

Grade Five Range Achievement Level Descriptors for the California Science Test



June 2021



Three-Dimensional (3-D) Earth and Space Sciences

Earth and Space Sciences: DCI Strands	Nearly Met Standard Students at level 2 consistently apply their knowledge and skills of the CA NGSS to problems of low complexity , demonstrating a partial understanding of the earth and space sciences.	Met Standard Students at level 3 consistently apply their knowledge and skills of the CA NGSS to problems of medium complexity , demonstrating an adequate understanding of the earth and space sciences.	Exceeded Standard Students at level 4 consistently apply their knowledge and skills of the CA NGSS to problems of high complexity , demonstrating a thorough understanding of the earth and space sciences.
Earth's Place in the Universe (ESS1)	Students can identify simple patterns in rock formations or fossils; use data to identify the relative distances of stars; and use data to identify daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Students can identify evidence from patterns in rock formations and fossils to support an explanation for changes in a landscape over time; support an argument that differences in the apparent brightness of the sun and stars are due to their relative distances from Earth; and graph data to show patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Students can use reasoning to explain patterns in rock formations and fossils in a landscape over time; use a model to support an argument that differences in the apparent brightness of the sun and stars are due to their relative distances from Earth; and use graphical data to explain patterns in daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
Earth's Systems (ESS2)	Students can use data in tables and graphical displays to describe typical weather conditions expected during a particular season; identify that climates differ in different regions of the world; describe the effects of weathering or erosion by water, ice, wind, or vegetation; identify data from maps that describe patterns of Earth's features; use a model to describe how the geosphere, biosphere, hydrosphere, and/or atmosphere interact; and identify differences in the amounts and percentages of water and fresh water in various reservoirs on Earth.	Students can represent data in tables and graphical displays to describe typical weather conditions expected during a particular season; combine information to describe climates in different regions of the world; use observations and/or measurements to identify the effects of weathering or the rate of erosion; analyze and interpret data from maps to describe patterns of Earth's features; develop a model to describe how the geosphere, biosphere, hydrosphere, and/or atmosphere interact; and describe and graph differences in the amounts and percentages of water and fresh water in various reservoirs on Earth.	Students can analyze and interpret data in tables and graphical displays to predict typical weather conditions expected during a particular season; analyze information to predict a region's climate patterns; plan an investigation to measure the effects of weathering or the rate of erosion by water, ice, wind, or vegetation; using data from maps, develop a model to describe patterns of Earth's features; develop a model to describe multiple ways in which the geosphere, biosphere, hydrosphere, and/or atmosphere interact; and graph and explain differences in the amounts and percentages of water and fresh water in various reservoirs on Earth.

Earth and Space Sciences: DCI Strands	<p style="text-align: center;">Nearly Met Standard</p> <p>Students at level 2 consistently apply their knowledge and skills of the CA NGSS to problems of low complexity, demonstrating a partial understanding of the earth and space sciences.</p>	<p style="text-align: center;">Met Standard</p> <p>Students at level 3 consistently apply their knowledge and skills of the CA NGSS to problems of medium complexity, demonstrating an adequate understanding of the earth and space sciences.</p>	<p style="text-align: center;">Exceeded Standard</p> <p>Students at level 4 consistently apply their knowledge and skills of the CA NGSS to problems of high complexity, demonstrating a thorough understanding of the earth and space sciences.</p>
<p>Earth and Human Activity (ESS3)</p>	<p>Students can identify a design solution that reduces the impacts of a weather-related hazard; identify that energy and fuels are derived from natural resources and their uses affect the environment; identify a solution to reduce an impact of a natural Earth process on humans; and identify one way that individual communities might use science ideas to protect Earth's resources and environment.</p>	<p>Students can make a claim about the effectiveness of a design solution that reduces the impacts of a weather-related hazard; combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment; compare multiple solutions to reduce the impacts of natural Earth processes on humans; and combine information to describe ways individual communities use science ideas to protect Earth's resources and environment.</p>	<p>Students can evaluate a claim or claims about the effectiveness of a design solution that reduces the impacts of a weather-related hazard; combine information from several sources to compare the effect of energy and fuels derived from natural resources on the environment; evaluate design solutions based on whether and how well the criteria and constraints are met to reduce the impacts of natural Earth processes on humans; and evaluate the ways individual communities use science ideas to protect Earth's resources and environment.</p>

