate of energy transfer, and the amount of product from a chemical reaction.
- Describe the energy released and the composition of nuclei for nuclear fission or nuclear fusion.
- Evaluate designs that minimize the effect of the force on an object during a collision.
- Describe how a change in an electric current can change a magnetic field.

- Describe the process of photosynthesis transforming light into energy for plants.
- Explain how organisms combine the simple elements that make up sugar molecules with other elements to make up proteins necessary for growth and metabolism.
- Compare and contrast the use of oxygen and stored energy in aerobic and anaerobic environments.
- Describe common ancestry in terms of anatomical structures or genes.
- Describe the composition of Earth's layers and the cycling of matter by the convection of Earth's mantle and explain the ages of crystal rock in terms of plate motion.
- Explain relationships between orbiting objects in the solar system.

About ELA and CSLA Performance Level Descriptors

Performance Level	Level of Text Complexity[1]	Range of Accuracy[2]	Quality of Evidence[3]	
			Grade 3	Grades 4-8
5	Very Complex Moderately Complex Readily Accessible	Mostly Accurate Mostly Accurate Accurate	Explicit Explicit Explicit	Explicit & Inferential Explicit & Inferential Explicit & Inferential
4	Very Complex Moderately Complex Readily Accessible	Generally Accurate Generally Accurate Mostly Accurate	Explicit Explicit Explicit	Explicit & Inferential Explicit & Inferential Explicit & Inferential
3	Very Complex Moderately Complex Readily Accessible	Minimally Accurate Generally Accurate Mostly Accurate	Explicit Explicit Explicit	Explicit & Inferential Explicit & Inferential Explicit & Inferential
2	Very Complex Moderately Complex Readily Accessible	Inaccurate Minimally Accurate Partially Accurate	Explicit Explicit Explicit	Explicit & Inferential Explicit & Inferential Explicit & Inferential

1. **Text Complexity**
   The complexity framework reflects the importance of text complexity as it relates to the CCSS, which indicates that 50 percent of an item's complexity is linked to the complexity of the text(s) used as the stimulus for that item. Consequently, to determine students' performance levels, it is critical to identify the pattern of responses when students respond to items linked to passages with distinct text complexities. To this end, a clear and consistent model was developed to define text complexity and has determined to use three text complexity levels: readily accessible, moderately complex, or very complex.

   Two components are used for determining text complexity for **all** passages:

   - Two quantitative text complexity measures (Reading Maturity Metric and Lexile) will be used to analyze all reading passages to determine **an initial** recommendation for placement of a text into a grade band and subsequently a grade level.
   - Text Analysis Worksheets, one for informational text and one for literary text, are then used to determine qualitative measures. Trained evaluators use these worksheets to determine a recommendation for qualitative text complexity within the grade level, with each text defined as readily accessible, moderately complex, or very complex.

   For multimedia texts, qualitative judgments from one or both of the "optional" categories in the Complexity Analysis Worksheet will be combined with judgments in the other categories to make a holistic determination of the complexity of the material.

2. **Range of Accuracy**
   There are three types of items on the assessments. For Evidence-Based Selected Response (EBSR) and Technology-Enhanced Constructed Response (TECR) items, the design is such that the items help contribute to an understanding of how accurately students comprehend text (demonstrate mastery of CCSS Reading Standards 2-10). Some of these items offer opportunities for students to receive partial credit based on the range of accuracy. For Prose-Constructed Response (PCR) items, draft scoring rubrics were developed (refer to *CMAS Test Design: Scoring Rubrics*) that include a Reading dimension to measure comprehension. Scores on the PCR items contribute to an evaluation of the degree to which a student can accurately comprehend a text. The Performance Level Descriptors (PLDs) describe five levels

of accuracy at grades 3-8 that are determined using the reading data collected through EBSR, TECR, and PCR items:

Accurate – The student is able to accurately state both the general ideas expressed in the text(s) and the key and supporting details. The response is complete, and the student demonstrates full understanding.

Mostly accurate – The student is able to accurately state most of the general ideas expressed in the text(s) and the key and supporting details, but the response is incomplete or contains minor inaccuracies. The student demonstrates understanding.

Generally accurate – The student is able to accurately state the gist of the text(s) but fails to accurately state the key and supporting details in the text or to connect such details to the overarching meaning of the text(s). The student demonstrates basic understanding.

Partially accurate – The student is able to accurately state the gist of the text(s) but is unable to state some of the key or supporting details with accuracy. The student is partially able to connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates partial understanding**.**

Minimally accurate – The student is unable to accurately state the gist of the text(s) but is able to minimally state some of the key or supporting details with accuracy. The student does not connect the specific details of the text to the overarching meaning(s) of the text. The student demonstrates minimal understanding.

Inaccurate – The student is unable to accurately state either the gist of the text or the key and supporting details evident in the text. The student demonstrates limited understanding.

3. Quality of Evidence

All items are designed to contribute to an understanding of how students "read closely to determine what the text says explicitly and to make logical inferences from it" and "cite specific textual evidence when writing or speaking to support conclusions drawn from the text" (CCSS Anchor Reading Standard 1). Some items offer opportunities for students to receive partial credit based on the quality of evidence provided. Students support their comprehension with explicit and/or inferential evidence:

Explicit evidence – Students show how the explicit words and phrases (details) from the text support statements made about the meaning of the text.

Inferential evidence – Students show how inferences drawn from the text support statements made about the meaning of the text.

Grade 3 ELA and CSLA Performance Level Descriptors

Reading

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be accurate when asking and/or answering questions, showing full understanding of the text when referring to explicit details and examples in the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to be minimally accurate when asking and/or answering questions, showing minimal understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing basic understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the inability to ask or answer questions, showing limited understanding of the text when referring to explicit details and examples in the text. ● With moderately complex text, students demonstrate the ability to be minimally accurate when asking and/or answering questions, showing minimal understanding of the text when referring to explicit details and examples in the text. ● With readily accessible text, students demonstrate the ability to be partially accurate when asking and/or answering questions, showing partial understanding of the text when referring to explicit details and examples in the text.

Writing - Written Expression

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, in the majority of instances	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating purposeful and	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while in the majority of	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while in the

demonstrating purposeful and controlled organization. The student: ● Provides effective development of the topic and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops topic and/or narrative elements in a manner that is appropriate to the task and purpose. ● Demonstrates purposeful organization that includes an introduction and/or conclusion. ● Effectively uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	mostly controlled organization. The student: ● Develops the topic and/or narrative elements using reasoning, details, text- based evidence, and/or description. ● Develops topic and/or narrative elements in a manner that is mostly appropriate to the task and purpose. ● Demonstrates purposeful organization that is mostly controlled and may include an introduction and/or conclusion. ● Uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	instances demonstrating organization that sometimes is controlled. The student: ● Develops the topic and/or narrative elements using some reasoning, details, text- based evidence, and/or description. ● Demonstrates some organization. ● Includes some linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.	majority of instances demonstrating organization that often is not controlled. The student: ● Minimal development of the topic and/or narrative elements and is, therefore, inappropriate to the task and purpose. ● Demonstrates minimal organization. ● Includes minimal linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.

Writing - Knowledge of Language and Conventions

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 4 ELA and CSLA Performance Level Descriptors

Reading

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be accurate when asking and/or answering questions, showing full understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to ask and/or answer questions with minimal accuracy, showing minimal understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to be generally accurate when asking and/or answering questions, showing basic understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when asking and/or answering questions, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to be accurate when asking and/or answering questions, showing limited understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to ask and/or answer questions with minimal accuracy, showing minimal understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to be partially accurate when asking and/or answering questions, showing partial understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.

Writing - Written Expression

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, in the majority of instances demonstrating purposeful and controlled organization. The student: • Provides effective development of the topic and/or narrative elements, using reasoning, details, text-based evidence, and/or description. • Develops topic and/or narrative elements in a manner that is appropriate to the task and purpose. • Demonstrates purposeful organization that includes an introduction and/or conclusion. • Correctly uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating purposeful and mostly controlled organization. The student: ● Develops the topic and/or narrative elements using reasoning, details, text-based evidence, and/or description. ● Develops topic and/or narrative elements in a manner that is mostly appropriate to the task and purpose. ● Demonstrates purposeful organization that is mostly controlled and may include an introduction and/or conclusion. ● Uses linking words and phrases, descriptive words, and/or temporal words to express ideas with clarity.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that sometimes is controlled. The student: ● Develops topic and/or narrative elements in manner that is general in its appropriateness to the task and purpose. ● Demonstrates some organization. ● Includes some linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that often is not controlled. The student: ● Provides minimal development of the topic and/or narrative elements and is, therefore, inappropriate to the task and purpose. ● Demonstrates minimal organization. ● Includes minimal linking words and phrases, descriptive words, and/or temporal words, limiting the clarity with which ideas are expressed.

Writing - Knowledge of Language and Conventions

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 5 ELA Performance Level Descriptors

Reading

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be accurate when quoting or referencing, showing full understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be generally accurate when quoting or referencing, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With moderately complex text, students demonstrate the ability to be generally accurate when quoting or referencing, showing general understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to be minimally accurate when quoting or referencing, showing minimal understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to be generally accurate when quoting or referencing, showing basic understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text. • With readily accessible text, students demonstrate the ability to be mostly accurate when quoting or referencing, showing understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to be accurate when quoting or referencing, showing limited understanding of the text when referring to explicit details and examples in the text. • With moderately complex text, students demonstrate the ability to be minimally accurate when quoting or referencing, showing minimal understanding of the text when referring to explicit details and examples in the text. • With readily accessible text, students demonstrate the ability to be partially accurate when quoting or referencing, showing partial understanding of the text when referring to explicit details and examples in the text and when explaining inferences drawn from the text.

Writing - Written Expression

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, in the majority of instances demonstrating purposeful and controlled organization. The student: ● Provides effective development of the topic and/or narrative elements, using reasoning, details, and/or description. ● Develops topic and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction and/or conclusion. ● Attends to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Effectively uses concrete words and phrases, sensory details, linking and transitional words, and/or domain-specific vocabulary to clarify ideas.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating purposeful and mostly controlled organization. The student: ● Develops the topic and/or narrative elements using reasoning, details, and/or description. ● Develops topic and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and may or may not include an introduction and/or conclusion. ● Demonstrates general awareness of the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Uses concrete words and phrases, sensory details, linking and transitional words, and/or domain-specific vocabulary to clarify ideas.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that sometimes is controlled. The student: ● Develops the topic and/or narrative elements minimally by using some reasoning, details, and/or description. ● Develops topic and/or narrative elements in manner that is general in its appropriateness to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and cohesion, omitting the introduction or conclusion. ● Demonstrates some awareness of the norms of the discipline. ● Draws partial evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking and transitional words, or domain-specific vocabulary to clarify ideas.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while in the majority of instances demonstrating organization that often is not controlled. The student: ● Minimal development of the topic and/or narrative elements and is, therefore, inappropriate to the task and purpose. ● Demonstrates minimal coherence, clarity, and cohesion. ● Demonstrates minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking and transitional words, or domain-specific vocabulary, limiting the overall clarity with which ideas are expressed.

