THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234

ELEMENTARY SCIENCE PERFORMANCE LEVEL DESCRIPTIONS

NYS P12 Science Learning Standards

Performance Level Descriptions

Performance level descriptions (PLDs) help communicate to students, families, educators, and the public the specific knowledge and skills expected of students when they demonstrate proficiency of a learning standard. The PLDs serve several purposes in classroom instruction and assessment. They are the foundation of rich discussion around what students need to do to perform at higher levels and to explain the progression of learning within a subject area. PLDs are also crucial in explaining student performance on the New York State (NYS) assessments since they make a connection between the scale score, the performance level, and specific knowledge and skills typically demonstrated at that level.

Policy Definitions of Performance Levels

For each subject area, students perform along a continuum of the knowledge and skills necessary to meet the demands of the New York State P-12 Science Learning Standards. There are students who excel in standards, students who are proficient, students who are partially proficient, and students who are below proficient. New York State assessments are designed to classify student performance into one of four levels based on the knowledge and skills the student has demonstrated. These performance levels for the Elementary- and Intermediate-level Science Tests are defined as:

NYS Level 4

Students performing at this level **excel** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered **more than sufficient** for the expectations at this grade.

NYS Level 3

Students performing at this level are **proficient** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered **sufficient** for the expectations at this grade.

NYS Level 2

Students performing at this level are **partially proficient** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered partial but insufficient for the expectations at this grade. Students performing at Level 2 are considered on track to meet current New York high school graduation requirements but are **not yet proficient** in Learning Standards at this grade.

NYS Level 1

Students performing at this level are **below proficient** in standards for their grade. They demonstrate **limited** knowledge, skills, and practices embodied by the Learning Standards that are considered **insufficient** for the expectations at this grade.

How were the PLDs developed?

Following best practice for the development of PLDs, the number of performance levels and their definitions were specified prior to the articulation of the full descriptions. New York State educators certified in the appropriate grade-levels and subject areas convened in separate meetings to develop the initial draft PLDs. In developing PLDs, participants considered policy definitions of the performance level and the knowledge and skill expectations in the Learning Standards. Once they established the appropriate knowledge and skills from a particular performance expectation (PE) for NYS Level 3 (i.e., proficient in standards), panelists worked together to parse the knowledge and skills across the other performance levels in such a way that the progression of the knowledge and skills was clearly seen moving from Level 1 to Level 4. This process was repeated for all of the PEs associated with each test. The drafts then went through additional rounds of review and edits from a number of NYS-certified educators, content specialists, and assessment experts under NYSED supervision.

How can the PLDs be used by Educators and in Instruction?

The PLDs should be used as a guidance document to show the overall continuum of learning of the knowledge and skills from the Learning Standards. NYSED encourages the use of the PLDs for a variety of purposes, including differentiating instruction to maximize individual student outcomes, creating formative classroom assessments and rubrics to help identify target performance levels for individual or groups of students, and tracking student growth along the proficiency continuum as described by the PLDs. The knowledge and skills shown in the PLDs describe *typical* performance and progression, however the order in which students will demonstrate the knowledge and skills within and between performance levels may be staggered (i.e. a student who predominantly demonstrates Level 2 knowledge and skills may simultaneously demonstrate certain knowledge and skills indicative of Level 3). It is important to realize that the knowledge and skills as well as *some* of the subject-area knowledge are found in the PLDS. Science concepts must be elaborated beyond what is found in the PLDs for instruction and assessment purposes. Because the Learning Standards for science have three dimensions, each of them must be examined in depth.

How are the PLDs used in Assessment?

PLDs are essential in setting performance standards (i.e., “cut scores”) for New York State assessments. Standard setting panelists use PLDs to determine the expectations for students to demonstrate the knowledge and skills necessary to *just barely* attain a Level 2, Level 3, or Level 4 on the assessment. These knowledge and skills drive discussions that influence the panelists as they recommend the cut scores on the assessment.