3-D Life Sciences

Life Sciences: DCI Strands	Nearly Met Standard Students at level 2 consistently apply their knowledge and skills of the CA NGSS to problems of low complexity , demonstrating a partial understanding of the life sciences.	Met Standard Students at level 3 consistently apply their knowledge and skills of the CA NGSS to problems of medium complexity , demonstrating an adequate understanding of the life sciences.	Exceeded Standard Students at level 4 consistently apply their knowledge and skills of the CA NGSS to problems of high complexity , demonstrating a thorough understanding of the life sciences.
From Molecules to Organisms: Structures and Processes (LS1)	Students can use a model to describe that organisms have unique life cycles but all have in common birth, growth, reproduction, and death; identify evidence that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction; identify components in a model that describes how animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways; and identify that plants get the materials they need for growth chiefly from air and water.	Students can develop models to describe that organisms have unique life cycles but all have in common birth, growth, reproduction, and death; construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction; use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways; and support an argument using evidence that plants get the materials they need for growth chiefly from air and water.	Students can develop and use models to explain that organisms have unique life cycles but all have in common birth, growth, reproduction, and death; construct an argument that plants and animals have internal and external structures that function as systems to support survival, growth, behavior, and reproduction; develop a model to explain that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways; and construct an argument using reasoning and data to show that plants get the materials they need for growth chiefly from air and water.
Ecosystems: Interactions, Energy, and Dynamics (LS2)	Students can identify examples to show that some animals form groups that help members survive; and use a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Students can construct an argument with evidence that some animals form groups that help members survive; and develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Students can use evidence and reasoning to describe the cause and effect relationship that some animals form groups that help members survive; and revise a model that describes the cycling of matter and the systems or interactions within the ecosystem among plants, animals, decomposers, and the environment.

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Heredity: Inheritance and Variation of Traits (LS3)	Students can identify that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms; and describe that traits can be influenced by the environment.	Students can analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms; and use evidence to explain that traits can be influenced by the environment.	Students can analyze and interpret data to identify patterns showing that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms; and use evidence to predict how traits might be influenced by changes in the environment.
Biological Evolution: Unity and Diversity (LS4)	Students can identify that fossils provide evidence of ancient organisms and the environments in which they lived long ago; identify examples that variations in characteristics among individuals of the same species provide advantages in surviving, finding mates, and reproducing; identify examples that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all; and identify a solution to a problem caused when the environment changes.	Students can analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago; use evidence to explain how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing; construct an argument using evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all; and make a claim about the effectiveness of a solution to a problem caused when the environment changes.	Students can analyze and interpret data from fossils to provide evidence of changes in organisms and the environments in which they lived long ago; use evidence to compare how variations in characteristics among individuals of the same species may or may not provide advantages in surviving, finding mates, and reproducing; use evidence to predict which organisms will survive well in a particular habitat; and use evidence and reasoning to support a claim about the effectiveness of a solution to a problem caused when the environment changes.