Writing – Knowledge of Language and Conventions

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 6 ELA Performance Level Descriptors

Reading

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text • With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do partially accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing – Written Expression

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing,** students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: ● Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. ● Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes precise language including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: ● Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. ● Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while generally demonstrating basic coherence, clarity, and/or cohesion. The student: ● Provides some development of the claim, topic, and/or narrative elements, using basic reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is somewhat appropriate to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. ● Employs a style that is generally effective, with basic awareness of the norms of the discipline. ● Draws some evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while demonstrating minimal coherence, clarity, and/or cohesion. The student: ● Provides minimal development of the claim, topic, and/or narrative elements, using minimal reasoning, details, text-based evidence, and/or description. ● Minimal development of the claim, topic and/or narrative elements that is minimally appropriate to the task, purpose, and audience. ● Demonstrates minimal coherence, clarity, and/or cohesion, making the writer's progression of ideas unclear. ● Employs a minimally effective style, and minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing – Knowledge of Language and Conventions

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 7 ELA Performance Level Descriptors

Reading

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: ● With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. ● With readily accessible text, students demonstrate the ability to do partially accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing – Written Expression

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: ● Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. ● Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes precise language including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: ● Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. ● Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while generally demonstrating basic coherence, clarity, and/or cohesion. The student: ● Provides some development of the claim, topic, and/or narrative elements, using basic reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is somewhat appropriate to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. ● Employs a style that is generally effective, with basic awareness of the norms of the discipline. ● Draws some evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while demonstrating minimal coherence, clarity, and/or cohesion. The student: ● Provides minimal development of the claim, topic, and/or narrative elements, using minimal reasoning, details, text-based evidence, and/or description. ● Minimal development of the claim, topic and/or narrative elements that is minimally appropriate to the task, purpose, and audience. ● Demonstrates minimal coherence, clarity, and/or cohesion, making the writer's progression of ideas unclear. ● Employs a minimally effective style, and minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing – Knowledge of Language and Conventions

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language

Grade 8 ELA Performance Level Descriptors

Reading

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do mostly accurate analyses of text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do accurate analyses of the text, showing full understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing general understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do generally accurate analyses of the text, showing basic understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do mostly accurate analyses of the text, showing understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.	In **reading**, the pattern exhibited by student responses indicates: • With very complex text, students demonstrate the inability to do an accurate analysis of the text, showing limited understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With moderately complex text, students demonstrate the ability to do minimally accurate analyses of the text, showing minimal understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text. • With readily accessible text, students demonstrate the ability to do partially accurate analyses of the text, showing partial understanding of the text when referring to explicit details and examples in the text and when supporting sound inferences drawn from the text.

Writing – Written Expression

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students address the prompts and provide effective development of ideas, including when drawing evidence from multiple sources, while demonstrating effective coherence, clarity, and/or cohesion. The student: ● Provides effective development of the claim, topic, and/or narrative elements, using clear reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is appropriate to the task, purpose, and audience. ● Demonstrates coherence, clarity, and cohesion and includes an introduction, conclusion, and a logical progression of ideas. ● Establishes and maintains an effective style, while attending to the norms and conventions of the discipline. ● Effectively draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes precise language including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide development of ideas, including when drawing evidence from multiple sources, while demonstrating coherence, clarity, and/or cohesion. The student: ● Provides development of the claim, topic, and/or narrative elements, using reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is mostly appropriate to the task, purpose, and audience. ● Demonstrates general coherence, clarity, and cohesion and includes an introduction, conclusion, and logically grouped ideas. ● Establishes and maintains a mostly effective style, while attending to the norms and conventions of the discipline. ● Draws evidence from literary or informational texts to support analysis, reflection, and research. ● Includes mostly precise language, including descriptive words and phrases, sensory details, linking and transitional words, words to indicate tone, and/or domain-specific vocabulary.	In **writing**, students address the prompts and provide basic development of ideas, including when drawing evidence from multiple sources, while generally demonstrating basic coherence, clarity, and/or cohesion. The student: ● Provides some development of the claim, topic, and/or narrative elements, using basic reasoning, details, text-based evidence, and/or description. ● Develops claim, topic, and/or narrative elements in a manner that is somewhat appropriate to the task, purpose, and audience. ● Demonstrates some coherence, clarity, and/or cohesion, making the writer's progression of ideas somewhat unclear. ● Employs a style that is generally effective, with basic awareness of the norms of the discipline. ● Draws some evidence from literary or informational texts to support analysis, reflection, and research. ● Includes some descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.	In **writing**, students address the prompts and provide minimal development of ideas, including when drawing evidence from multiple sources, while demonstrating minimal coherence, clarity, and/or cohesion. The student: ● Provides minimal development of the claim, topic, and/or narrative elements, using minimal reasoning, details, text-based evidence, and/or description. ● Minimal development of the claim, topic and/or narrative elements that is minimally appropriate to the task, purpose, and audience. ● Demonstrates minimal coherence, clarity, and/or cohesion, making the writer's progression of ideas unclear. ● Employs a minimally effective style, and minimal awareness of the norms of the discipline. ● Draws minimal evidence from literary or informational texts to support analysis, reflection, and research. ● Includes minimal descriptions, sensory details, linking or transitional words, words to indicate tone, or domain-specific vocabulary.

Writing – Knowledge of Language and Conventions

Level 5	Level 4	Level 3	Level 2
A student who achieves at **Level 5 exceeds expectations** for the assessed standards.	A student who achieves at **Level 4 meets expectations** for the assessed standards.	A student who achieves at **Level 3 approaches expectations** for the assessed standards.	A student who achieves at **Level 2 partially meets expectations** for the assessed standards.
In **writing**, students demonstrate full command of the conventions of Standard English consistent with edited writing. There may be some errors in grammar and usage, but overall meaning is clear.	In **writing**, students demonstrate command of the conventions of Standard English consistent with edited writing. There are errors in grammar and usage that may occasionally impede understanding.	In **writing**, students demonstrate basic command of the conventions of Standard English consistent with edited writing. There are few patterns of errors in grammar and usage that impede understanding, demonstrating partial control over language.	In **writing**, students demonstrate minimal command of the conventions of Standard English consistent with edited writing. There are patterns of errors in grammar and usage that impede understanding, demonstrating minimal control over language.

Grade 3 Mathematics Performance Level Descriptors

	Grade 3 Math : Sub-Claim A The student solves problems involving Major Content for Grade 3 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Products and Quotients 3.OA.1 3.OA .2 3.OA .4 3.OA .6 3.OA.7-1 3.OA.7-2	**Understands** and interprets products and quotients of whole numbers. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division. **Both factors are greater than 5 and less than or equal 10.** **Represents a multiplication or division situation as an equation.** Accurately multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	Interprets products and quotients of whole numbers. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division. **One factor** is **greater than or equal** to 5. **Accurately** multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	**Interprets** products and quotients of whole numbers. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division, with both factors less than or equal to 5, or with one factor of 10. Multiplies and divides within 100, **using strategies relating multiplication and division or properties of operations.**	Determines products and quotients of whole numbers within 100. Determines the unknown whole number in a multiplication or division problem by relating multiplication and division, with both factors less than or equal to 5, or with one factor of 10.
Multiplication and Division 3.OA.3-1 3.OA.3-2 3.OA.3-3 3.OA.3-4	Uses multiplication and division within 100 to solve word problems involving equal groups, arrays, **area, and measurement quantities other than area. Both factors are > 5 and < or = to 10.** **Identifies multiple contexts given a numerical expression involving multiplication and division.**	**Uses multiplication and division within 100 to solve word problems** involving equal groups and arrays. **One factor** is **> or =** to 5.	Given a visual aid, uses multiplication and division within 100 to solve word problems involving equal groups **and arrays**, with both factors < or = to 5, or with one factor of 10.	Given a visual aid, uses multiplication and division within 100 to solve word problems involving equal groups. Both factors are < or = to 5, with both factors < or = to 5, or with one factor of 10.
Two-Step Problems 3.OA.8 3.Int.1 3.Int.2	Solves two-step **unscaffolded** word problems using the four operations, **including rounding where appropriate**, in which the unknown is in a variety of positions. **Both values** for each operation performed is substantial (towards the upper limits as defined by the standard assessed).	Solves two-step scaffolded word problems using the four operations **in which the unknown is in a variety of positions.** One of the values for each operation performed is substantial (towards the upper limits as defined by the standard assessed).	Solves two-step scaffolded word problems using the four operations and in which the sum, difference, product or quotient is always the unknown. **One of the values for each operation performed is substantial (towards the upper limits as defined by the standard assessed).**	Solves two-step scaffolded word problems using the four operations and in which the sum, difference, product or quotient is always the unknown.
Fraction Equivalence 3.NF.3a-1 3.NF.3a-2 3.NF.3b-1 3.NF-3c 3.NF-3d 3.NF.A.Int.1	Understands, recognizes and generates equivalent fractions with denominators of 2, 3, 4, 6 and 8. Expresses whole numbers as fractions and recognize fractions that are equivalent to whole numbers.	**Understands, recognizes and generates equivalent fractions using denominators of 2, 4, and 8.** Expresses whole numbers as fractions.	Given a visual model, **understands,** recognizes and **generates** equivalent fractions with denominators of 2, 4 and 8. Expresses **whole numbers** as fractions.	Given a visual model recognizes equivalent fractions with denominators of 2, 4 and 8. Expresses the number 1 as a fraction.

	Grade 3 Math : Sub-Claim A The student solves problems involving Major Content for Grade 3 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Compares two fractions that have the same numerator or same denominator using symbols to justify conclusions. **Plots the location of equivalent fractions on a number line.** The student must recognize that two fractions must refer to the same whole in order to compare. **Given a whole number and two fractions in a real-world situation, plots all three numbers on a number line and determines which fraction is closest to the whole number. Justifies the comparison by plotting points on a number line.**	Compares two fractions that have the same numerator or same denominator using symbols **and justifies conclusions by using a visual model.** The student must recognize that two fractions must refer to the same whole in order to compare.	**Compares two fractions that have the same numerator or same denominator using symbols. The student must recognize that two fractions must refer to the same whole in order to compare.**	
Fractions as Numbers 3.NF.1 3.NF.2 3.NF.A.Int.1	Understands 1/*b* is equal to one whole partitioned into *b* equal parts–limiting the denominators to 2, **3**, 4, **6** and 8. Represents 1/*b* on a number line diagram by partitioning the number line between 0-1 into *b* equal parts recognizing that *b* is the total number of parts. Demonstrates understanding of the quantity *a*/*b* by marking off *a* parts of 1/*b* from 0 on the number line and **states that the endpoint locates the number *a*/*b*.** **Applies the concepts of 1/*b* and *a*/*b* in real-world situations.** **Describes the number line that best fits the context.**	Understands 1/*b* is equal to one whole partitioned into *b* equal parts–limiting the denominators to 2, 4 and **8**. Represents 1/*b* on a number line diagram by partitioning the number line between 0-1 into *b* equal parts recognizing that *b* is the total number of parts. **Demonstrates the understanding of the quantity *a*/*b* by marking off *a* parts of 1/*b* from 0 on the number line.**	Understands 1/*b* is equal to one whole partitioned into *b* equal parts–limiting the denominators to 2 and 4. **Represents 1/*b* on a number line diagram by partitioning the number line between 0-1 into *b* equal parts recognizing that *b* is the total number of parts.** **Represents fractions in the form *a*/*b* using a visual model.**	Understands 1/*b* is equal to one whole partitioned into *b* equal parts–limiting the denominators to 2 and 4. Identifies 1/*b* on a number line diagram when partitioned between 0 and 1 into *b* equal parts.
Time 3.MD.1-1 3.MD.1-2	Tells, writes and measures time to the nearest minute. Solves **two–step** word problems involving addition **and** subtraction of time intervals in minutes.	Tells, writes and measures time to the nearest minute. **Solves one-step word problems involving addition or subtraction of time intervals in minutes.**	Tells, writes and measures time to the nearest minute. **Solves one-step word problems involving addition or subtraction of time intervals in minutes, with scaffolding, such as a number line diagram.**	Tells, writes and measures time to the nearest minute.
Volumes and Masses	Using grams, kilograms or liters, measures, estimates and **solves**	**Using grams, kilograms or liters, measures and estimates**	Using grams, kilograms or liters, measures **and estimates** liquid	Using grams, kilograms or liters, measures liquid volumes and

	Grade 3 Math : Sub-Claim A The student solves problems involving Major Content for Grade 3 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**evel 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
3.MD.2-1 3.MD.2-2 3.MD.2-3 3.Int.5	**multi-step word problems** involving liquid volumes and masses of objects using any of the four basic operations. **Number values should be towards the higher end of the acceptable values for each operation.** Uses estimated measurements **to compare answers** to one-step word problems. **Evaluates usefulness and accuracy of estimations.**	**liquid volumes and masses of objects using any of the four basic operations.** **Uses estimated measurements, when indicated, to answer one-step word problems.**	volumes and masses of objects **using concrete objects** (beakers, measuring cups, scales) **to develop estimates.**	masses of concrete objects (beakers, measuring cups, scales).
Geometric Measurement 3.MD.5 3.MD.6 3.MD.7b-1 3.MD.7d	Recognizes area as an attribute of plane figures. Understands area is measured using square units. **Describes a visual model to show understanding that** area that can be found by covering a plane figure without gaps or overlaps by unit squares and counting them. **Connects counting squares to multiplication when finding area.** Represents the area of a plane figure as "n" square units.	Recognizes area as an attribute of plane figures. With a visual model, understands area is measured using square units. Determines area by covering a plane figure without gaps or overlaps by unit squares and counting them. **Represents the area of a plane figure as "n" square units.**	Recognizes area as an attribute of plane figures. With a visual model, understands area is measured using square units. **Determines area by covering a plane figure without gaps or overlaps by unit squares and counting them.**	Recognizes area as an attribute of plane figures. With a visual model, understands area is measured using square units. Determines area by counting unit squares.