PLDs are also used in question development. Question writers are assigned to write questions that draw on the specific knowledge and skills from a PLD. This ensures that each test has questions that distinguish performance all along the continuum. Teachers can use the PLDs in the same manner when developing both formative and summative classroom assessments. Tasks that require students to demonstrate knowledge and skills from the PLDs can be tied back to the performance level with which the PLD is associated, providing the teacher with feedback about the students’ progress as well as a wealth of other skills that the student is likely able to demonstrate (or can aspire to in the case of the next-highest PLD

Elementary Science
Performance Level Descriptions

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Forces and Interactions 3-PS2-1	Plan and conduct an investigation, using fair tests in which variables are controlled and the number of trials is considered, to collect evidence that shows the effects of balanced and unbalanced forces on the motion of an object. Use the evidence to construct an explanation of this phenomenon.	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	Conduct an investigation that identifies the evidence that shows the effects of balanced and unbalanced forces on the motion of an object.	From the data collected during an investigation, identify the given evidence that shows the effects of balanced and unbalanced forces on the motion of an object.
Forces and Interactions 3-PS2-2	Make observations and/or measurements of an object's motion to identify a pattern and use this evidence to construct an explanation for the predicted future motion of the object.	Make observations and/or measurements of an object's motion to identify a pattern and use this evidence to predict future motion	Make observations and/or measurements of an object's motion to identify a pattern in the object's motion.	Identify the observations that are evidence of an object's motion or pattern in the object's motion.
Forces and Interactions 3-PS2-3	Ask a question and plan an investigation to determine the cause and effect relationship of static electricity or magnetic interactions between two objects not in contact with each other.	Ask a question to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	Identify the question being tested involving a cause and effect relationship showing electricity or a magnetic interaction between two objects not in contact with each other.	Given a question about an electric or a magnetic interaction between two objects not in contact with each other, identify a result of this interaction.
Forces and Interactions 3-PS2-4	Using the engineering design process, solve a simple design problem by developing an object, tool, process, or system that includes several criteria for success. Include scientific ideas about magnets, and constraints on materials, time, or cost and refine the design after testing.	Define a simple design problem that can be solved by applying scientific ideas about magnets.	Identify a simple design problem, from those given, that can be solved by applying scientific ideas about magnets.	Given a simple design problem, identify the appropriate object or tool needed to solve this problem, which includes scientific ideas about magnets.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Interdependent Relationships in Ecosystems 3-LS2-1	Construct an argument using evidence, data, and/or a model to describe the cause and effect relationship between animals forming groups and their chance of survival.	Construct an argument that some animals form groups that help members survive.	Identify the argument, from those provided, that supports the claim that animals form groups that helps members survive.	Identify the evidence for an argument, from those provided, that some animals that form groups help members survive.
Interdependent Relationships in Ecosystems 3-LS4-1	Use scientific reasoning to analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived and construct an explanation to support this phenomenon.	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Using data from fossils, identify the given evidence of the organism that supports the environments in which they lived long ago.	Using data from fossils and given evidence about organism, identify the environments in which they lived long ago.
Interdependent Relationships in Ecosystems 3-LS4-3	Construct an argument with evidence about the cause and effect relationships between a particular habitat and why some organisms can survive well, some survive less well, and some cannot survive at all.	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Identify the argument, from those provided, that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Identify evidence for an argument, from those provided, that some organisms in a particular habitat can survive well, some survive less well, and some cannot survive at all.
Interdependent Relationships in Ecosystems 3-LS4-4	Make a claim about the merits of multiple solutions to a problem caused when the environment changes and the types of plants and animals that live there may change. Cite relevant evidence about how the solution meets the criteria and constraints of the problem.	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Identify the given claim and solution, that matches the problem caused when the environment changes and the types of plants and animals that live there may change.	Identify the problem caused when the environment changes, from those provided, that matches the given solution to that problem.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Inheritance and Variations of Traits: Life Cycles and Traits 3-LS1-1	Develop models to describe that organisms have unique and diverse life cycles, but all have predictable patterns and describe how reproduction is essential to the continued existence of a species.	Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.	Use models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.	Use models to identify common stages that exist in all life cycles.
Inheritance and Variations of Traits: Life Cycles and Traits 3-LS3-1	Analyze and interpret similarities and differences in patterns of multiple data sets to provide evidence that plants and animals have traits inherited from parents, and that there is variation in these traits that exist in a group of similar organisms.	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.	Identify a pattern in the data to provide evidence that plants and/or animals have traits inherited from parents or that there is variation in these traits that exists in a group of similar organisms.	Identify the evidence that an observable trait of a plant or animal was inherited from its parents or identify a variation in a trait that exists in a group of similar organisms.
