

## Grade 5 Science Performance Level Descriptors

### Limited

A student performing at the **Limited Level** demonstrates a minimal command of Ohio's Learning Standards for Grade 5 Science. A student at this level has an emerging ability to demonstrate knowledge of the solar system and use knowledge of the relationship between Earth and the sun to describe predictable cycles, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light and sound to describe physical situations.

A student at the **Limited Level** can:

- Recall that the sun is the only star in the solar system;
- Describe characteristics of planets such as distance from the sun, size, movement, composition and temperature;
- Recognize Earth's day and night cycle, the motion of the sun, moon in the sky, and other stars in the night sky;
- Trace the movement of the sun across the sky throughout the day;
- Trace the movement of shadows throughout the day;
- Recognize that organisms within an ecosystem have roles and relationships;
- Recall the sun is the primary source of energy for most ecosystems;
- Describe that objects at rest require a force to start moving;
- Investigate how the color of objects is related to light;
- Identify behaviors of light and sound;
- Observe and ask questions about the world that can be answered through scientific investigations;
- Recognize that science affects everyday life;
- Use evidence from experimentation and observation to explain that science is a way of knowing about the world around us;
- Provide examples of how science explanations can change based on new scientific evidence.

## Grade 5 Science Performance Level Descriptors

### Basic

A student performing at the **Basic Level** demonstrates a partial command of Ohio's Learning Standards for Grade 5 Science. A student at this level has a general ability to demonstrate knowledge of the solar system and use knowledge of the relationship between Earth and the sun to describe predictable cycles, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light and sound to describe physical situations.

A student at the **Basic Level** can:

- Recall that the orbital paths of planets, moons and celestial bodies are due to gravitational attraction;
- Select tools and technology needed to study the solar system, including Earth (e.g., telescopes, satellites, probes);
- Explain that other stars are much farther away from Earth than the sun, which causes them to appear much smaller;
- Recall the size and composition of stars, including the sun;
- Identify general information about asteroids, meteoroids, comets, and dwarf planets (e.g., composition, relative size, orbits);
- Recognize that stars move across the night sky due to the rotation of Earth.
- Identify that roles of living organisms are determined by how they acquire energy (e.g., producers, consumers, decomposers);
- Recall that shadows change throughout the day due to the apparent movement of the sun.
- Recognize that producers are the foundation of the food web;
- Identify the roles and relationships of organisms within an ecosystem;
- Recall that photosynthesis is the process plants use to produce food from sunlight;
- Identify the effects of relative mass/weight and force (amount and direction) on an object's change in motion;
- Recognize measurements of motion involving speed, distance and time;
- Recall that an object moving at constant speed has no change in speed or direction if no force is acting on it;
- Investigate the behavior of light and sound when encountering a new medium (e.g., absorption, reflection, pass or travel through);
- Communicate scientific procedures and explanations;
- Provide examples of science as a human endeavor.

## Grade 5 Science Performance Level Descriptors

### Proficient

A student performing at the **Proficient Level** demonstrates an appropriate command of Ohio's Learning Standards for Grade 5 Science. A student at this level has a consistent ability to demonstrate knowledge of the solar system and use knowledge of the relationship between Earth and the sun to describe predictable cycles, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light and sound to describe physical situations.

A student at the **Proficient Level** can:

- Compare or summarize general characteristics (e.g., size, composition, distance, motion) of objects in the universe including stars, planets, moons, asteroids and comets;
- Use diagrams and models to predict the position of shadows.
- Compare roles of living organisms, determined by how they acquire energy (e.g., producers, consumers, decomposers);
- Explain that photosynthesis is the process through which sunlight is transformed by producers into usable energy for organisms;
- Create a food web to illustrate how energy is transferred and transformed in an ecosystem through interactions of organisms;
- Describe that an object moving at constant speed has no change in speed or direction if no force or balanced forces are acting on it;
- Compare the speed of objects, given distance and time data;
- Recognize that balanced forces result in no change in motion and unbalanced forces causes a change in motion.
- Plan an investigation to explore the behavior of light when encountering a new medium (e.g., absorption, reflection, refraction, pass or travel through);
- Explain how the color of objects related to reflection and absorption;
- Explain how the pitch of sound and the vibration rate of an object are related;
- Interpret the behavior of sound when encountering a new medium (e.g., absorption, reflection, pass or travel through);
- Design and conduct scientific investigations using appropriate safety techniques;
- Develop and communicate descriptions, models, explanations and predictions;
- Explain that science assumes that objects and event occur in consistent patterns that are understandable through measurement and observation;
- Provide examples to show that science explanations can change based on new scientific evidence.

## Grade 5 Science Performance Level Descriptors

### Accelerated

A student performing at the **Accelerated Level** demonstrates a strong command of Ohio's Learning Standards for Grade 5 Science. A student at this level has a superior ability to demonstrate knowledge of the solar system and use knowledge of the relationship between Earth and the sun to describe predictable cycles, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light and sound to describe physical situations.

A student at the **Accelerated Level** can:

- Create a model to show the relationship between size, distance and appearance of the sun to other stars;
- Use data about the compositions of planets to predict location position in the solar system.
- Provide evidence to support why producers are the foundation of the food web;
- Develop a model to illustrate the flow of energy based on a scenario and explain the roles and relationships (e.g., symbiotic) of organisms within an ecosystem;
- Predict the impact on the ecosystem as species are introduced or removed (e.g., endangered or threatened species, invasive species);
- Draw conclusions based on data and/or diagrams showing movement of an object over time;
- Compare and rank the relative change in motion for objects of different masses/weights that experience the same force;
- Compare and explain the differences between objects that emit light (e.g., the sun) and objects that reflect light (e.g., an apple, the moon);
- Predict how absorbed light causes objects to warm and the effects of the material, light intensity, angle, and time of exposure on the amount of heating;
- Use data to compare the speed of sound under different conditions;
- Plan an investigation to explore and predict movement of sound as it travels outward from its source through different media.

## Grade 5 Science Performance Level Descriptors

### Advanced

A student performing at the **Advanced Level** demonstrates a distinguished command of Ohio's Learning Standards for Grade 5 Science. A student at this level has a sophisticated ability to demonstrate knowledge of the solar system and use knowledge of the relationship between Earth and the sun to describe predictable cycles, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light and sound to describe physical situations.

A student at the **Advanced Level** can:

- Given data, provide evidence to support the fact that Earth orbits the sun in a nearly circular path;
- Use diagrams and models to predict the position of Earth and sun and stars at various stages in the yearly cycle.
- Use data from an ecosystem to interpret the change of energy flow in an ecosystem when species are introduced or removed;
- Use data to form conclusions about the roles of organisms within a given ecosystem and explain how the evidence supports that conclusion;
- Plan an investigation based on data from a real-world scenario to determine the impact of the introduction of an invasive species on the population of a local species;
- Predict changes that take place when an object experiences differing magnitudes of forces and/or masses/weights;
- Design an investigation that determines how the mass/weight of an object (or amount of force acting on an object) affects how the motion of an object changes;
- Design an investigation that illustrates how balanced and unbalanced forces impact motion;
- Test a design to explore how absorbed light causes objects to warm and the effects of the material, light intensity, angle, and time of exposure on the amount of heating;
- Design an object to illustrate the relationships between the pitch of a sound and the vibration rate of an object;
- Design an engineering solution to a real-world scenario involving light absorption and reflection of heat.