	Grade 3 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 3 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**evel 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Multi-Digit Arithmetic 3.NBT.2 3.NBT.3	Accurately adds and subtracts within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Multiplies one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value	**Accurately** adds and subtracts within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Uses repeated addition to multiply one-digit whole numbers by multiples of 10 in the range 10-90 **using strategies based on place value and properties of operations.**	Adds and subtracts within 1000, using strategies and algorithms based on place value, properties of operations with scaffolding, and/or the relationship between addition and subtraction. **Uses repeated addition to multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.**	Adds and subtracts within 1000, using strategies and algorithms based on place value, properties of operations with scaffolding, and/or the relationship between addition and subtraction.

	Grade 3 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 3 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Scaled Graphs 3.MD.3-1 3.MD.3-3 3.Int.4	Completes a scaled picture graph and a scaled bar graph to represent a data set. Solves one-and two-step "how many more" and "how many less" problems, **requiring a substantial addition, subtraction or multiplication step,** using information presented in scaled bar graphs.	**Completes a scaled picture graph and a scaled bar graph to represent a data set**. Solves one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	**Completes a scaled picture graph and a scaled bar graph to represent a data set, with scaffolding, such as using a model as a guide.** Solves one-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	Identifies a correctly scaled picture graph and a correctly scaled bar graph to represent a data set. Solves one-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
Measurement Data 3.MD.4	Generates measurement data by measuring lengths to the nearest half and **fourth** inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers, halves **or quarters**. **Uses the line plot to answer questions or solve problems.**	Generates measurement data by measuring lengths to the nearest half inch. Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers or halves.	**Generates measurement data by measuring lengths to the nearest half inch.** **Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers or halves, with scaffolding.**	Identifies correct measurement from figures with appropriate scale provided.
Understanding Shapes 3.G.1	Understands the properties of quadrilaterals and the subcategories of quadrilaterals. Recognizes **and sorts** examples of quadrilaterals that have shared attributes and **shows** that the shared attributes can define a larger category. Draws examples and **non-examples** of quadrilaterals with specific attributes.	**Understands the properties** of quadrilaterals and the subcategories of quadrilaterals. Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category. **Draws examples of quadrilaterals with specific attributes.**	Identifies examples of quadrilaterals and the subcategories of quadrilaterals. **Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category.**	Identifies examples of quadrilaterals and the subcategories of quadrilaterals.
Perimeter and Area 3.G.2 3.MD.8 3.Int.3	Solves real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and provides examples of rectangles with **the same perimeter and different areas** or with the same area and different perimeters**.** **A substantial addition, subtraction, or multiplication step with number values towards the higher end of the**	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, **finding an unknown side length**, and **provides examples of** rectangles with the same area and different perimeters.	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, **and identifying rectangles with the same area and different perimeters.**	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths.

	Grade 3 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 3 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**evel 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	acceptable values for each operation Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole.			

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses Grade 3 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**evel 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 3.C.1-1 3.C.1-2 3.C.1-3 3.C.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols, labels • justification of a conclusion • **determination of whether an argument or conclusion is generalizable** • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). **Provides a counter-example where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/**defensible** approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • precision of calculation • **correct** use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluating**, interpreting and critiquing** the validity of other's responses, r**easonings, and approaches, utilizing mathematical connections (when appropriate)**.	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses Grade 3 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Concrete Referents and Diagrams 3.C.3-1 3.C.3-2 3.C.6-1 3.C.6-2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams--including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • **determination of whether an argument or conclusion is generalizable** • evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning**, and providing a counter-example where applicable**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-**organized and complete** response based on operations using concrete referents such as diagrams--including number lines (**whether provided in the prompt or constructed by the student**) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluating, **interpreting, and critiquing** the validity of other's responses, approaches, and **reasoning.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **a response** based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • **a logical approach based on a conjecture and/or stated assumptions** • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations. • **evaluating** the validity of other's responses, **approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **an** incomplete response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses
Distinguish Correct Explanation/ Reasoning from that which is Flawed 3.C.4-1 3.C.4-2 3.C.4-3 3.C.4-4 3.C.4-5 3.C.4-6 3.C.5-1 3.C.5-2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response by: • presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • **evaluating** explanation/reasoning; if	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates **a well-organized** and complete response by: • presenting and **defending** solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response by**:** • presenting solutions to **multi-step** problems in the form of valid chains of reasoning**,** using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response by: • presenting solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed

	Grade 3 Math: Sub-Claim C In connection with content, the student expresses Grade 3 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
3.C.4-7	there is a flaw in the argument • presenting **and defending** corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • **an efficient** and logical progression of steps **with appropriate justification** • **precision of calculation**	that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **a logical progression of steps** • **precision of calculation**	• identifying and **describing the flaw in reasoning or describing errors in solutions to multi-step problems** • **presenting corrected reasoning** Response may include: • **a logical approach based on a conjecture and/or stated assumptions** • **a logical**, but incomplete, progression of steps • **minor** calculation errors	• identifying an error in reasoning Response may include: • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error
	• correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • **evaluation of whether an argument or conclusion is generalizable** • evaluating, interpreting, and critiquing the validity of other's responses, approaches and reasoning, and **providing a counter-example where applicable.**	• **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning**.	• **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating** the validity of other's responses, **approaches and conclusions.**	• limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

	Grade 3 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 3 by applying knowledge and skills articulated in the standards for Grade 3 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly and quantitatively, using appropriate tools strategically, looking for the making use of structure, and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 3.D.1 3.D.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • **analyzing and/or creating constraints, relationships and goals**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or **making assumptions and using** approximations to simplify a real-world situation • **mapping relationships** between important quantities by selecting	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities by using provided**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities by using provided tools to create models • analyzing relationships

	Grade 3 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 3 by applying knowledge and skills articulated in the standards for Grade 3 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly and quantitatively, using appropriate tools strategically, looking for the making use of structure, and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • **justifying and defending models which lead to a conclusion** • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a concise arithmetic expression or equation to describe a situation	appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context **of the situation** • reflecting on whether the results make sense • modifying **and/or improving** the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	**tools to create models** • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context** • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • writing an arithmetic expression or equation to describe a situation	mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

Grade 4 Mathematics Performance Level Descriptors

	Grade 4 Math : Sub-Claim A The student solves problems involving Major Content for Grade 4 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Fractions and Decimals 4.NF.1-2 4.NF.2-1 4.NF.A.Int.1 4.NF.5 4.NF.6 4.NF.7 4.NF.Int.1 4.NF.Int.2	Compares decimals to hundredths; uses decimal notations for fractions with denominators 10 or 100. Compares fractions, with like or unlike numerators and denominators, by creating equivalent fractions with common denominators, comparing to a benchmark fraction and **generating equivalent fractions.** Recognizes that decimals and fractions must refer to the same whole in order to compare. Shows results using symbols. **Demonstrates the use of conceptual understanding of fractional equivalence and ordering when solving** simple word problems requiring fraction comparison. **Converts a simple fraction to a denominator of 10 or 100 and writes as a decimal (e.g.,1/2 = 5/10 = .5, ¼ = 25/100 = 0.25, 1/20 = 5/100 = 0.05).** **Adds fractions with denominators of 10 and 100.**	Given a visual model and/or manipulatives, compares decimals to hundredths: **Expresses a fraction with denominator 10 as an equivalent fraction with denominator 100. Uses decimal notation for fractions with denominators 10 or 100.** Compares fractions, with like or unlike numerators and denominators, by **creating equivalent fractions with common denominators** and comparing to a benchmark fraction. Recognizes that decimals and fractions must refer to the same whole in order to compare. Shows results using symbols. **Solves simple word problems requiring fraction comparison**.	Given a visual model and/or manipulatives, compares decimals to hundredths; uses decimal notations for fractions (tenths and hundredths); compares fractions, with like **or unlike numerators and denominators by comparing to a benchmark fraction.** **Recognizes that decimals and fractions must refer to the same whole in order to compare.** **Shows results using symbols.** **Solves simple word problems requiring fraction comparison with scaffolding**.	Given a visual model and/or manipulatives, compares decimals to hundredths; uses decimal notations for fractions (tenths and hundredths); compares fractions with like denominators.
Building Fractions 4.NF.3a 4.NF.3b-1 4.NF.3c 4.NF.3d 4.NF.Int.1	**Understands** and solves mathematical and real-world problems involving the addition and subtraction of fractions and mixed numbers with like denominators by joining and separating parts referring to the same whole, and **justifying the solution by using a visual model.** Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Using visual models and/or manipulatives, solves mathematical and **word problems** involving the addition and subtraction of fractions and **mixed numbers** with like denominators by joining and separating parts referring to the same whole. Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Using visual models and/or manipulatives, solves mathematical problems involving the addition and subtraction of fractions with like denominators by joining and separating parts referring to the same whole. **Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.**	Using visual models and/or manipulatives, solves mathematical problems involving the addition and subtraction of fractions with like denominators by joining and separating parts referring to the same whole.

	Grade 4 Math : Sub-Claim A The student solves problems involving Major Content for Grade 4 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Multiplying Fractions 4.NF.4a 4.NF.4b-1 4.NF.4b-2 4.NF.4c 4.NF.Int.1	**Describes a visual fraction model** and solves mathematical and real-world problems by recognizing that fraction *a*/*b* is a multiple of 1/*b* and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical and **real- world problems** by recognizing that fraction *a*/*b* is a multiple of 1/*b* and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical problems by recognizing that fraction *a*/*b* is a multiple of 1/*b* **and uses that construct to multiply a fraction by a whole number.**	Using visual models and/or manipulatives, solves mathematical problems by recognizing that fraction *a*/*b* is a multiple of 1/*b*.
Solving with Multiplication 4.OA.1-1 4.OA. 1-2 4.OA.2	Interprets multiplication equations as comparisons and represents statements of multiplicative comparisons as multiplicative equations. **Distinguishes multiplicative comparisons.** Uses multiplication or division to solve **multi-step** word problems involving multiplicative comparisons. Uses a symbol for the unknown number.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations. Uses multiplication or division to solve **one- or two-step word problems** involving multiplicative comparisons.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations. **Uses multiplication or division to solve scaffolded word problems involving multiplicative comparisons.**	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations.
Multi-step Problems 4.OA.3-1 4.OA.3-2 4.NBT.5-1 4.NBT.5-2 4.NBT.6-1 4.NBT.6-2 4.Int.2 4.Int.3 4.Int.4 4.Int.5	Solves multi-step word problems using the four operations with whole numbers: in multiplying a three- or four-digit by a one-digit number or two two-digit numbers. Finds whole number quotients and remainders with up to **four**-digit dividends and one-digit divisors and interprets remainders as appropriate. Chooses from a variety of strategies to solve these problems and **selects an appropriate context for the task.**	Solves two-step word and other problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors and **interprets remainders as appropriate**. **Chooses from a variety of strategies to solve these problems.**	Solves one- or two-step **word** problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers. Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors. **Chooses from a variety of strategies to solve these problems. Can only solve two-step problems when scaffolding is provided for each step.**	Solves one-step mathematical problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers. Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors.
Place Value 4.NBT.1 4.NBT.2 4.NBT.3 4.NBT.Int.1	In any **multi**-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right. Reads, writes and compares multi-digit whole numbers using base-10 numerals, number names in expanded form and	In any **four-digit** whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right. Reads, writes and compares **four-digit** whole numbers using base-10 numerals, number names in expanded form and	In any three-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right. **Reads, writes and compares three-digit whole numbers using base-10 numerals, number names in expanded**	In any three-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.