Inheritance and Variations of Traits: Life Cycles and Traits 3-LS3-2	Use evidence to identify a cause and effect relationship that supports an explanation that traits can be influenced by the environment as well as inheritance.	Use evidence to support the explanation that traits can be influenced by the environment.	Identify the evidence that supports an explanation that traits can be influenced by the environment.	Identify the explanation with evidence, from those provided, that supports that traits can be influenced by the environment.
Inheritance and Variations of Traits: Life Cycles and Traits 3-LS4-2	Use evidence from multiple sources to construct a scientific explanation, using cause and effect relationships, for how the variations in characteristics among individuals of the same species and may provide advantages.	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Identify the evidence from a given explanation that supports how variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, or reproducing.	Using evidence from an explanation, identify one characteristic among individuals of the same species that may provide an advantage in surviving, or finding mates, or reproducing.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Weather and Climate 3-ESS2-1	Represent data in tables and graphical displays to find patterns in weather conditions to compare typical weather conditions during two seasons.	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Given data from a table or graphical display, identify typical patterns of weather conditions expected during a particular season.	Given data of weather conditions from a data table or a graphical display, identify the season during which the weather is occurring
Weather and Climate 3-ESS2-2	Obtain and combine information to describe climate patterns in different regions of the world and describe how climates are influenced by their locations on Earth.	Obtain and combine information to describe climates in different regions of the world.	Interpret given information to describe a climate pattern in a region of the world.	Use given information to identify the correct climate pattern, from those given, in a region of the world.
Weather and Climate 3-ESS3-1	Make a claim about the merit of a design solution, by citing relevant scientific evidence about how it meets the criteria and constraints of the problem, that results in a reduction of impacts caused by a weather-related hazard.	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	Identify a claim about the merit of a design solution, using evidence provided, that reduces the impacts of a weather-related hazard.	Identify the given evidence that supports a claim about the merit of a solution that reduces the impacts of a weather-related hazard.
Weather and Climate 3-ESS2-3 NYSED	Plan and conduct an investigation to determine the cause and effect relationships between weather and water processes in Earth systems and make a prediction about what would happen if one of the variables changes within the investigation.	Plan and conduct an investigation to determine the connections between weather and water processes in Earth systems.	Conduct an investigation to determine the cause and effect relationships between weather and a water process in Earth systems.	Using the results of an investigation, determine a cause and effect relationship between weather and a water process in Earth systems.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Energy 4-PS3-1	Use multiple types of evidence (e.g., observations, investigations, simulations) to construct an explanation relating the speed of an object to the energy of that object.	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	Identify the evidence that supports an explanation relating the speed of an object to the energy of that object.	Identify the explanation, from those given, that supports the evidence that relates the speed of an object to the energy of that object.
Energy 4-PS3-2	Design an investigation and make observations to produce data to serve as the basis for evidence for an explanation that energy is conserved as it is transferred and/or converted from one form to another.	Make observations to provide evidence that energy is conserved as it is transferred and/or converted from one form to another.	Given observations, identify the evidence that energy is conserved as it is transferred and/or converted from one form to another.	Given observations, identify an energy transfer and/or conversion from one form to another.
Energy 4-PS3-3	Ask questions, make predictions about the outcomes, and conduct an investigation about the relative changes in energy that occur when objects collide.	Ask questions and predict outcomes about the changes in energy that occur when objects collide.	From a given question, predict an outcome about the changes in energy that occur when objects collide.	Identify the question, from those given, that predicts an outcome about the changes in energy that occur when objects collide.
Energy 4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another and construct an explanation of any design problems encountered and how solutions were developed.	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	Apply scientific ideas to test or refine a given device that converts energy from one form to another.	Apply scientific ideas to test a device that converts energy from one form to another.
Energy 4-ESS3-1	Obtain and combine information to describe how using energy and fuels that are derived from natural resources can cause an effect on the environment in multiple ways.	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	Identify from the given information how the use of energy and/or fuels derived from natural resources affect the environment.	Given information, identify an energy and/or fuel derived from natural resources that affects the environment.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Waves: Waves and Information 4-PS4-1	Develop different types of models of waves to describe patterns, in terms of amplitude and wavelength, and to demonstrate that waves can cause objects to move.	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	Use a given model of waves to describe patterns in amplitude and wavelength and/or how waves can cause objects to move.	Using a given model of waves, identify a pattern in terms of wavelength or amplitude or how a wave can cause an object to move.
