

Science
Grade 6

Sample Items

Introduction

The South Carolina State Department of Education provides districts and schools with tools to assist in delivering focused instruction aligned with the *South Carolina College- and Career-Ready Science Standards 2021*. This document contains a set of ten SC READY Science grade 6 test items that have been written to align with the 2021 standards for *Grade 6 Science*. These items were reviewed for content, fairness, and sensitivity prior to being field tested and approved for release to the public.

Purpose

This document is intended to be a resource for educators; it is not designed to be a practice test for students. The sample items are examples of college- and career-ready assessment items. The SC READY test assesses content standards in a variety of ways. This document does not include all item types. To see the full functionality of Technology-Enhanced items see Online Tools Training.

<https://wbte.drcedirect.com/SC/portals/sc>

Item Information Format

SC READY SCIENCE 6 Sample Item (#)	
Standard Alignment	PE Code (2D or 3D) Science and Engineering Practice (SEP) Disciplinary Core Idea (DCI) Crosscutting Concept (CCC)
Standard Description	text from the <i>South Carolina College- and Career-Ready Science Standards 2021</i>
Item Type	Evidence-Based Selected Response (EBSR), Selected Response, Multi-select, Drag and Drop input, Drop-down, Match Interaction; Short Text Input
Answer Key	correct answer
Depth of Knowledge	cognitive demand
Estimated Difficulty	estimate based on student responses

Links

Assessment Quick Links for Teachers

<https://ed.sc.gov/tests/assessment-information/quick-links-for-teachers/>

South Carolina College- and Career-Ready Science Standards 2021

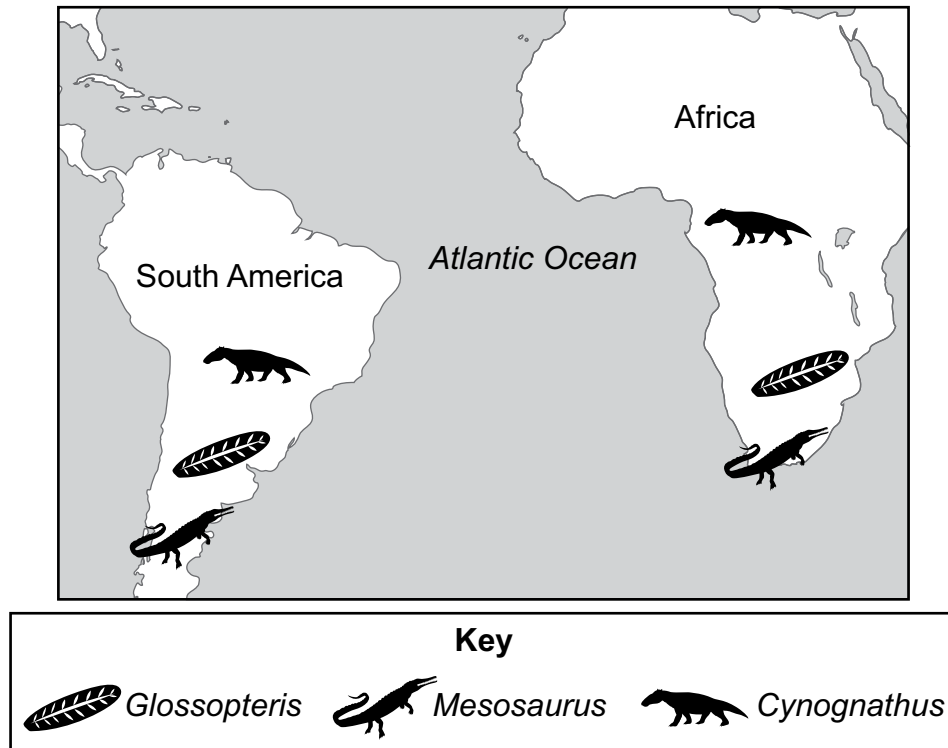
<https://ed.sc.gov/instruction/standards/science/standards/>

Norman Webb's Depth-of-Knowledge for the Four Content Areas

<https://www.webbalign.org/dok-summary-tables>

1. *Glossopteris* was an ancient fern. *Mesosaurus* and *Cynognathus* were ancient reptiles. The map shows where fossils of these three organisms have been observed.