	Grade 4 Math : Sub-Claim A The student solves problems involving Major Content for Grade 4 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	inequality symbols (>, <, =), rounds to any place **and chooses appropriate context given a rounded number.** **Performs computations by applying conceptual understanding of place value, rather than by applying multi-digit algorithms.**	inequality symbols (>, <, =), and **rounds to any place.**	**form and inequality symbols (>, <, =), and rounds to any place with scaffolding.**	
Addition and Subtraction 4.NBT.4-1 4.NBT.4-2 4.Int.7 4.Int.8	Solves **multiple**-step word and other problems by adding or subtracting multi-digit whole numbers using the standard algorithm.	Solves **two**-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm.	Solves one-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm with accuracy.	Solves one-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm with limited accuracy.

	Grade 4 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 4 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Operations and Factors 4.OA.4-1 4.OA.4-2 4.OA.4-3 4.OA.4-4	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100, finds **all** factor pairs and determines multiples of whole numbers. Determines whether a whole number in the range 1-100 is prime or composite.	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 finds factor pairs or determines multiples of whole numbers. Determines whether a whole number in the range 1-100 is prime or composite.	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 finds factor pairs or determines multiples of whole numbers. **Determines, with scaffolding, whether a whole number in the range 1-100 is prime or composite.**	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 identifies factor pairs or multiples of whole numbers.
Measurement and Conversion 4.MD.1 4.MD.2-1 4.MD.2-2 4.MD.3 4.Int.6	Solves measurement word problems involving whole numbers which include calculation of area and perimeter – including those in which **side lengths are missing** – using all four operations. Solves measurement word problems which include calculation of area and perimeter–including those in which **side lengths are missing**–using addition, subtraction, multiplication of simple fractions. Records measurement	**Solves measurement word problems involving whole numbers which include calculation of area and perimeter – when information about side lengths is provided –** using all four operations. Solves measurement word problems **which include calculation of area and perimeter–when information about side lengths is provided–** using addition, subtraction, multiplication of simple fractions. Records measurement	Solves mathematical measurement problems involving whole numbers using all four operations**.** Solves mathematical measurement problems using addition, subtraction, **and multiplication** of simple fractions. **Records measurement equivalents in a two-column table.** **Uses knowledge of measurement units within one system to convert from larger units to smaller units.**	Solves mathematical measurement problems involving whole numbers using all four operations**.** Solves mathematical measurement problems using addition and subtraction of simple fractions.

	Grade 4 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 4 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	equivalents in a two-column table. Uses knowledge of measurement units within one system to solve word problems, real-world problems, and mathematical problems involving converting from larger units to smaller units. Represents measurement quantities using diagrams such as number line diagrams **that require students to provide the appropriate measurement scale given the context.**	equivalents in a two-column table. Uses knowledge of measurement units within one system to **solve word problems, real-world problems and mathematical problems** involving converting from larger units to smaller units. **Represents measurement quantities using diagrams such as number line diagrams that feature a measurement scale**.		
Represent and Interpret Data 4.MD.4-1 4.MD.4-2	Makes a line plot to display a data set of measurements in fractions of a unit with like denominators limited to 2, 4 and 8, **(including mixed numbers)** and uses addition and subtraction of fractions to solve problems involving information in the line plots and **evaluates the solution in relation to the data.**	Makes a line plot to display a data set of measurements in fractions of a unit with like denominators of 2 or 4 and **uses addition and subtraction of fractions to solve problems involving information in the line plot.**	**Makes** a line plot to display a data set of measurements in fractions of a unit with like denominators of 2 or 4.	Identifies a correct line plot that displays a data set of measurements in fractions of a unit with like denominators of 2 or 4.
Geometric Measurement 4.MD.5 4.MD.6 4.MD.7	Recognizes how angles are formed and that angle measures are additive. Understands and applies concepts of angle measurement **recognizing that angles are measured in reference to a circle.** Uses a protractor to measure and sketch angles. Solves mathematical and real-world problems by composing and decomposing angles**.** Solves mathematical and real-world angle problems, **including problems that require the use of equations with a symbol for the unknown angle measure.**	Understands and applies concepts of angle measurement**.** Uses a protractor to measure and **sketch angles.** **Solves mathematical and real-world problems by composing and decomposing angles.**	Understands and **applies** concepts of angle measurement. **Uses a protractor to measure angles.**	Understands and identifies concepts of angle measurement.
Lines, Angles and Shapes	Draws and identifies points, lines, line segments, rays, angles	**Draws** and identifies points, lines, line segments, rays, angles	Identifies points, lines, line segments, rays, angles (right,	Identifies points, lines, line segments, rays, angles (right,

	Grade 4 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 4 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
4.G 1 4.G.2 4.G.3	(right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use **any of these** to classify **or describe** two-dimensional figures.	(right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use some of these to classify **two-dimensional figures.**	obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and **use some of these to classify quadrilaterals and triangles.**	obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles.
Generate and Analyze Patterns 4.OA.5	Generates a number or shape pattern that follows a given rule and identifies apparent features of the pattern that were not explicit in the rule itself **and describes the rule for generating the number or shape pattern.**	Generates a number or shape pattern that follows a given rule and **identifies explicit features of the pattern.**	**Generates** a number or shape pattern that follows a given rule.	Identifies a number or shape pattern that follows a given rule.

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses Grade 4 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 4.C.1-1 4.C.1-2 4.C.2 4.C.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a logical/**defensible** approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • justification of a conclusion • **evaluation of whether an argument or conclusion is generalizable** • evaluating**, interpreting and critiquing** the validity of	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete written response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns Response may include: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses Grade 4 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). **Provides a counter-example where applicable.**	other's responses, **reasonings, and approaches, utilizing mathematical connections (when appropriate).**		
Concrete Referents and Diagrams 4.C.4-1 4.C.4-2 4.C.4-3 4.C.4-4 4.C.4-5 4.C.7-1 4.C.7-2 4.C.7-3 4.C.7-4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams--including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and **providing a counter-example where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-**organized** and complete response based on operations using concrete referents such as diagrams--including number lines (**whether provided in the prompt or constructed by the student**) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating, **interpreting, and critiquing** the validity of other's responses, approaches, and **reasoning.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **a complete response** based on operations using concrete referents such as diagrams--including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • **a logical approach based on a conjecture and/or stated assumptions** • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations. • **evaluating** the validity of other's responses, **approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **an incomplete** response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses.

	Grade 4 Math: Sub-Claim C In connection with content, the student expresses Grade 4 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Distinguish Correct Explanation/ Reasoning from that which is Flawed 4.C.5-1 4.C.5-2 4.C.5-3 4.C.5-4 4.C.5-5 4.C.5-6 4.C.6-1 4.C.6-2 4.C.6-3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response by: • presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • **evaluating** explanation/reasoning; if there is a flaw in the argument • presenting **and defending** corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • **an efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and **providing a counter-example where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates **a well-organized** and complete response by: • presenting and **defending** solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **a logical progression of steps** • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning**.	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response by**:** • presenting solutions to **multi-step** problems in the form of valid chains of reasoning**,** using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and **describing the flaw in reasoning or describing errors in solutions to multi-step problems** • **presenting corrected reasoning** Response may include: • **a logical approach based on a conjecture and/or stated assumptions** • **a logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating** the validity of other's responses, **approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response by: • presenting solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning Response may include: • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses.

	Grade 4 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 4 by applying knowledge and skills articulated in the standards for Grade 4 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly and quantitatively, using appropriate tools strategically, looking for the making use of structure, and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 4.D.1 4.D.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • **analyzing and/or creating constraints, relationships and goals** • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • **justifying and defending models which lead to a conclusion** • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing **a concise** arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or **making assumptions** and using approximations to simplify a real-world situation • **mapping relationships between important quantities by selecting appropriate tools to create models** • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context **of the** situation • reflecting on whether the results make sense • modifying **and/or improving** the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities by using provided tools to create models** • analyzing relationships mathematically **between important quantities** to draw conclusions • **interpreting mathematical results in a simplified context reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

Grade 5 Mathematics Performance Level Descriptors

	Grade 5 Math : Sub-Claim A The student solves problems involving Major Content for Grade 5 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Addition and Subtraction Operations with Decimals 5.NBT.7-1 5.NBT.7-2	Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value, properties of operations and/or the relationship between addition and subtraction. **Applies this concept to a real-world context**, and relates the strategy to a written method and explain the reasoning used.	**Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value**, properties of operations and/or the relationship between addition and subtraction.	Adds or subtracts (without regrouping) two decimals to hundredths using concrete models, drawings or strategies based on place value and/or the relationship between addition and subtraction.	Adds or subtracts (without regrouping) two decimals to hundredths **(both decimals presented with the same number of decimal places)** using concrete models, drawings or strategies based on place value and/or the relationship between addition and subtraction.
Adding and Subtracting in Context with Fractions 5.NF.2-1 5.NF.2-2 5.NF.A.Int.1	**Describes a model to represent** word problems involving addition and subtraction of fractions and mixed numbers referring to the same whole in cases of unlike denominators by using visual fraction models or equations. **Assesses and justifies reasonableness using benchmark fractions and number sense of fractions**.	Solves word problems involving addition and subtraction of fractions and mixed numbers referring to the same whole **in cases of unlike denominators** by using visual fraction models or equations.	Solves word problems involving addition and subtraction of fractions **and mixed numbers** using only denominators of 2, 4, 5 or 10 **or benchmark fractions with unlike denominators, referring to the same whole by using visual fraction models or equations.**	Solves word problems involving addition and subtraction of fractions using only denominators of 2, 4, 5 or 10.
Fractions with Unlike Denominators 5.NF.1-1 5.NF.1-2 5.NF.1-3 5.NF.1-4 5.NF.1-5	Adds and subtracts **three or more** fractions and adds and subtracts two mixed numbers with unlike denominators in such a way as to produce an equivalent sum or difference with like denominators.	Adds and subtracts two fractions or mixed numbers with unlike denominators **in such a way as to produce an equivalent sum or difference with like denominators.**	Adds or subtracts two fractions or **mixed numbers** with unlike denominators using only fractions with denominators of 2, 4, 5 or 10 in such a way as to produce an equivalent sum or difference with like denominators.* *below grade level.	Adds or subtracts two fractions with unlike denominators using only fractions with denominators of 2, 4, 5 or 10 in such a way as to produce an equivalent sum or difference with like denominators.* *below grade level.
Multiplication and Division Operations with Decimals 5.NBT.7-3 5.NBT.7-4 5.NBT.Int.1	Multiplies tenths by tenths or tenths by hundredths and divides in problems involving tenths and/or hundredths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction. **Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.**	Multiplies tenths by tenths **or tenths by hundredths** and divides in problems involving tenths **and/or hundredths** using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction. **Relates the strategy to a written method.**	Multiplies tenths by tenths **and divides** in problems involving tenths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	Multiplies tenths by tenths in problems involving tenths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.

