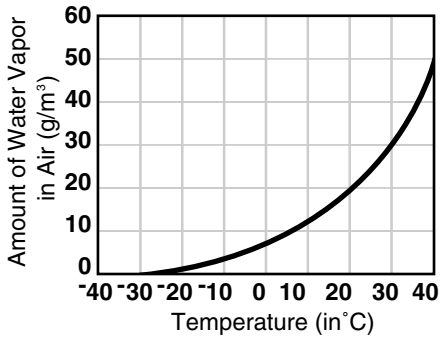
## Selected-Response Illustrative Items

**Levels 19–21/22**

### 19 Science Inquiry

Items in the Science Inquiry objective assess the student's scientific thinking and planning skills, particularly those related to making hypotheses, laboratory procedure, data presentation and analysis, and the evaluation of experimental evidence and conclusions. This item measures the student's ability to interpret and draw a valid conclusion from a graph.

**2**




**According to the information shown in the graph, which of these is a valid conclusion?**

**F** The amount of water vapor in the air increases as the temperature increases.

**G** The amount of water vapor in the air is unaffected by temperature.

**H** The amount of water vapor is affected only by temperature.

**J** The amount of water vapor in the air decreases as the temperature increases.

### 20 Physical Science

Items measuring the Physical Science objective focus on the principles of physics and chemistry. This item measures the student's understanding of force and the efficiency of various models of a simple machine. Students are introduced to the concept of simple machines at earlier grade levels, but a deeper understanding is assessed at the high school levels.

**3** **The pictures show two levers being used to lift the same rock to the same height. What is the advantage of using the lever in picture 2?**

**A** Less energy is lost due to friction.

**B** Less force is required to lift the rock.

**C** More work is done while lifting the rock.

**D** More energy is transferred to the rock.

## Selected-Response Illustrative Items — Levels 19–21/22

### 21 Life Science

Items measuring the Life Science objective at the high school levels assess the student's knowledge and understanding of biology and ecology. This item focuses on the student's understanding of human body systems.

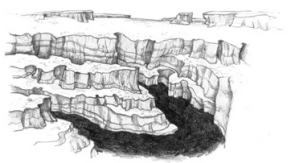
**4** **Which of these systems in the human body produces substances that control the rate of growth?**

**F** skeletal system
**G** nervous system
**H** endocrine system
**J** circulatory system

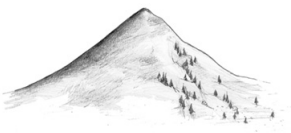
### 22 Earth and Space Science

Items in this objective require the student to connect concepts and processes of geology, meteorology, and the solar system to the world outside the classroom. In this item, the student is expected to recognize a causal relationship between a landform and a glacier.

**5** **Which of these landforms was most likely created by a glacier?**

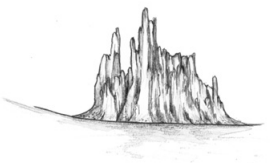


**A**



**C**

**B**



**D**

## Selected-Response Illustrative Items

## Levels 19–21/22

### 23 Science and Technology

Items measuring this objective assess the student's understanding of fundamental developments in science and technology. This item measures the student's ability to identify an application of scientific and technological advancements to a household object.

**6** **Which of these inventions involves combined technological advancements in the use of sound and light?**

**F** tape recorder
**G** microwave oven
**H** compact disc player
**J** computer scanner

### 24 Personal and Social Perspectives in Science

Items in the Personal and Social Perspectives objective focus on situations of social concern that are either caused or affected by advances in science or technology, such as population changes, waste management, and pollution, as well as on the effects of scientific developments on the individual and the workplace. In this item, the student must demonstrate an understanding of facts related to these issues.

**7** **Which of these has remained a major disadvantage of the widespread use of nuclear reactors as a source of electrical energy?**

**A** the disposal of radioactive waste
**B** the short life span of nuclear power plants
**C** the supply of fuel for nuclear reactors
**D** the inferior quality of energy produced

### 25 History and Nature of Science

In this item, the student is asked to identify the basic criteria for accepting a scientific theory as a scientific law. Other items in this objective assess the student's knowledge of the history of scientific development and the criteria that define scientific endeavor. Scientists and their discoveries, inventors and inventions, the history of advancements in science, and careers in science are also addressed.

**8** **Which of these is the most important requirement for accepting a theory as a scientific law?**

**F** The theory must be more than 10 years old.
**G** The theory must appear in more than one scientific journal.
**H** The theory must be widely understood by both scientists and nonscientists.
**J** The theory must be supported by repetitive and non-contradictory experimental results.