Fossils of Land Organisms in South America and Africa



Which statement **best** uses evidence from the map to support the theory of plate tectonics?

- A. The fossils indicate that the landmasses were once farther apart and that the organisms traveled long distances between them.
- B. The fossils indicate that the landmasses were once joined together and then became separated over a long period of time.
- C. The fossils indicate that the organisms swam from one landmass to the other landmass before they became fossilized.
- D. The fossils indicate that the organisms developed independently on both landmasses and maintained their similarity as the landmasses moved apart over time.

Item information on following page 

SC READY SCIENCE 6 Sample Item 1	
Standard Alignment	6-ESS2-3 (3D) SEP: Analyzing and Interpreting Data DCI: ESS2.B CCC: Patterns
Standard Description	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
Item Type	Selected Response
Answer Key	B
Depth of Knowledge	3
Estimated Difficulty	Medium

2. A student is making a model to show how kinetic energy and particle movement change as a pot of water is heated from 20°C to 80°C.

Make **one** selection in each row to correctly indicate how kinetic energy and particle movement change as temperature increases.

	Increases	Decreases
kinetic energy	<input type="checkbox"/>	<input type="checkbox"/>
particle movement	<input type="checkbox"/>	<input type="checkbox"/>

Key:






	Increases	Decreases
kinetic energy	<input checked="" type="checkbox"/>	<input type="checkbox"/>
particle movement	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SC READY SCIENCE 6 Sample Item 2	
Standard Alignment	6-PS1-4 (3D) SEP: Developing and Using Models DCI: PS1.A CCC: Cause and Effect
Standard Description	Develop and use a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
Item Type	Match Interaction
Answer Key	See key
Depth of Knowledge	2
Estimated Difficulty	High

3. This question has two parts.

Students are learning about a certain type of fossil called an index fossil. Index fossils are easily recognizable and abundant fossils unique to a particular geologic time period. They can be used to estimate the age of the rock layer in which they appear. The table shows five index fossils by their appearance in the geologic time scale.

Index Fossils by Geologic Time Scale

Cenozoic	 <i>Pecten</i>
Mesozoic	 <i>Perisphinctes</i>  <i>Nerinea</i>
Paleozoic	
	 <i>Mucrospirifer</i>
	 <i>Paradoxides</i>

Part A

Which statement is **best** supported by the information in the table?

- A. *Mucrospirifer* fossils are the youngest index fossils.
- B. *Pecten* index fossils are older than *Paradoxides* index fossils.
- C. *Perisphinctes* and *Nerinea* index fossils are about the same age.

Part B

Which evidence **best** supports the answer to Part A?

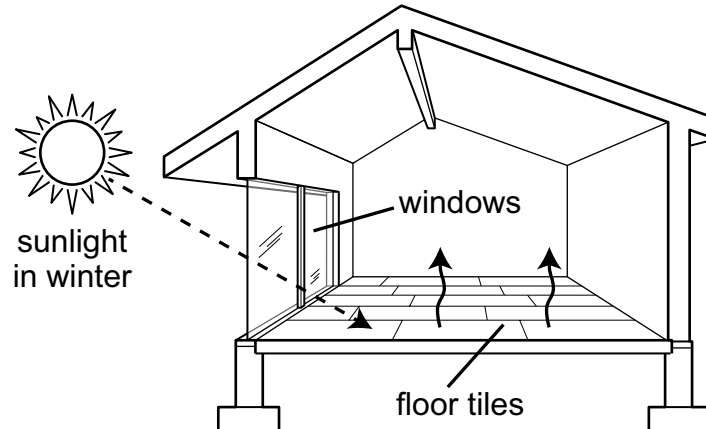
- A. Both index fossils were formed in the Mesozoic era.
- B. The Cenozoic era happened before the Paleozoic era.
- C. The youngest index fossils were formed in the Paleozoic era.