	Grade 5 Math : Sub-Claim A The student solves problems involving Major Content for Grade 5 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Relates the strategy to a written method.			
Multiply with Whole Numbers 5.NBT.5 5.Int.1 5.Int.2	Solves two-step **unscaffolded** word problems involving multiplication and multiplies **four**-digit by **two-digit** whole numbers **using the standard algorithm.** **Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.** Accurately multiplies multi-digit whole numbers using the standard algorithm **and assesses reasonableness of the product.**	Solves two-step scaffolded word problems involving multiplication **of a three-digit by a one-digit whole number.** **Accurately** multiplies multi-digit whole numbers using the standard algorithm.	Solves one-step word problems involving multiplication **of a three-digit by a one-digit whole number**. **Multiplies multi-digit whole numbers using the standard algorithm with limited accuracy.**	Solves one-step word problems involving multiplication.
Quotients and Dividends 5.NBT.6	Divides whole numbers up to four-digit dividends and **two-digit** divisors using strategies based on place value, the properties of operations and/or the relationship between multiplication and division. **Illustrates and explains the calculations by using equations, rectangular arrays, and area models.** **Checks reasonableness of answers by using multiplication or estimation.**	Divides whole numbers up to **four-digit** dividends and one-digit divisors which are multiples of ten using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.	**Divides** whole numbers up to three-digit dividends and one-digit divisors which are multiples of ten **using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.**	Correctly identifies the quotient of whole numbers up to three-digit dividends and one-digit divisors which are multiples of ten.
Multiplying and Dividing with Fractions 5.NF.4a-1 5.NF.4a-2 5.NF.4b-1 5.NF.6-1 5.NF.6-2 5.NF.7a 5.NF.7b 5.NF.7c	**Describes a model to represent and/**or solve real-world problem**s,** by multiplying a mixed number by a fraction, a fraction by a fraction and a whole number by a fraction; dividing a fraction by a whole number and a whole number by a fraction using visual fraction models and creating context for the mathematics **and equations**, including rectangular areas; and interpreting the product and/or quotient.	Multiplies a fraction or a whole number by a fraction and divides a fraction by a whole number – or whole number by a fraction – using visual fraction models and **creating context for the mathematics, including rectangular areas.**	Multiplies a fraction or a whole number by a fraction **and divide a fraction by a whole number or whole number by a fraction** using visual fraction models.	Multiplies a fraction or a whole number by a fraction using visual fraction models.

	Grade 5 Math : Sub-Claim A The student solves problems involving Major Content for Grade 5 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Interpreting Fractions 5.NF.3-1 5.NF.3-2	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. Interprets the fraction as division of the numerator by the denominator. **Identifies a simple model representing the** situation**.** **Describes a model to represent the situation.**	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. **Interprets the fraction as division of the numerator by the denominator.**	Solves word problems involving division of whole numbers leading to answers in the form of fractions **or mixed numbers** by using manipulatives or visual models to identify between which two whole numbers the answer lies.	Solves word problems involving division of whole numbers leading to answers in the form of fractions by using manipulatives or visual models to identify between which two whole numbers the answer lies.
Recognizing Volume 5.MD.3 5.MD.4	Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them. **Represents the volume of a solid figure as "n" cubic units. Writes an equation that illustrates the unit cube pattern.**	Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.	Recognizes volume as an attribute of solid figures **and with a visual model understands that volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.**	Recognizes volume as an attribute of solid figures.
Finding Volume 5.MD.5b 5.MD.5c	Solves real-world and mathematical problems by applying the formulas for volume, relating volume to the operations of multiplication and addition, and recognizing volume is additive by finding the volume of solid figures of two **or more** non-overlapping parts.	Given a visual model, solves real-world and mathematical problems by applying the formulas for volume, **relating volume to the operations of multiplication and addition, and recognizing volume is additive by finding the volume of solid figures of two non-overlapping parts.**	Given a visual model **and the formulas for finding volume**, **solves real-world and mathematical problems by applying the formulas for volume (*V* = *l* x *w* x *h* and *V* = *B* x *h*).**	Given a visual model, solves volume problems by counting unit cubes.
Read, Write and Compare Decimals 5.NBT.3a 5.NBT.3b 5.NBT.4	Reads, writes and compares decimals **to any place** using numerals, number names, expanded form and symbols (>, <, =); rounds to any place and **chooses appropriate context given a rounded number.**	Reads, writes and compares decimals to the **hundredths** using numerals, number names, expanded form and symbols (>, <, =), and **rounds to any place.**	**Reads, writes and compares** decimals to the hundredths using numerals, number names, expanded form and symbols (>, <, =), **and rounds to any place with scaffolding**.	Identifies the correct comparison of decimals to the hundredths using numerals, number names, expanded form and symbols (>, <, =).
Place Value 5.NBT.1 5.NBT.2-2 5.NBT.A.Int.1	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left and uses whole number exponents to denote powers of 10 and **uses symbols to**	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right or 1/10 of what it represents in the place to its left and **uses whole number exponents to denote powers of 10.**	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right or **1/10 of what it represents in the place to its left** by using manipulatives or visual models.	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right by using manipulatives or visual models.

	Grade 5 Math : Sub-Claim A The student solves problems involving Major Content for Grade 5 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	compare two powers of 10 expressed exponentially (compare 10^2 to 10^5).			
Multiplication Scaling 5.NF.5a	Interprets multiplication scaling by comparing the size of the product to the size of one factor on the basis of the size of the second factor without performing the indicated multiplication, **focusing on one factor being a fraction greater than or less than one.**	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor without performing the indicated multiplication **where one factor is a fraction less than one.**	**Interprets** multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication where one factor is a fraction less than one using manipulatives or visual models.	Identifies multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication where one factor is a fraction less than one using manipulatives or visual models.
Write and Interpret Numerical Expressions 5.OA.1 5.OA.2-1 5.OA.2-2	Uses parentheses, brackets, or braces **with no greater depth than two,** to write and **evaluate** numerical expressions. **Interprets numerical expressions without evaluating them.**	Uses parentheses, brackets, or braces to **write numerical expressions.** Interprets simple numerical expressions without evaluating them.	Uses parentheses, **brackets, or braces** to write simple numerical expressions.	Uses parentheses to write simple numerical expressions.

	Grade 5 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 5 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Graphing on the Coordinate Plane 5.G.1 5.G.2 5.OA.3	Represents real-world and mathematical problems by locating and graphing points in the first quadrant of a coordinate plane and interprets coordinate values of points in the context of the situation**.**	Represents real-world and mathematical problems by locating **and** graphing points in the first quadrant of a coordinate plane.	Represents real-world and mathematical problems by locating **or graphing** points in the first quadrant of a coordinate plane.	Represents real-world mathematical problems by locating points in the first quadrant of a coordinate plane.
Two-Dimensional Figures 5.G.3 5.G.4	Classifies two-dimensional figures in a hierarchy based on properties. Understands that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. **Uses appropriate tools to determine similarities and differences between categories and subcategories.**	Classifies two-dimensional figures in a **hierarchy** based on properties. Understands that shared attributes categorize two-dimensional figures.	**Classifies** two-dimensional figures based on properties. **Understands that shared attributes categorize two-dimensional figures.**	Identifies two-dimensional figures based on properties.
Conversions 5.MD.1-1 5.MD.1-2	Converts among different-sized standard measurement units within a given measurement system and uses these conversions to solve real-world, **multi-step** problems.	Converts among different-sized standard measurement units within a given measurement system **and uses these conversions to solve real-world**, single-step problems.	**Converts** among different-sized standard measurement units within a given measurement system **and solves single-step problems by using manipulatives or visual models.**	Identifies the correct conversion among different-sized standard units within a given measurement system.

	Grade 5 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 5 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Chooses the appropriate measurement unit based on the given context.			
Data Displays 5.MD.2-2	Uses operations on fractions with denominators of 2, 4, and 8 to solve problems involving information in line plots and **interprets the solution in relation to the data.**	Uses operations on fractions with denominators of 2 and 4 to solve problems involving information in line plots.	Uses operations on fractions with like denominators of 2 **and 4** to solve problems involving information in line plots.	Uses operations on fractions with like denominators of 2 to solve problems involving information in line plots.

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses Grade 5 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 5.C.1-1 5.C.1-2 5.C.1-3 5.C.2-1 5.C.2-2 5.C.2-3 5.C.2-4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a well-organized and complete written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include: • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an **efficient** and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **well-organized** and complete written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include: • a logical/**defensible** approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating, **interpreting and critiquing** the validity of other's responses, **reasonings, and approaches, utilizing mathematical connections (when appropriate).**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a complete written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include: • a **logical** approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an **incomplete** written response based on explanations/reasoning using: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response may include: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses Grade 5 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	connections (when appropriate). **Provides a counter-example where applicable.**			
Place Value 5.C.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on place value system including: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and **providing a counter-example where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a **well-organized** and complete response based on place value system including: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating**,** interpreting and critiquing the validity of other's responses, approaches and reasoning.	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete response** based on place value system including: • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • **evaluating the validity of other's responses, approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on place value system which may include: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations
Concrete Referents and Diagrams 5.C.4-1 5.C.4-2 5.C.4-3 5.C.4-4 5.C.5-1 5.C.5-2 5.C.5-3 5.C.6	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams--including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a **well-organized a**nd complete response based on operations using concrete referents such as diagrams--including number lines (**whether provided in the prompt or constructed by the student**) and connecting the diagrams to a written (symbolic) method, which may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates **a complete response** based on operations using concrete referents such as diagrams--including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • **a logical approach based on a conjecture and/or stated assumptions** • a **logical**, but incomplete, progression of steps	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include: • a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses Grade 5 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	mathematical connections (when appropriate) • an **efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and **providing a counterexample where applicable**	**mathematical connections (when appropriate)** • a logical progression of steps • **precision of calculation** • **correct** use of grade-level vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating, **interpreting, and critiquing** the validity of other's responses, approaches, and **reasoning.**	• **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations. • **evaluating** the validity of other's responses, **approaches and conclusions.**	• limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses
Distinguish Correct Explanation/ Reasoning from that which is Flawed 5.C.7-1 5.C.7-2 5.C.7-3 5.C.7-4 5.C.8-2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a well-organized and complete response by: • analyzing and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • **evaluating** explanation/ reasoning if there is a flaw in the argument • presenting **and defending** corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • **an efficient** and logical progression of steps **with appropriate justification** • precision of calculation • correct use of grade-level vocabulary, symbols and labels	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates **a well-organized** and complete response by: • analyzing and **defending** solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning Response may include: • a logical approach based on a conjecture and/or stated assumptions, **utilizing mathematical connections (when appropriate)** • **a logical progression of steps** • **precision of calculation** • **correct** use of grade-level	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response by**:** • analyzing solutions to **multi-step** problems in the form of valid chains of reasoning**,** using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying and **describing the flaw in reasoning or describing errors in solutions to multi-step problems** • **presenting corrected reasoning** Response may include: • **a logical approach based on a conjecture and/or stated assumptions** • **a logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response by: • analyzing solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning Response may include: • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

	Grade 5 Math: Sub-Claim C In connection with content, the student expresses Grade 5 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and **providing a counter-example where applicable**	vocabulary, symbols and labels • **justification of a conclusion** • **evaluation of whether an argument or conclusion is generalizable** • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning**	• partial justification of a conclusion based on own calculations • **evaluating** the validity of other's responses, **approaches and conclusions.**	

	Grade 5 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 5 by applying knowledge and skills articulated in the standards for Grade 5 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 5.D.1 5.D.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • analyzing and/or creating constraints, relationships and goals • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • justifying and defending models which lead to a conclusion • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions or **making assumptions** and using approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • modifying and/or improving the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities by using provided tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