Waves: Waves and Information 4-PS4-3	Generate, test, and evaluate multiple solutions (methods) that use patterns to transfer information and describe the most appropriate solution based on how well they meet the criteria and constraints.	Generate and compare multiple solutions that use patterns to transfer information.	Generate and/or identify multiple solutions (methods) that use patterns to transfer information.	Identify one solution (method) that uses a pattern to transfer information.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Structure, Function and Information Processing 4-PS4-2	Carry out an investigation in order to produce evidence to develop a model to describe the cause and effect relationships that occur when light reflects from objects and enters the eye, allowing objects to be seen.	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	Use a model to describe that when light reflects from objects and enters the eye it allows objects to be seen.	Identify the model, from those given, that shows what occurs when light reflects from objects and enters the eye, allowing objects to be seen.
Structure, Function and Information Processing 4-LS1-1	Construct an argument using multiple sources of evidence to demonstrate that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Construct an argument that plants and/or animals have internal and/or external structures that allow for survival or growth or behavior or reproduction.	Identify the argument, from those provide, that supports the claim that plants and/or animals have internal and/or external structures that allow for survival or growth or behavior or reproduction.
Structure, Function and Information Processing 4-LS1-2	Develop a system model to describe the way in which animals receive different types of information through their senses, process the information in their brains, and respond to information in different ways.	Use a model to describe that animals receive different types of information through their senses, process the information in their brains, and respond to information in different ways.	Use a model to identify one type of information animals receive through their senses, process the information in their brains, and identify how they respond to this information.	Use a model to identify one type of information, from those given, that animals receive through a sense or identify one way animals respond to information, from those given.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Earth's Systems: Processes that Shape the Earth 4-ESS1-1	Construct an explanation for changes in landscapes over time, using evidence from patterns in rock formations and fossils in rock layers.	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in landscapes over time.	Support an explanation by identifying the evidence, from those given, using patterns in rock formations and/or fossils in rock layers, for the change in a landscape over time.	Identify an explanation for changes in landscapes over time, from those given, using evidence from patterns in rock formations and/or fossils in rock layers.
Earth's Systems: Processes that Shape the Earth 4-ESS2-1	Make observations and/or measurements to identify patterns that provide evidence of the effects of weathering and the rate of erosion caused by water, ice, wind and vegetation.	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion caused by water, ice, wind or vegetation.	Identify the observation and/or measurement, from those given, that provides evidence of the effects of weathering or erosion by water, ice, wind or vegetation.	Identify one effect of weathering or erosion by water, ice, wind, or vegetation, from those given, based on an observation.
Earth's Systems: Processes that Shape the Earth 4-ESS2-2	Analyze and interpret data from maps to construct an explanation for the cause of patterns observed in Earth's surface features.	Analyze and interpret data from maps to describe patterns of Earth's features.	Use data from a map to describe a pattern of an Earth surface feature.	Use data from a map to identify a pattern, from those given, of an Earth surface feature.
Earth's Systems: Processes that Shape the Earth 4-ESS3-2	Generate, compare, and test multiple solutions to reduce the impacts caused by natural Earth processes on humans and make a claim based on evidence to support the best solution.	Generate and compare multiple solutions to reduce the impacts caused by natural Earth processes on humans.	Generate one solution that could reduce the impacts caused by a natural Earth process on humans.	Identify a solution, from those given, that could reduce the impact of a natural Earth process on humans.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Structure and Properties of Matter 5-PS1-1	Develop a model, using a relative scale, to show that matter is made of particles too small to be seen and use the model to explain a real-world phenomenon.	Develop a model to describe that matter is made of particles too small to be seen.	Given a model, describe the evidence that shows matter is made of particles too small to be seen.	Identify one piece of evidence in a model, from those given, that shows matter is made of particles too small to be seen.
Structure and Properties of Matter 5-PS1-2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, going through a phase change, and mixing substances, the total amount of matter is conserved.	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total amount of matter is conserved.	Measure or graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total amount of matter is conserved.	Using measured quantities or a graph, identify the evidence, from those given, that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total amount of matter is conserved.
Structure and Properties of Matter 5-PS1-3	Plan and conduct an investigation to make observations and obtain measurements to identify materials based on their properties.	Make observations and measurements to identify materials based on their properties.	From given observations and/or measurements, identify a material based on its properties.	Identify an observation or measurement, from those given, that supports the identification of a material based on its properties.
Structure and Properties of Matter 5-PS1-4	Conduct multiple investigations (changing variables, changing substances) to determine whether the mixing of two or more substances results in a new substance.	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	Given an investigation, identify the evidence that the mixing of two or more substances results in new substances.	Identify the investigation, from those given, that shows that mixing two or more known substances results in a new substance.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Matter and Energy in Organisms and Ecosystems 5-PS3-1	Develop and use a model to show that energy in animals' food was once energy from the Sun, how photosynthesis plays a role in this transfer of energy, and how this energy is used by animals for body repair, growth, motion and to maintain body warmth.	Use models to describe that energy in animals' food (used for body repair, growth, motion and to maintain body warmth) was once energy from the Sun.	Use a model to describe the evidence that energy in animals' food (used for body repair or growth or motion or to maintain body warmth) was once energy from the Sun.	Identify the evidence in a model that shows that energy in animals' food was once energy from the Sun.