Item information on following page 

SC READY SCIENCE 6 Sample Item 3	
Standard Alignment	6-ESS1-4 (3D) SEP: Constructing Explanations and Designing Solutions DCI: ESS1.C CCC: Scale, Proportion, and Quantity
Standard Description	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
Item Type	EBSR
Answer Key	C/A
Depth of Knowledge	2
Estimated Difficulty	Medium

4. The diagram shows a house design that allows the house to remain warm in winter.

Passive Solar House Design



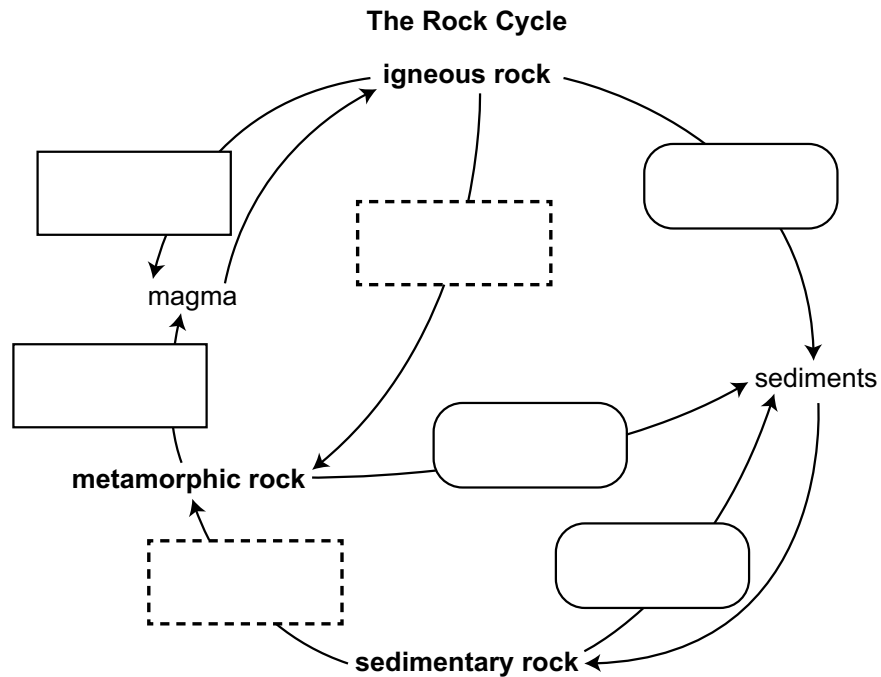
Select the **two** statements that describe how materials in the house interact with the environment in winter.

- A. The windows reflect solar energy.
- B. The floor tiles reflect solar energy.
- C. The windows transmit solar energy.
- D. The windows absorb solar energy and release heat.
- E. The floor tiles absorb solar energy and release heat.

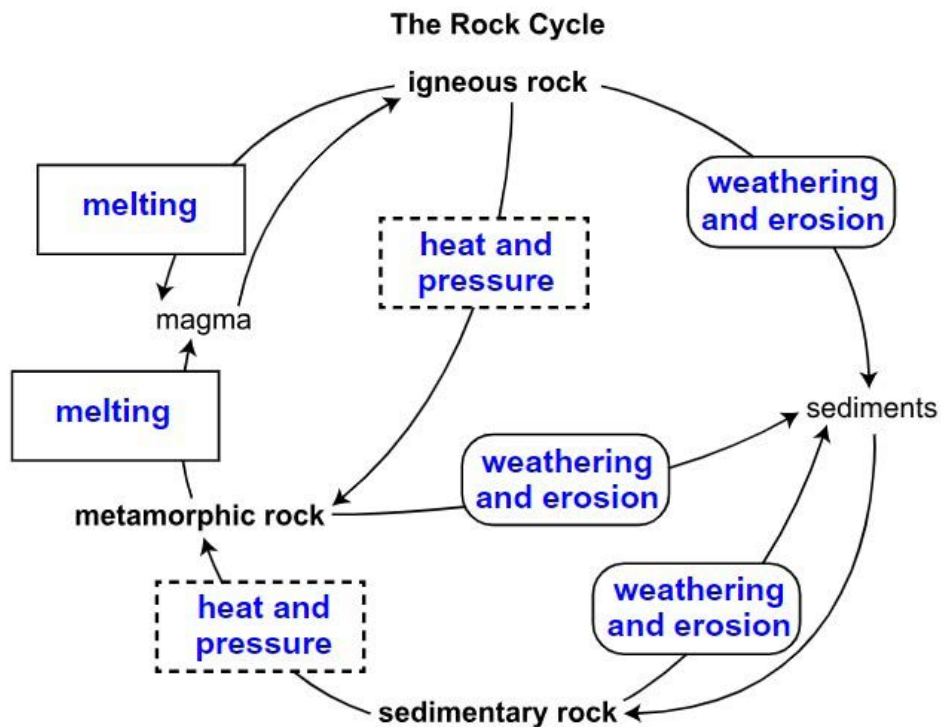
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SC READY SCIENCE 6 Sample Item 4	
Standard Alignment	6-PS4-2 (3D) SEP: Developing and Using Models DCI: PS4.B CCC: Structure and Function
Standard Description	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
Item Type	Multi-Select
Answer Key	C, E
Depth of Knowledge	2
Estimated Difficulty	High