	Grade 5 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 5 by applying knowledge and skills articulated in the standards for Grade 5 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• improving the model if it has not served its purpose • writing **a concise** arithmetic expression or equation to describe a situation			

Grade 6 Mathematics Performance Level Descriptors

	Grade 6 Math: Sub-Claim A The student solves problems involving Major Content for Grade 6 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Multiplying and Dividing with Fractions 6.NS.1-2	Solves word problems involving **division of fractions by fractions.**	Divides fractions **with unlike denominators** and solves word problems with prompting embedded within the problem.	Divides fractions with common denominators **and solves word problems with prompting embedded within the problem.**	Divides fractions with common denominators.
Ratios 6.RP.1 6.RP.2 6.RP.3a 6.RP.3b 6.RP.3c-1 6.RP.3c-2 6.RP.3d	Uses ratio and rate reasoning to solve real-world and mathematical problems, including ratio, unit rate, percent and unit conversion problems. Uses **and connects a variety of representations** and strategies to solve these problems. Finds missing values in tables and plots values on the coordinate plane.	Uses ratio and rate reasoning to solve **real-world** and mathematical problems, including ratio, unit rate, percent and unit conversion problems using a limited variety of representations and strategies. Finds missing values in tables and locates **and** plots values on the coordinate plane.	**Uses ratio and rate reasoning** to solve mathematical problems, including ratio, unit rate, percent and unit conversion problems using a limited variety of representations and strategies. **Finds missing values in tables and locates or plots values on the coordinate plane.**	Solves problems including ratio, unit rate, percent and unit conversion problems using a limited variety of representations and strategies.
Rational Numbers 6.NS.5 6.NS.6a 6.NS.6b-1 6.NS.6b-2 6.NS.6c-1 6.NS.6c-2 6.NS.7a 6.NS.7b 6.NS.7c-1 6.NS.7c-2 6.NS.7d 6.NS.8	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line and compared with or without the use of a number line. Understands **and interprets** the absolute value of a rational number. Plots ordered pairs on a coordinate plane to solve real-world and mathematical problems. Understands **(or recognizes) that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.** **Distinguishes comparisons of absolute value from statements about order.**	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line **and compared with or without the use of a number line.** **Understands** the absolute value of a rational number. Plots ordered pairs on a coordinate plane to solve **real-world and** mathematical problems.	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line. Determines the absolute value of a rational number. **Locates or plots ordered pairs on a coordinate plane to solve mathematical problems.**	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line. Determines the absolute value of a rational number.
Expressions and	**Writes,** reads and evaluates numerical and algebraic	Reads and **evaluates** numerical and algebraic expressions,	**Reads numerical and algebraic expressions including those**	

	Grade 6 Math: Sub-Claim A The student solves problems involving Major Content for Grade 6 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Inequalities 6.EE.1-1 6.EE.1-2 6.EE.2a 6.EE.2b 6.EE.2c-1 6.EE.2c-2 6.EE.4	expressions, including those that contain whole number exponents. Identifies parts of algebraic and numerical expressions using mathematical terms **and views one or more parts of an expression as a single entity**. Identifies equivalent expressions using properties of operations.	including those that contain whole number exponents. **Writes numerical expressions and some algebraic expressions, including those that contain whole number exponents.** Identifies parts of algebraic and numerical expressions using mathematical terms. **Identifies equivalent expressions using properties of operations.**	**that contain whole number exponents**. Identifies parts of algebraic **and** numerical expressions using mathematical terms.	Identifies parts of an algebraic or numerical expression using mathematical terms.
Equations and Inequalities 6.EE.5-1 6.EE.5-2 6.EE.6 6.EE.7 6.EE.8 6.EE.9	Uses variables to represent numbers and writes expressions and single-step equations to solve real-world and mathematical problems **and understand their solutions.** **Expresses a relationship between dependent and independent variables** and relates tables and graphs to equations. Writes and graphs inequalities to represent a constraint or condition in a real-world or mathematical problem. **Understands that there are an infinite number of solutions for an inequality.**	Uses variables to represent numbers and writes expressions and single-step equations to solve **real-world** or mathematical problems. Relates tables and graphs to the equations. **Writes** and graphs inequalities to represent a constraint or condition in a **real-world** or mathematical problem.	Uses variables to represent numbers and writes expressions without exponents, and single-step equations to solve mathematical problems. **Relates tables and graphs to the equations.** **Graphs inequalities to represent a constraint or condition in a mathematical problem.**	Uses variables to represent numbers and writes expressions without exponents, and single-step equations to solve mathematical problems

	Grade 6 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 6 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Factors and Multiples 6.NS.4-1 6.NS.4-2	Finds greatest common factors and least common multiples. Uses the distributive property to **express** a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	Finds greatest common factors and least common multiples. **Uses the distributive property to rewrite a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.**	Identifies greatest common factors **and** least common multiples.	Identifies greatest common factors or least common multiples.

	Grade 6 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 6 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Geometry 6.G.1 6.G.2-1 6.G.2-2 6.G.3 6.G.4	Solves real-world and mathematical problems involving area of polygons by composing into rectangles or decomposing into triangles and other shapes. Determines measurements of polygons in the coordinate plane. Determines and uses nets of three-dimensional figures to find surface area. Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas. **Uses volume formulas to find unknown measurements.** **Understands the concepts of area and volume to solve unscaffolded problems.**	Solves **real-world** and mathematical problems involving area of polygons by either composing into rectangles or decomposing into triangles and other shapes. Determines measurements of polygons in the coordinate plane. **Determines** and uses nets of three-dimensional figures to find surface area. Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas.	Solves mathematical problems involving area of polygons by either composing into rectangles **or decomposing into triangles and other shapes.** **Determines measurements of polygons in the coordinate plane.** **Uses nets of three-dimensional figures to find surface area.** **Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas.**	Solves mathematical problems involving area of polygons by composing into rectangles.
Statistics and Probability 6.SP.1 6.SP.2 6.SP.3 6.SP.4 6.SP.5	Recognizes a statistical question and understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands the purpose of center and variability and that it can be summarized with a single number. **Displays** numerical data in plots on a number line, including dot plots, histograms and box plots, and **determines which display is the most appropriate.** **Summarizes numerical data sets in relation to their context, such as by reporting the number of observations, describing the nature of the attributes under investigation and using measures of center**	Recognizes a statistical question and understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands the purpose of center and that it can be summarized with a single number.	**Recognizes a statistical question** and understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands **the purpose of center** and that it can be summarized with a single number.	Understands that a set of collected data has a distribution which can be described by its center, spread and overall shape. Understands that the center of a set of data can be summarized with a single number.

	Grade 6 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 6 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**evel 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	and variability. **Determines which measures of center and variability are the most appropriate for a set of data.**			
Operations with Multi-Digit Numbers 6.NS.2 6.NS.3-1 6.NS.3-2 6.NS.3-3 6.NS.3-4 6.Int.1	Solves **two**-step word problems and other problems by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals **and assesses reasonableness of the result using different methods.**	Solves one-step **word** problems and other problems with some level of accuracy by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals.	Solves one-step problems by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals.	Solves one-step problems with **limited accuracy** by dividing multi-digit numbers and adding, subtracting, multiplying and dividing multi-digit decimals.

	Grade 6: Sub-Claim C In connection with content, the student expresses Grade 6 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**evel 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 6.C.1.1 6.C.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting, and critiquing the validity and **efficiency** of other's responses, approaches and reasoning, and **providing**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a complete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches and reasoning.	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • **a logical** approach based on a conjecture and/or stated assumptions • **a logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, which may include: • a faulty approach based on a conjecture and/or stated assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 6: Sub-Claim C In connection with content, the student expresses Grade 6 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	counter-examples where applicable.			
Concrete Referents and Diagrams 6.C.3 6.C.4 6.C.5	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as: diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols, labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and efficiency of other's responses, approaches and reasoning, and **provides a counter-example where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as: diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete justification of a conclusion** • **evaluating**, interpreting and critiquing **the validity of other's** responses, **approaches and** reasoning	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on concrete referents provided in the prompt or **in simple cases, constructed by the student** such as: diagrams **that are connected to a written (symbolic) method**, number line diagrams or coordinate plane diagrams, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some use** of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on concrete referents provided in the prompt such as: diagrams, number line diagrams or coordinate plane diagrams, which may include: • a faulty approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion
Distinguish Correct Explanation/ Reasoning from that which is Flawed 6.C.6 6.C.7 6.C.8.1 6.C.8.2 6.C.9	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response to a given equation, multi-step problem, proposition or conjecture, including: • a **logical** approach based on a conjecture and/or stated assumptions • **a logical, but incomplete, progression of steps** • minor calculation errors • **some** use of grade-level vocabulary, symbols and labels	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response to a given equation, multi-step problem, proposition or conjecture, including: • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels

	Grade 6: Sub-Claim C In connection with content, the student expresses Grade 6 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and efficiency of other's responses, approaches and reasoning, and **providing a counter-example where applicable.** • identifying and describing errors in solutions and presents correct solutions. • **distinguishing correct explanation/reasoning from that which is flawed. If there is a flaw, presents correct reasoning.**	• **complete** justification of a conclusion • evaluating**, interpreting and critiquing** the validity of other's responses, approaches and **reasoning.** • identifying and describing error in solutions and **presents correct solutions.**	• partial justification of a conclusion • **evaluating the validity of other's approaches and conclusion.** • **identifying and describing errors in solutions.**	• partial justification of a conclusion

	Grade 6: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 6 by applying knowledge and skills articulated in the standards for Grade 6 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 6.D.1 6.D.2 6.D.3	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **d**evises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a complete, clear and correct algebraic expression	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and **making assumptions** and **approximations** to simplify a real-world situation • **mapping relationships** between important quantities by **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing **a complete, clear, and correct** algebraic expression	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships** between important quantities by using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: ● using stated assumptions and approximations to simplify a real-world situation ● identifying important quantities by using provided tools to create models ● analyzing relationships mathematically to draw conclusions ● writing an incomplete algebraic expression or equation to describe a situation

	Grade 6: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 6 by applying knowledge and skills articulated in the standards for Grade 6 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • improving the model if it has not served its purpose • interpreting mathematical results in the context of the situation • **analyzing and/or creating limitations, relationships and interpreting goals within the model** • **analyzing, justifying and defending models which lead to a conclusion**	or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • **improving** the model if it has not served its purpose • interpreting mathematical results in **the context of the situation**	• applying proportional reasoning • **writing/**using functions to describe how one quantity of interest depends on another • using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose** • **interpreting mathematical results in a simplified context**	• applying proportional reasoning • using functions to describe how one quantity of interest depends on another • using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Grade 7 Mathematics Performance Level Descriptors

	Grade 7 Math: Sub-Claim A The student solves problems involving Major Content for Grade 7 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Proportional Relationships 7.RP.1 7.RP.2a 7.RP.2b 7.RP.2c 7.RP.2d 7.RP.3-1 7.RP.3-2	**Analyzes** and uses proportional relationships to solve real-world and mathematical problems, including **multi-step** ratio/percent problems. Computes unit rates of quantities associated with ratios of fractions. Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in tables, equations, diagrams, verbal descriptions and graphs. Interprets a point (*x, y*) on the graph of a proportional relationship in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate. Represents proportional relationships by equations and uses them to solve mathematical and real-world problems, including multi-step ratio and percent problems. **Determines when it is appropriate to use unit rates and understands its limitations.**	**Analyzes** and uses proportional relationships to solve real-world and mathematical problems, including simple ratio/percent problems. Computes unit rates of quantities associated with ratios of fractions. Decides whether two quantities are in a proportional relationship and identifies the constant of proportionality (unit rate) in tables, equations, diagrams, verbal descriptions and graphs. **Interprets a point (*x, y*) on the graph** of a proportional relationship **in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.** **Represents proportional relationships by equations** and uses them to solve mathematical and real-world problems, including simple ratio and percent problems.	**Uses** proportional relationships to solve **real-world** and mathematical problems, including simple ratio/percent problems. **Computes unit rates of quantities associated with ratios of fractions.** **Decides** whether two quantities are in a proportional relationship and **identifies the constant of proportionality (unit rate) in tables, equations, diagrams, verbal descriptions and graphs.** **Uses equations representing a proportional relationship to solve mathematical and real-world problems, including ratio and percent problems.**	Identifies proportional relationships to solve mathematical problems, including ratio/percent problems. Identifies whether two quantities are in a proportional relationship.
Operations with Fractions 7.NS.1a 7.NS.1b-1 7.NS.1b-2 7.NS.1c-1 7.NS.1d 7.NS.2a-1 7.NS.2a-2 7.NS.2b-1 7.NS.2b-2 7.NS.2c 7.NS.3 7.EE.3	Performs operations on positive and negative rational numbers in multi-step mathematical and real-world problems. Represents addition and subtraction on a horizontal or vertical number line and recognizes situations in which opposite quantities combine to make zero. Determines reasonableness of a solution and **interprets solutions in real-world contexts.**	Performs operations on positive and negative rational numbers in **multi-step** mathematical and real-world problems. Represents addition and subtraction on a horizontal or vertical number line and recognizes situations in which opposite quantities combine to make zero. **Determines reasonableness of a solution.**	Performs operations on positive and negative rational numbers in mathematical and **real-world** problems. Represents addition and subtraction on a horizontal or vertical number line **and recognizes situations in which opposite quantities combine to make zero.**	Performs operations on positive and negative rational numbers in mathematical problems. Represents addition and subtraction on a horizontal or vertical number line.