3-D Physical Sciences

Physical Sciences: DCI Strands	Nearly Met Standard Students at level 2 consistently apply their knowledge and skills of the CA NGSS to problems of low complexity , demonstrating a partial understanding of the physical sciences.	Met Standard Students at level 3 consistently apply their knowledge and skills of the CA NGSS to problems of medium complexity , demonstrating an adequate understanding of the physical sciences.	Exceeded Standard Students at level 4 consistently apply their knowledge and skills of the CA NGSS to problems of high complexity , demonstrating a thorough understanding of the physical sciences.
Matter and Its Interactions (PS1)	Students can use a model to identify that matter is made of particles too small to be seen; identify or observe properties of materials; use measurements of matter such as weight and temperature to make observations that matter is conserved during physical changes; and identify whether the mixing of substances produces a new substance.	Students can develop a model to describe that matter is made of particles too small to be seen; make observations and measurements to identify materials by their properties; measure and graph quantities to provide evidence that matter is conserved during physical changes; and investigate whether the mixing of substances produces a new substance.	Students can develop a model to explain that particles too small to be seen can account for one or more phenomena; plan an investigation using an independent variable to identify materials based upon their properties; evaluate evidence to substantiate a claim that matter is conserved during physical and/or chemical changes; and use evidence to plan a new investigation to determine whether the mixing of substances produces a new substance.
Motion and Stability: Forces and Interactions (PS2)	Students can identify the balanced and unbalanced forces acting on an object; take measurements of an object's motion, make observations about electric or magnetic interactions between two objects not in contact with each other; describe a simple design problem that may be solved using magnets; and identify that the gravitational force exerted by Earth on objects is directed down.	Students can investigate the effects of balanced and unbalanced forces on the motion of an object; make observations and measurements to identify patterns in an object's motion; ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other; define the criteria and constraints for a design problem that can be solved using magnets; and provide evidence that the gravitational force exerted by Earth on objects is directed down.	Students can use evidence to ask new questions about the effects of balanced and unbalanced forces on the motion of an object; make observations and measurements to predict patterns in an object's motion; identify testable and non-testable questions to determine electric or magnetic interactions between two objects not in contact with each other; refine a design solution based on a set of criteria and constraints for a problem that may be solved using magnets; and construct an argument using evidence that the gravitational force exerted on objects is directed toward Earth's center.

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Energy (PS3)	Students can describe the speed and energy of an object; identify that energy can be transferred from place to place; identify that changes in energy occur during a collision; make observations or take measurements using a device that converts energy from one form to another; and identify that energy in animals' food was once energy from the sun.	Students can use evidence to explain the relationship between the speed of an object and the energy of that object; make observations to provide evidence that energy can be transferred from place to place (sound, light, heat, and/or electric currents); ask questions and predict outcomes about the changes in energy that occur when objects collide; test a device that converts energy from one form to another; and use models to describe that energy in animals' food was once energy from the sun.	Students can make a prediction using evidence about the relationship between the speed of an object and the energy of that object; compare two models to determine the best way for energy to be transferred from place to place by sound, light, heat, or electric currents; ask questions and predict a pattern linking collision and energy transfer between colliding objects; evaluate how well a device that converts energy from one form to another meets specified criteria and constraints; and develop a model to explain that energy in animals' food was once energy from the sun.
Waves and their Applications in Technologies for Information Transfer (PS4)	Students can use a model to identify patterns in wave properties and that waves cause objects to move; use a model to describe that light reflecting from objects and entering the eye allows objects to be seen; and describe a solution that uses patterns to transfer information.	Students can develop a model to describe patterns in wave properties and that waves cause objects to move; develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen; and compare multiple solutions that use patterns to transfer information.	Students can develop models to make predictions regarding the movement of objects caused by waves; use a model to explain a phenomenon about light reflecting from objects and entering the eye allowing objects to be seen; and use reasoning to explain which information transfer solution is most effective based on the evidence.

3-D Engineering Technology and Applications of Science

Engineering, Technology, and Applications of Science: DCI Strand	<p style="text-align: center;">Nearly Met Standard</p> <p>Students at level 2 consistently apply their knowledge and skills of the CA NGSS to problems of low complexity, demonstrating a partial understanding of engineering, technology, and applications of science.</p>	<p style="text-align: center;">Met Standard</p> <p>Students at level 3 consistently apply their knowledge and skills of the CA NGSS to problems of medium complexity, demonstrating an adequate understanding of engineering, technology, and applications of science.</p>	<p style="text-align: center;">Exceeded Standard</p> <p>Students at level 4 consistently apply their knowledge and skills of the CA NGSS to problems of high complexity, demonstrating a thorough understanding of engineering, technology, and applications of science.</p>
Engineering Design (ETS1)	Students can identify a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost; identify a solution to a problem based on how well it is likely to meet the criteria and constraints of the problem; and carry out a test to improve a model.	Students can define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost; compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem; and carry out a test to improve a model by controlling variables.	Students can define a complex design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost; use several sources to generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem; and carry out tests and analyze data to improve a model by controlling variables or identifying failures.