Matter and Energy in Organisms and Ecosystems 5-LS1-1	Plan and conduct an investigation to gather data and provide evidence that plants get the materials they need for growth chiefly from air and water, and not soil.	Support an argument that plants get the materials they need for growth chiefly from air and water.	Identify the evidence in given information that supports an argument that plants get the materials they need for growth chiefly from air and water.	Using evidence, identify the argument from those provided, that plants get the materials they need chiefly from air and water.
Matter and Energy in Organisms and Ecosystems 5-LS2-1	Develop a model that includes multiple pathways to describe the movement of matter and energy among multiple plants (producers), animals (consumers), decomposers and the environment.	Develop a model to describe the movement of matter among plants (producers), animals (consumers), decomposers, and the environment.	Use a model of a food web to describe the movement of matter among plants (producers), animals (consumers), decomposers, and/or the environment.	Identify the evidence in a model of a food web that shows one pathway for the transfer of matter among plants (producers), animals (consumers), decomposers, and/or the environment.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Earth's Systems 5-ESS2-1	Develop a model. using an example to describe multiple ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact.	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Use evidence from a model to describe one way that two Earth spheres interact.	Using a model, identify two Earth systems (spheres) that are interacting.
Earth's Systems 5-ESS2-2	Develop a graph, using standard units and an appropriate scale, of the amounts of salt water and fresh water in various reservoirs to describe evidence about the distribution of these types of water on Earth.	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Interpret a graph showing the amounts of salt water and fresh water in various reservoirs to describe the distribution of water on Earth.	Use a graph to determine the amounts of salt water and fresh water in various reservoirs on Earth.
Earth's Systems 5-ESS3-1	Obtain and combine scientific information to describe ways individual communities use science ideas to protect multiple Earth resources and the environment.	Obtain and combine information about ways individual communities use science ideas to protect Earth resources and environment.	Interpret given information to provide evidence that describes ways individual communities use science ideas to protect Earth resources or the environment.	Identify the information that describes a way an individual community uses a science idea to protect an Earth resource or the environment.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
Space Systems: Stars and the Solar System 5-PS2-1	Using multiple sources of evidence, construct an argument that the gravitational force exerted by Earth causes objects to be directed downward.	Support an argument that the gravitational force exerted by Earth on objects is directed down.	Identify the evidence that supports an argument that the gravitational force exerted by Earth causes objects to be directed downward.	Identify the argument, based on given evidence, that supports gravitational force exerted by Earth causes objects to be directed downward.
Space Systems: Stars and the Solar System 5-ESS1-1	Construct an argument, with evidence, that differences in the apparent brightness of the Sun compared to other stars is due to relative distances from Earth.	Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from Earth.	Identify an argument based on evidence, from those given, that differences in the apparent brightness of the Sun compared to other stars is due to relative distances from Earth.	Given an argument, identify the evidence that shows that the differences in the apparent brightness of the Sun compared to other stars is due to relative distances from Earth.
Space Systems: Stars and the Solar System 5-ESS1-2	Construct a graphical display, using data, to explain the reason for the patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Identify the patterns in graphical or pictorial displays that show the daily changes in length and direction of shadows, or day and night, or in the seasonal appearance of some stars in the night sky.	Identify a pattern from a given display of data showing the daily changes in length and direction of shadows, or in the length of day and night, or in the seasonal appearance of some stars in the night sky.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
3-5 Engineering Design ETS1-1	Investigate and define multiple simple design problems reflecting a need or want in a community, that includes specified criteria for success and constraints on materials, time, and cost.	Define 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 simple design problem, from those provided, reflecting a need or want, that includes specified criteria for success or constraints on materials, time, or cost.	Identify a simple design problem, from those provided, reflecting a need or want of society.
3-5 Engineering Design ETS1-2	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 make a claim about which solution best solves the problem based on science and engineering principles.	Generate and compare multiple possible solutions to a problem based on how well each solution is likely to meet the criteria and constraints of the problem.	Compare multiple possible solutions to a problem based on how well each solution is likely to meet the criteria and constraints of the problem.	Identify the best possible solution to a problem, from those provided, based on how well the solution is likely to meet the given criteria and constraints of the problem.
3-5 Engineering Design ETS1-3	Plan and carry out multiple fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved and use data to justify the aspects needing improvement.	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Given the procedure for an investigation in which variables are controlled and failure points are considered, carry out fair tests to identify one aspect of a simple model or prototype that can be improved.	Given the data from an investigation in which variables were controlled and failure points were considered, identify one aspect of a model or prototype, from those provided, that can be improved.