	Grade 7 Math: Sub-Claim A The student solves problems involving Major Content for Grade 7 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Using the properties of operations, justifies the steps taken to solve multi-step mathematical and real-world problems involving rational numbers.			
Expressions, Equations and Inequalities 7.EE.1 7.EE.2 7.EE.4a-1 7.EE.4a-2 7.EE.4b	Applies properties of operations as strategies to add, subtract, factor and expand linear expressions. Solves **multi-step** linear equations with rational coefficients. In mathematical or real-world contexts, uses variables to represent quantities, construct and solve equations and inequalities, and graph **and interpret** solution sets. **Rewrites an expression in different forms.** **Describes the relationship between equivalent quantities that are expressed algebraically in different forms in a problem context and explains their equivalence in light of the context of the problem.**	Applies properties of operations as strategies to add, subtract, **factor** and expand linear expressions. Solves two-step linear equations with rational coefficients. In a mathematical or **real-world** context, uses variables to represent quantities, construct and solve equations and inequalities, and graph solution sets.	Applies properties of operations as strategies to add, subtract **and expand** linear expressions. Solves **two-step** linear equations with rational coefficients. **In a mathematical context, uses variables to represent quantities, construct and solve equations and inequalities, and graph solution sets.**	Applies properties of operations as strategies to add and subtract linear expressions. Solves one-step linear equations with rational coefficients.

	Grade 7 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 7 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Representing Geometric Figures 7.G.2 7.G.3	Draws geometric figures – freehand, with a ruler and protractor or with technology – and describes their attributes. Constructs triangles with given angle and side conditions and notices when those conditions determine a unique triangle, >1 triangle or no triangle. Describes two-dimensional figures that result from slicing three-dimensional figures by a	Draws geometric figures – freehand, with a ruler and protractor or with technology – and describes their attributes. Constructs triangles with given angle and side conditions. **Describes the two-dimensional figures that result from slicing three-dimensional figures by a plane parallel or perpendicular to a base or face.**	Draws geometric figures – freehand, with a ruler and protractor, or with technology – and describes some of their attributes. **Constructs triangles with given angle and side conditions.**	Draws geometric figures – freehand, with a ruler and protractor, or with technology – and describes some of their attributes.

	Grade 7 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 7 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	plane **which may or may not be** parallel or perpendicular to a base or face.			
Drawings and Measurement 7.G.1 7.G.4-1 7.G.4-2 7.G.5 7.G.6	Solves mathematical and real-world problems involving circumference, area, surface area and volume of two-and three-dimensional objects, **including composite objects.** Solves problems involving scale drawings of geometric figures, including reproducing a scale drawing at a different scale. Represents angle relationships using equations to solve for unknown angles. **Produces a logical conclusion** about the relationship between circle circumference and area.	Solves mathematical and **real-world** problems involving circumference, area, surface area and volume of two-and three-dimensional objects. Solves problems involving scale drawings of geometric figures, **including reproducing a scale drawing at a different scale.** **Represents** angle relationships **using equations to solve** for unknown angles.	Solves mathematical problems involving circumference, area, **surface area and volume** of two-**and three-**dimensional objects. Solves problems involving scale drawings of geometric figures. **Uses facts about angle relationships to determine the measure of unknown angles**.	Solves mathematical problems involving circumference and area of two-dimensional objects. Solves problems involving scale drawings of geometric figures.
Random Sampling and Comparative Inferences 7.SP.1 7.SP.2 7.SP.3 7.SP.4	Understands and uses random sampling to draw inferences about a population. Draws relevant informal comparative inferences about 2 populations, including assessing the degree of visual overlap of 2 numerical data distributions with similar variabilities. **Generates multiple samples of the same size to gauge the variation in estimates or predictions.** **Analyzes whether a sample is representative of a population.**	**Understands and uses random sampling** to draw inferences about a population. Draws **relevant** informal comparative inferences about two populations.	**Draws inferences about a population from a table or graph of random samples.** **Draws informal comparative inferences about two populations.**	Compares two populations based on measures of center and measures of variability.
Chance Processes and Probability Models 7.SP.5 7.SP.6 7.SP.7a 7.SP.7b 7.SP.8a 7.SP.8b 7.SP.8c	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. **Generates a sample space to determine** the probability of simple or compound events using methods such as organized lists, tables, tree diagrams or **simulations.**	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Finds probabilities when given sample spaces for simple **and compound** events using methods such as organized lists, tables and **tree diagrams.**	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. **Finds probabilities when given sample spaces for simple events using methods such as organized lists and tables.**	Understands that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.

	Grade 7 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 7 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Approximates the probability of a chance event by collecting data. Develops probability models to determine the probabilities of events. Designs and uses a simulation to generate frequencies for compound events. **Designs and uses a simulation to estimate the probability of a compound event.**	**Develops a model to approximate the probability of a chance event and predicts approximate frequencies when given the probability or by observing frequencies in data generated from the process.**		

	Grade 7 Math: Sub-Claim C In connection with content, the student expresses Grade 7 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Properties of Operations 7.C.1.1 7.C.1.2 7.C.2	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on properties of operations and relationship between addition and subtraction or multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols, labels • complete justification of a conclusion • **generalization of an argument or conclusion** evaluating, interpreting, and critiquing the validity of other's responses, approaches, conclusions and reasoning, and **correcting and providing counter-examples where applicable.**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student **clearly** constructs and communicates a complete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating**, interpreting and critiquing** the validity of other's **responses,** approaches, conclusions, and **reasoning.**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical,** but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions**	**I**n connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on the properties of operations and the relationship between addition and subtraction or between multiplication and division, including: • a faulty approach based on a conjecture and/or stated assumptions • an incomplete or illogical progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 7 Math: Sub-Claim C In connection with content, the student expresses Grade 7 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Concrete Referents and Diagrams 7.C.3 7.C.4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • generalization of an argument or conclusion • evaluating, interpreting and critiquing the validity and efficiency of other's responses, approaches, conclusions and reasoning, and **providing a counterexample where applicable.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a **complete** response based on concrete referents provided in the prompt or **constructed by the student** such as: diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on concrete referents provided in the prompt or in **simple cases, constructed by the student** such as: diagrams **that are connected to a written (symbolic) method,** number line diagrams or coordinate plane diagrams, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluation the validity of other's approaches and conclusions.**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on concrete referents provided in the prompt such as: diagrams, number line diagrams or coordinate plane diagrams, which may include: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion
Distinguish Correct Explanation / Reasoning from that which is Flawed 7.C.5 7.C.6.1 7.C.7.1 7.C.7.2 7.C.7.3 7.C.7.4 7.C.8	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols, labels • complete justification of a conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response to a given equation, multi-step problem, proposition or conjecture, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols, labels • **complete** justification of a conclusion	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response to a given equation, multi-step problem, proposition or conjecture, including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical,** but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response to a given equation, multi-step problem, proposition or conjecture, including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols, labels • partial justification of a conclusion

	Grade 7 Math: Sub-Claim C In connection with content, the student expresses Grade 7 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and **efficiency** of other's responses, approaches, conclusions and reasoning, and **provides a counterexample where applicable.** • identifying and describing errors in solutions and presents correct solutions • **distinguishing correct explanation/reasoning from that which is flawed. If there is a flaw, presents correct reasoning.**	• evaluating**, interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning.** • identifying and describing errors in solutions and **presents correct solutions.**	• partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions.** • **identifying and describing errors in solutions.**	

	Grade 7 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 7 by applying knowledge and skills articulated in the standards for Grade 7 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 7.D.1 7.D.2 7.D.3 7.D.4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a complete, clear and correct algebraic expression or equation to describe a situation • applying proportional reasoning	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and **making assumptions** and **approximations** to simplify a real-world situation • **mapping** relationships between important quantities by **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a **complete**, **clear and correct** algebraic expression or equation to describe a situation • applying proportional reasoning	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships** between important quantities by using provided tools to create models • analyzing relationships mathematically **between important quantities** to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation • applying proportional reasoning using functions to describe how one quantity of interest depends on another

	Grade 7 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 7 by applying knowledge and skills articulated in the standards for Grade 7 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	• writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • improving the model if it has not served its purpose • interpreting mathematical results in the context of the situation **• analyzing and/or creating constraints, relationships and goals** **• analyzing, justifying and defending models which lead to a conclusion**	• writing/using functions to describe how one quantity of interest depends on another • using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • **improving** the model if it has not served its purpose • interpreting mathematical results in the **context of the situation**	• **writing**/using functions to describe how one quantity of interest depends on another • using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity **• reflecting on whether the results make sense** **• modifying the model if it has not served its purpose** **• interpreting mathematical results in a simplified context**	• using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Grade 8 Mathematics Performance Level Descriptors

	Grade 8 Math: Sub-Claim A The student solves problems involving Major Content for Grade 8 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Expressions and Equations 8 EE.1 8 EE.2	Evaluates and generates equivalent numerical expressions using and applying properties of integer exponents. Solves equations of the form $x^2 = p$ and $x^3 = p$, representing solutions **using √ or $\sqrt[3]{}$ symbols.**	Evaluates and **generates equivalent** numerical expressions using and **applying** properties of integer exponents. **Solves** equations of the form $x^2 = p$, where p is a perfect square, **and solves equations of the form $x^3 = p$, where p is a perfect cube.**	Evaluates numerical expressions using properties of integer exponents. **Partially solves equations of the form $x^2 = p$, where p is a positive rational number and a perfect square < or = to 100, by representing only the positive solution of the equation.**	Evaluates numerical expressions using properties of integer exponents.
Scientific Notation 8.EE.3 8.EE.4-1 8.EE.4-2	Using scientific notation, estimates very large and very small quantities, determines how many times as large a number is in relation to another. Performs operations with numbers expressed in scientific notation. Interprets scientific notation that has been generated by technology. Chooses appropriate units for measuring very large or very small quantities. **Interprets scientific notation in context.**	Using scientific notation, estimates very large and **very small quantities.** Performs operations with numbers expressed in scientific notation.	Using scientific notation, estimates very large quantities. **Performs operations with numbers expressed in scientific notation.**	Using scientific notation, estimates very large quantities.
Proportional Relationships and Linear Equations 8.EE.5-1 8.EE.5-2 8.EE.6-1 8.F.3-1	Graphs linear relationships in the form $y=mx+b$, including proportional relationships. Interprets the unit rate as the slope of the graph of a proportional relationship and applies these concepts to solve real-world problems. Compares two different proportional relationships represented in different ways. Interprets $y=mx+b$ as defining a linear function. Uses similar triangles to show that the slope is the same between any two distinct points on a non-vertical line in the coordinate plane.	Graphs linear relationships, in the form $y=mx+b$, including proportional relationships. Interprets the unit rate as the slope of the graph of a proportional relationship and **applies these concepts to solve real-world problems**. **Compares** two different proportional relationships represented in different ways.	Graphs linear relationships, in the form $y=mx+b$, **including proportional relationships.** **Interprets the unit rate as the slope of the graph of a proportional relationship.** **Makes some comparisons between two different proportional relationships represented in different ways**.	Graphs linear relationships, in the form $y=mx+b$.

