

## 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 the physical environment, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light 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 seasons, day and night, and the motion of the sun in the sky;
- 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.

## 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 the physical environment, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light 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 (e.g., made of gas) of stars, including the sun;
- Identify general information about asteroids, meteoroids, comets, and dwarf planets (e.g., composition, relative size, orbits);
- Identify that roles of living organisms are determined by how they acquire energy (e.g., producers, consumers, decomposers);
- Recognize that producers are the foundation of the food web;
- Identify the roles and relationships (e.g., symbiotic) 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).

## 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 the physical environment, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light to describe physical situations.

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

- Compare or summarize general characteristics (e.g., size, composition, distance, temperature, motion) of objects in the universe including, stars, planets, moons, asteroids and comets;
- Explain that seasonal weather patterns in specific regions (e.g., hurricane, monsoon, rainy or dry seasons) are predictable, due to the yearly solar cycle;
- Relate Earth's tilt and revolution to direct sunlight and seasons;
- 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 energy;
- 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 is acting on it;
- Compare the speed of objects, given distance and time data;
- 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 relates 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).

## 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 the physical environment, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light to describe physical situations.

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

- Create a model to show the relationship between size, distance and appearance of stars;
- Explain how using data about the compositions of planets can indicate distance from the sun;
- Examine relationships and draw conclusions between direct sunlight and temperature, and the angle/altitude of the sun and amount of direct sunlight;
- Explain and 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;
- 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 the physical environment, demonstrate knowledge of the roles of organisms in ecosystems and use knowledge of motion and light 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 data and evidence to make a conclusion about how the positions of the Earth and the sun relate to seasonal weather patterns in specific regions;
- Given a scenario, determine relationships between direct sunlight and temperature and the angle/altitude of the sun and amount of direct sunlight;
- 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;
- 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.