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.

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Earth and Human Activity (ESS3)	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.	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.	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.

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	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 engineering, technology, and applications of science.	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 engineering, technology, and applications of science.	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 engineering, technology, and applications of science.
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.