

Science

Grade 7

Advanced

**Students scoring at the Advanced level in science generally exhibit the ability to:**

- analyze investigations by researching and evaluating testable questions, dependent and independent variables, and experimental designs;
- select appropriate tools and resources for data collection and analyze data to evaluate explanations, make inferences, and predict trends;
- communicate related research, experimental procedures, data, and analyses in a variety of appropriate methods;
- explain how science is tested, revised, and advanced through problem solving, mathematics, technology, and communications;
- compare functions of plant and animal cell structures (i.e., organelles) and explain why the life cycles of plants and animals differ;
- analyze how the cell processes of osmosis, diffusion, respiration, and photosynthesis are necessary for an organism's survival;
- describe the growth and development of humans from infancy to old age and various factors affecting this development;
- analyze how the failure of organs or systems affects health and how methods of transferring genetic information impact an organism;
- analyze factors that affect relationships between organisms in ecosystems and describe how adaptations help species survive;
- analyze the roles of components in ecosystems, the resources humans derive from ecosystems, and the impact of human activities;
- compare, describe, or analyze ecosystems by using the movement of energy and the effects of limiting factors and carrying capacity; and
- compare and contrast the nitrogen and carbon cycles and explain why they are important for the survival of organisms.

## Mastery

Students scoring at the Mastery level in science generally exhibit the ability to:

- compare investigations by identifying and evaluating testable questions, variables, and experimental designs;
- select appropriate tools and resources for data collection and analyze data to evaluate explanations, make inferences, and predict trends;
- communicate experimental procedures, data, and analyses in a variety of appropriate methods;
- describe how science is tested, revised, and advanced through problem solving, mathematics, technology, and communication;
- describe functions of plant and animal cell structures (i.e., organelles) and compare the life cycles of plants and animals;
- compare the cell processes of osmosis and diffusion and respiration and photosynthesis;
- classify organisms using a dichotomous key and describe the growth and development of humans from infancy to old age;
- relate the functions of organs, systems, and overall health in sustaining life and describe methods of transferring genetic information;
- describe and compare relationships between organisms in ecosystems and explain how adaptations help species survive;
- compare the roles of components in ecosystems, the resources humans derive from ecosystems, and the impact of human activities;
- identify, describe, or explain ecosystems by using the movement of energy and the effects of limiting factors and carrying capacity; and
- compare and contrast the nitrogen and carbon cycles and explain why they are important for the survival of organisms.

## Basic

### Students scoring at the Basic level in science generally exhibit the ability to:

- describe investigations by comparing or recognizing testable questions, variables, and experimental designs;
- select appropriate tools and resources for data collection and analyze data to develop explanations, make inferences, and predict trends;
- communicate experimental procedures, data, and analyses through appropriate methods;
- describe how science is tested, revised, and advanced through problem solving, mathematics, technology, and communication;
- differentiate between plants and animals by their cell structures (i.e., organelles) and describe the life cycles of plants and animals;
- describe the cell processes of osmosis, diffusion, respiration, and photosynthesis;
- classify organisms using a dichotomous key and describe human growth and development;
- describe the functions of organs and organ systems and identify methods of transferring genetic information;
- describe relationships between organisms in ecosystems and how adaptations help species survive;
- identify the roles of components in ecosystems, the resources humans derive from ecosystems, and the impact of human activities;
- identify and describe ecosystems by using the movement of energy and the effects of limiting factors and carrying capacity; and
- describe and explain the nitrogen and carbon cycles.

## Approaching Basic

### Students scoring at the Approaching Basic level in science generally exhibit the ability to:

- describe an investigation by identifying testable questions and variables;
- select tools and resources correctly to collect and analyze data to evaluate explanations and make inferences;
- communicate experimental procedures, data, and analyses;
- describe how science is tested, revised, and advanced, and identify that mathematics and technology improve science;
- identify functions of plant and animal cell structures (i.e., organelles) and describe parts of the life cycles of plants and animals;
- identify the cell processes of osmosis, diffusion, respiration, and photosynthesis;
- classify organisms using a dichotomous key and know that different factors affect human growth or development over time;
- identify functions of organs and identify the role of genetic information in an organism;
- identify relationships between organisms in ecosystems and recognize adaptations;
- identify the components of ecosystems as living or nonliving and know that humans' use of ecosystem resources can have impact;
- identify the roles of organisms in a food chain and factors that limit the carrying capacity and restrict the growth of populations; and
- identify parts of the nitrogen and carbon cycles.

## Unsatisfactory

**Students scoring at the Unsatisfactory level in science have not demonstrated the fundamental knowledge and skills needed for the next level of schooling. Students at this level need to develop the ability to:**

- describe an investigation by identifying testable questions and variables;
- select tools and resources correctly to collect and analyze data to evaluate explanations and make inferences;
- communicate experimental procedures, data, and analyses;
- describe how science is tested, revised, and advanced, and identify that mathematics and technology improve science;
- identify functions of plant and animal cell structures (i.e., organelles) and describe parts of the life cycles of plants and animals;
- identify the cell processes of osmosis, diffusion, respiration, and photosynthesis;
- classify organisms using a dichotomous key and know that different factors affect human growth or development over time;
- identify functions of organs and identify the role of genetic information in an organism;
- identify relationships between organisms in ecosystems and recognize adaptations;
- identify the components of ecosystems as living or nonliving and know that humans' use of ecosystem resources can have impact;
- identify the roles of organisms in a food chain and factors that limit the carrying capacity and restrict the growth of populations; and
- identify parts of the nitrogen and carbon cycles.