	Grade 8 Math: Sub-Claim A The student solves problems involving Major Content for Grade 8 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Solving Linear Equations 8.EE.7b 8.EE.C.Int. 1	Solves **mathematical and real-world problems** linear equations in one variable, with rational number coefficients, including those that require use of the distributive property and combining like terms.	Solves linear equations in one variable, with rational number coefficients, including those that require use of the distributive property **and** combining like terms.	Solves linear equations in one variable, with rational number coefficients, **including those that require use of the distributive property or combining like terms.**	Solves linear equations in one variable, with rational number coefficients.
Simultaneous Linear Equations 8.EE.8a 8.EE.8b-1 8.EE.8b-2 8.EE.8b-3 8.EE.8c	Analyzes and solves mathematical and **real-world** problems leading to pairs of simultaneous linear equations graphically, algebraically and by **inspection.** **Understands the relationship between the graphic representation and the algebraic solution to the system.** **Verifies a solution utilizing multiple methods to prove accuracy.**	**Analyzes** and solves mathematical problems leading to pairs of simultaneous linear equations graphically and **algebraically.**	Solves mathematical problems leading to pairs of simultaneous linear equations graphically and by **inspection**.	Solves mathematical problems leading to pairs of simultaneous linear equations graphically, where the graph is provided.
Functions 8.F.1-1 8.F.1-2 8.F.2 8.F.3-2	Understands that a function is a rule assigning to each input exactly 1 output, which can be graphed as a set of ordered pairs. Compares properties of two functions represented in different ways. Identifies **and proves** functions that are non-linear**.**	Understands that a function is a rule that assigns to each input exactly one output and can be graphed as a set of ordered pairs. **Compares properties of two functions represented in different ways.**	Understands that a function is a rule that assigns to each input exactly one output **and can be graphed as a set of ordered pairs.**	Understands that a function is a rule that assigns to each input exactly one output.
Congruence and Similarity 8.G.1a 8.G.1b 8.G.1c 8.G.2 8.G.3 8.G.4	Describes the effect of dilations, translations, rotations and reflections on two-dimensional figures with and without coordinates, determines whether two given figures are congruent or similar through one or more transformations and **describes the sequence of transformations to justify congruence or similarity of two figures.**	Describes the effect of **dilations**, translations, rotations and reflections on two-dimensional figures **with** coordinates, and determines whether two given figures are congruent **or similar through one or more transformations.**	Describes the effect of translations, rotations **and** reflections on two-dimensional figures without coordinates and determines whether two given figures are congruent.	Describes the effect of translations, rotations or reflections on two-dimensional figures without coordinates and determines whether two given figures are congruent.
Pythagorean Theorem 8.G.7-1 8.G.7-2 8.G.8	Applies the Pythagorean Theorem in real world and mathematical problems in two and three dimensions and to find the distance between two points in a coordinate system.	Applies the Pythagorean Theorem in a simple planar case and **to find the distance between two points in a coordinate system.**	Applies the Pythagorean Theorem in solving **for any side** of the right triangle in a simple planar case without coordinates.	Applies the Pythagorean Theorem in solving for the hypotenuse of a right triangle in a simple planar case without coordinates.

	Grade 8 Math: Sub-Claim A The student solves problems involving Major Content for Grade 8 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	Recognizes situations to apply the Pythagorean Theorem in multi-step problems.			

	Grade 8 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 8 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Rational Numbers 8.NS.1 8.NS.2	Distinguishes between rational and irrational numbers, understands that these numbers have decimal expansions and approximates their locations on a number line, and converts between terminating decimals or **decimals that repeat eventually** and fractional representations of rational numbers.	Distinguishes between rational and irrational numbers, understands that these numbers have decimal expansions and approximates their locations on a number line, and **converts between terminating decimals or repeating decimals of the form (0.aaa…) and fractional representations of rational numbers.**	Distinguishes between rational and irrational numbers and **understands that these numbers have decimal expansions** and approximates their locations on a number line.	Distinguishes between rational and irrational numbers and approximates their locations on a number line.
Modeling with Functions 8.F.4 8.F.5-1 8.F.5-2	Constructs a function to model a linear relationship between two quantities described with or without a context. Given a description of a relationship or two (*x,y*) values in a table of values or a graph, determines the rate of change and initial value of the function. Analyzes **and** describes the functional relationship between two quantities. Sketches a graph of a function when given a written description.	Constructs a function to model a linear relationship between two quantities described **with or without a context.** **Given two (*x,y*) values in a table of values or a graph,** determines the rate of change and initial value of the function. Analyzes the graph of a linear function to describe the functional relationship between two quantities. **Sketches the graph of a function when given a written description.**	**Constructs** a function to model a linear relationship between two quantities in a table or a graph. Determines the rate of change **and** initial value of the function from a table or graph that contains the initial value. **Analyzes the graph of a linear function to describe the functional relationship between two quantities.**	Identifies a function to model a linear relationship between two quantities in a table or a graph. Determines the rate of change or initial value of the function from a table or graph that contains the initial value.
Volume 8.G.9	Identifies the formulas for the volume of cones, cylinders and spheres, and uses them to find the volume **or dimensions** of solids in mathematical and real-world problems. **Applies these formulas to multiple composite mathematical solids.**	Identifies the formulas for the volume of cones, cylinders and spheres, and uses them to find the volume of solids in mathematical and **real-world** problems.	Identifies the formulas for the volume of cones, cylinders and spheres, and **uses them to find the volume of solids in mathematical problems.**	Identifies the formulas for the volume of cones, cylinders and spheres.
Bivariate Data	Analyzes and describes the patterns of association that can	**Analyzes** and describes the patterns of association that can	Describes the patterns of association that can be seen in	Describes the patterns of association that can be seen in

	Grade 8 Math: Sub-Claim B The student solves problems involving Additional and Supporting Content for Grade 8 with connections to the Standards for Mathematical Practice.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
8.SP.1 8.SP.2 8.SP.3 8.SP.4	be seen in bivariate data by constructing, displaying and interpreting scatter plots and two-way tables. Uses the equation of a linear model to solve problems in context. Informally fits a straight line to a scatter plot that suggests a linear association and **assesses the model fit.** **Compares linear models used to fit the same set of data to determine which is a better fit.**	be seen in bivariate data by **constructing, displaying and** interpreting scatter plots and two-way tables. Uses the equation of a linear model to solve problems in context. **Informally fits a straight line to** a scatter plot that suggests a linear association.	bivariate data by interpreting scatter plots and two-way tables. **Uses a given equation of a linear model to solve problems in context.** **Identifies a line of best fit for a scatter plot that suggests a linear association.**	bivariate data by interpreting scatter plots and two-way tables.

	Grade 8 Math: Sub-Claim C In connection with content, the student expresses Grade 8 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Graphs and Equations 8.C.1.1 8.C.1.2 8.C.2	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given equation or system of equations including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting, and critiquing the validity and efficiency of other's responses, approaches and	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given equation or system of equations including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given equation or system of equations including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical,** but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on the principle that a graph of an equation in two variables is the set of all its solutions and a given equation or system of equations including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical or incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion

	Grade 8 Math: Sub-Claim C In connection with content, the student expresses Grade 8 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	reasoning, conclusions and **reasoning correcting and providing a counterexample where applicable.**			
Reasoning 8.C.3.1 8.C.3.2 8.C.3.3 8.C.4.1 8.C.6	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity of other's responses, approaches, conclusions and reasoning, **correcting and providing a counterexample where applicable**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions**	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion.
Geometric Reasoning 8.C.5.1 8.C.5.2 8.C.5.3	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • precision of calculation • correct use of grade-level	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a logical approach based on a conjecture and/or stated assumptions • a logical and **complete** progression of steps • **precision** of calculation • **correct** use of grade-level	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a **complete** response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a **logical** approach based on a conjecture and/or stated assumptions • a **logical**, but incomplete, progression of steps • **minor** calculation errors • **some** use of grade-level	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on applying geometric reasoning in a coordinate setting and/or use coordinates to draw geometric conclusions including: • a faulty approach based on a conjecture and/or stated assumptions • an illogical and incomplete progression of steps • major calculation errors • limited use of grade-level

	Grade 8 Math: Sub-Claim C In connection with content, the student expresses Grade 8 appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	vocabulary, symbols and labels • complete justification of a conclusion • **generalization of an argument or conclusion** • evaluating, interpreting and critiquing the validity and **efficiency** of other's responses, approaches and reasoning, **correcting and providing a counterexample where applicable** • identifying and describing errors in solutions and presenting correct solutions • **distinguishing correct explanation/reasoning from that which is flawed. If there is a flaw, presents correct reasoning.**	vocabulary, symbols and labels • **complete** justification of a conclusion • evaluating, **interpreting and critiquing** the validity of other's responses, approaches, conclusions and **reasoning** • identifying and describing errors in solutions and **presenting correct solutions**	vocabulary, symbols and labels • partial justification of a conclusion • **evaluating the validity of other's approaches and conclusions** • **identifying and describing errors in solutions**	vocabulary, symbols and labels • partial justification of a conclusion

	Grade 8 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 8 by applying knowledge and skills articulated in the standards for Grade 8 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for and making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
Modeling 8.D.1 8.D.2 8.D.3 8.D.4	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and workplace by: • using stated assumptions and making assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a complete, clear and correct algebraic expression	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and workplace by: • using stated assumptions and **making assumptions** and **approximations** to simplify a real-world situation • **mapping** relationships between important quantities by **selecting appropriate** tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • writing a **complete, clear and correct** algebraic expression	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and workplace by: • using stated assumptions and approximations to simplify a real-world situation • **illustrating relationships between important quantities by using provided tools to create models** • analyzing relationships mathematically **between important quantities** to draw conclusions • writing an incomplete algebraic expression or equation to describe a	In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and workplace by: • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an incomplete algebraic expression or equation to describe a situation

	Grade 8 Math: Sub-Claim D In connection with content, the student solves real-world problems with a degree of difficulty appropriate to Grade 8 by applying knowledge and skills articulated in the standards for Grade 8 (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for and making use of structure and/or looking for and expressing regularity in repeated reasoning.			
	Level 5: Exceeds Expectations	**Level 4: Meets Expectations**	**Level 3: Approaches Expectations**	**Level 2: Partially Meets Expectations**
	or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another	or equation to describe a situation • applying proportional reasoning • writing/using functions to describe how one quantity of interest depends on another	situation • applying proportional reasoning • **writing**/using functions to describe how one quantity of interest depends on another	
	• using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • improving the model if it has not served its purpose • interpreting mathematical results in the context of the situation analyzing and/or creating constraints, relationships and goals analyzing, justifying and defending models which lead to a conclusion	• using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • reflecting on whether the results make sense • **improving** the model if it has not served its purpose interpreting mathematical results in the **context of the situation**	• using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity • **reflecting on whether the results make sense** • **modifying the model if it has not served its purpose interpreting mathematical results in a simplified context**	• applying proportional reasoning • using functions to describe how one quantity of interest depends on another using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity