SCPASS 2018
Parent Friendly Performance Level Descriptors (PLDs)
Science Grade 4, 6, and 8

The Parent-Friendly Performance Level Descriptors (PLDs) contain some examples of what a typical student can do at each achievement level on the South Carolina Palmetto Assessment of State Standards (SCPASS) for science. These examples are not comprehensive and should not be used as a substitute for the South Carolina's Academic Standards and Performance Indicators for Science (SCASP) on which the examples are based. For a complete list of the standards for each grade level see: http://ed.sc.gov/instruction/standards-learning/science/standards/.

For SCPASS, educators have developed four performance levels to describe student mastery and command of the knowledge and skills outlined in the SCASP. Performance levels give meaning and context to scale scores by describing the knowledge and skills students must demonstrate to achieve each level.

The four performance levels on SCPASS are *Does Not Meet Expectations*, *Approaches Expectations*, *Meets Expectations*, and *Exceeds Expectations*. The general meaning of each level is provided below:

A student who *does not meet expectations* in the knowledge and skills necessary at this grade level of learning, as defined by the content standards, ***needs substantial academic support*** to be prepared for the next grade level and to be on track for college and career readiness.

A student who *approaches expectations* in the knowledge and skills necessary at this grade level of learning, as defined by the content standards, ***needs additional academic support*** to be prepared for the next grade level and to be on track for college and career readiness.

A student who *meets expectations* in the knowledge and skills necessary at this grade level of learning, as defined by the content standards, ***is prepared*** for the next grade level and is on track for college and career readiness.

A student who *exceeds expectations* in the knowledge and skills necessary at this grade level of learning, as defined by the content standards, ***is well prepared*** for the next grade level and is well prepared for college and career readiness.

PLDs show a *progression of knowledge and skills* that students are expected to have mastered across the performance levels. It is important to understand that a student should demonstrate knowledge and skills within the scored performance level *as well as all preceding content and skills in any performance level*. For example, a student who *meets expectations* should also possess the knowledge and skills described at *approaching expectations* and *does not meet expectations* performance levels.

Below are examples of what a typical student can do at each achievement level on the South Carolina Palmetto Assessment of State Standards (SCPASS) science assessment in grades 4, 6, and 8.

Grade 4 Science

A student who scores in the does not meet expectations category typically can:

- Identify data from scientific investigations
- Identify the stages of the water cycle (evaporation, condensation, precipitation, and runoff)
- Locate temperature, precipitation, wind speed/direction, relative humidity, and cloud types of local weather based on data or information provided on maps
- Recognize the planets in the solar system
- Recognize that light is made up of different colors
- Recognize that changes in vibrations can affect the pitch and volume of sound
- Identify a plant as flowering or non-flowering or an animal as a vertebrate or invertebrate
- Recognize that some characteristics of organisms are inherited from parents
- Recall the senses and sensory organs that humans and other animals use to detect and respond to signals from the environment

A student who scores in the approaches expectations category typically can:

- Use mathematical thinking to express quantitative observations of appropriate English or metric units
- Use models to describe the processes of evaporation, condensation, precipitation, and runoff of water that take place during the water cycle
- Identify the location and order of the planets as they orbit the Sun and their main composition, either rock or gas
- Recognize that day and night result from Earth's rotation on its axis
- Identify that the Sun's position in the sky appears to change throughout the day
- Explain the different colors that make up white light
- Complete a basic scientific investigation to demonstrate how light behaves when it strikes transparent, translucent, and opaque materials
- Classify plants as flowering or non-flowering and animals as vertebrate or invertebrate
- Identify characteristics of organisms that are inherited from parents and several that are influenced by nature
- Provide examples of ways that humans or other animals use their senses and sensory organs to detect and respond to signals from the environment

A student who scores in the meets expectations category typically can:

- Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods to show patterns and to support explanations, claims, or designs
- Use mathematical thinking to express quantitative observations using appropriate English or metric units, to collect and analyze data, or to understand patterns and trends
- Develop and use models to explain how water changes as it moves between the atmosphere and Earth's surface during each phase of the water cycle including evaporation, condensation, precipitation, and runoff
- Analyze and interpret data form observations, measurements, and weather maps to describe patterns in local weather conditions, including temperature, precipitation, wind speed/direction, relative humidity, and cloud types in local weather
- Develop and use models of Earth's solar system to exemplify the location and order of the planets as they orbit the Sun and the main composition, either rock or gas, of those planets
- Construct explanations of how day and night result from Earth's rotation on its axis
- Construct scientific arguments to support the claim that white light is made up of different colors
- Analyze and interpret data to describe how changes in vibration can affect the pitch and volume of sound

- Obtain and communicate information about the characteristics of plants and animals to develop models which classify plants as flowering or non-flowering and animals as vertebrate or invertebrate
- Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment
- Compare how humans and other animals use their senses and sensory organs to detect and respond to signals from the environment

A student who scores in the "exceeds expectations" category typically can:

- Understand relationships between variables
- Refine extended models representing the phases of water throughout the water cycle on Earth
- Use weather data to develop weather maps to predict possible local weather conditions
- Construct explanations for how the length and direction of a shadow will appear depending on the apparent movement of the Sun
- Critique scientific arguments using evidence to support the claim that white light is composed of different colors of light with different wavelengths
- Refine scientific investigations to demonstrate how light behaves when it strikes transparent, translucent, and opaque materials
- Use evidence to predict inherited characteristics or characteristics influenced by the environment of an organism
- Develop models to compare how humans and other animals use their senses and sensory organs to detect and respond to signals from the environment

Grade 6 Science

A student who scores in the "does not meet expectations" category typically can:

- Follow the steps of simple scientific investigations
- Recognize appropriate metric units
- Identify how different phenomena (natural and human induced) may contribute to the composition of Earth's atmosphere
- Recognize that water on Earth moves in a cycle between land, bodies of water, and the atmosphere
- Identify the transfer of heat by conduction, convection, and radiation
- Recognize examples of how living organisms obtain and use resources from their environment to reproduce, grow and develop
- Identify examples of vertebrates and invertebrates
- Recognize the structures of protists or fungi that allow them to obtain energy and explore their environment
- Recognize illustrated examples of the process of photosynthesis and transpiration
- Identify the resources needed for photosynthesis

A student who scores in the approaches expectations category typically can:

- Use mathematical skills to manipulate metric units
- Identify the relationships between variables
- Summarize the steps of the cycling of water through Earth's systems
- Describe data shown on weather maps, satellites, and radar
- Explain the concept of the conservation of energy as it is transformed from one form to another
- Test solutions that could be used to improve the efficiency of a simple machine
- Describe how living organisms obtain and use resources for energy, reproduce, grow and develop, and respond to their environment
- Explain the differences between vertebrate and invertebrate animals
- Classify innate and learned behaviors in animals
- Describe the processes of photosynthesis, respiration, and transpiration
- Complete a controlled scientific investigation to determine how changes in environmental factors affect the growth and development of a flowering plant

A student who scores in the meets expectations category typically can:

- Ask questions to generate hypotheses for scientific investigations and refine models, explanations, or designs
- Use and manipulate appropriate metric units, collect and analyze data, express relationships between variables for models and investigations
- Obtain and evaluate scientific information to answer questions, explain or describe phenomena, develop models, evaluate hypotheses, explanations, claims, or designs, or identify and/or fill gaps in knowledge
- Construct scientific arguments for or against how different phenomena (natural and human induced) may contribute to the composition of Earth's atmosphere
- Analyze and interpret data from local weather using weather maps, information from satellites, and radar
- Describe how energy is conserved as it is transformed from kinetic energy to potential (gravitational and elastic) energy and vice versa
- Develop and use models to describe and compare the directional transfer of heat by conduction, convection, and radiation

- Support claims that living organisms obtain and use resources for energy, respond to stimuli, reproduce, and grow, and develop
- Analyze and interpret data related to the diversity of animals to support claims that all animals (vertebrates and invertebrates) share common characteristics
- Compare how the structures of protists and fungi allow them to obtain energy and explore their environment
- Analyze and interpret data to explain how the processes of photosynthesis, respiration, and transpiration work together to meet the needs of plants

A student who scores in the exceeds expectations category typically can:

- Use grade-level appropriate statistics to analyze data
- Communicate using conventions and expectations of scientific writing
- Predict local weather patterns and conditions based on information provided
- Evaluate different forms of energy and provide examples that demonstrate the conservation of energy as it is transformed from one form to another
- Refine design solutions that improve the efficiency of a machine by reducing the input energy (effort) or the amount of energy transferred to the surrounding environment as it moves an object
- Construct models to show how the processes of photosynthesis, respiration, and transpiration work together to meet the needs of plants
- Refine the steps of a controlled scientific investigation to better investigate how changes in environmental factors affect the growth and development of a flowering plant

Grade 8 Science

A student who scores in the does not meet expectations category typically can:

- Identify data from scientific investigations
- Define force, mass, speed, and direction
- Recognize that an object's speed is related to its change in position over time
- Identify the basic properties of waves (including frequency, amplitude, wavelength, and speed)
- Recognize parts of the eye that allow humans to see colors
- Recognize the unique and defining features of igneous, sedimentary, and metamorphic rocks
- Identify key elements of plate tectonics (including convergent, divergent, and transform plate boundaries)
- Define human and natural factors that can contribute to the extinction of species

A student who scores in the "*approaches expectations*" category typically can:

- Use mathematical skills to manipulate metric units
- Describe the effect of balanced and unbalanced forces on an object's motion in terms of magnitude and direction
- Explain the behaviors of waves as they interact with various materials (including refraction, reflection, transmission, and absorption)
- Identify the characteristics and movements of objects in Earth's solar system
- Explain how motions within the Sun-Earth-Moon system cause Earth phenomena (including day and year, moon phases, solar and lunar eclipses, and tides)
- Explain the patterns in the locations of volcanoes and earthquakes as they relate to tectonic plate boundaries, interactions, and hot spots
- Identify major events and diversity in Earth's history according to the geologic timescale by using evidence from rock layers

A student who scores in the meets expectations category typically can:

- Analyze and interpret data from informational texts to reveal patterns
- Conduct a controlled scientific investigation to test how varying the amount of force or mass of an object affects the motion (speed and direction), shape, or orientation of the object
- Use mathematical and computational thinking to generate graphs that represent the motion of an object's position and speed as a function of time
- Use models to exemplify the basic properties of waves (including frequency, amplitude, wavelength, and speed)
- Construct explanations for how humans see color as a result of the transmission, absorption, reflection, and refraction of light waves by various materials
- Obtain and communicate information to model the characteristics and movements of objects in Earth's solar system
- Use the rock cycle model to describe the processes and forces that create igneous, sedimentary, and metamorphic rocks
- Construct explanations for how the theory of plate tectonics accounts for the motion of the tectonic plates, the geologic activities at plate boundaries, and the changes in landform areas over geologic time
- Obtain and communicate information to support claims that natural and human-made factors can contribute to the extinction of species

A student who scores in the exceeds expectations category typically can:

- Use grade level appropriate statistics to analyze data
- Develop models to compare and predict the resulting effect of balanced and unbalanced forces on an object's motion in terms of magnitude and direction. Construct a graph to compare the positions and speeds of two objects
- Develop a model to compare the behaviors of waves as they interact with various materials (including refraction, reflection, transmission, and absorption)
- Develop a model comparing the characteristics and movements of objects in Earth's solar system
- Develop models to explain how motions within the Sun-Earth-Moon system cause Earth phenomena (including day and year, moon phases, solar and lunar eclipses, and tides)
- Develop a model that compares the patterns in the locations of volcanoes and earthquakes related to tectonic plate boundaries, interactions, and hot spots
- Develop and use models to organize Earth's history according to the geologic timescale by using evidence from rock layers