5. A student is making a model to represent processes in the rock cycle. Drag the processes into the correct positions in the model. Processes will be used more than once. **Boxes with the same shape or outline will have the same process.**



Key:

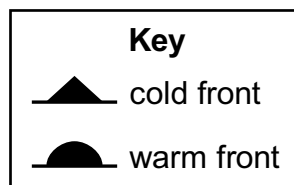
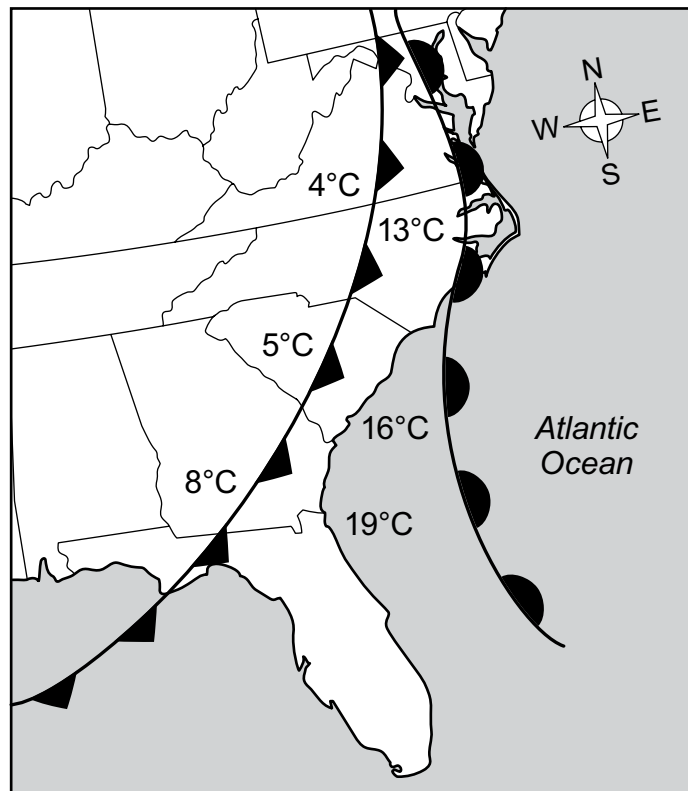


Item information on following page

SC READY SCIENCE 6 Sample Item 5	
Standard Alignment	6-ESS2-1 (3D) SEP: Developing and Using Models DCI: ESS2.A CCC: Energy and Matter
Standard Description	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
Item Type	Drag and Drop
Answer Key	See key
Depth of Knowledge	2
Estimated Difficulty	High

6. A student looks at the weather map below.

Weather Map of Southeastern United States



Use this information and the drop-down menus to describe the weather on the South Carolina coast over the next 24 hours.

The temperature will **most likely** become , and there will also be an increased chance of .

Key:

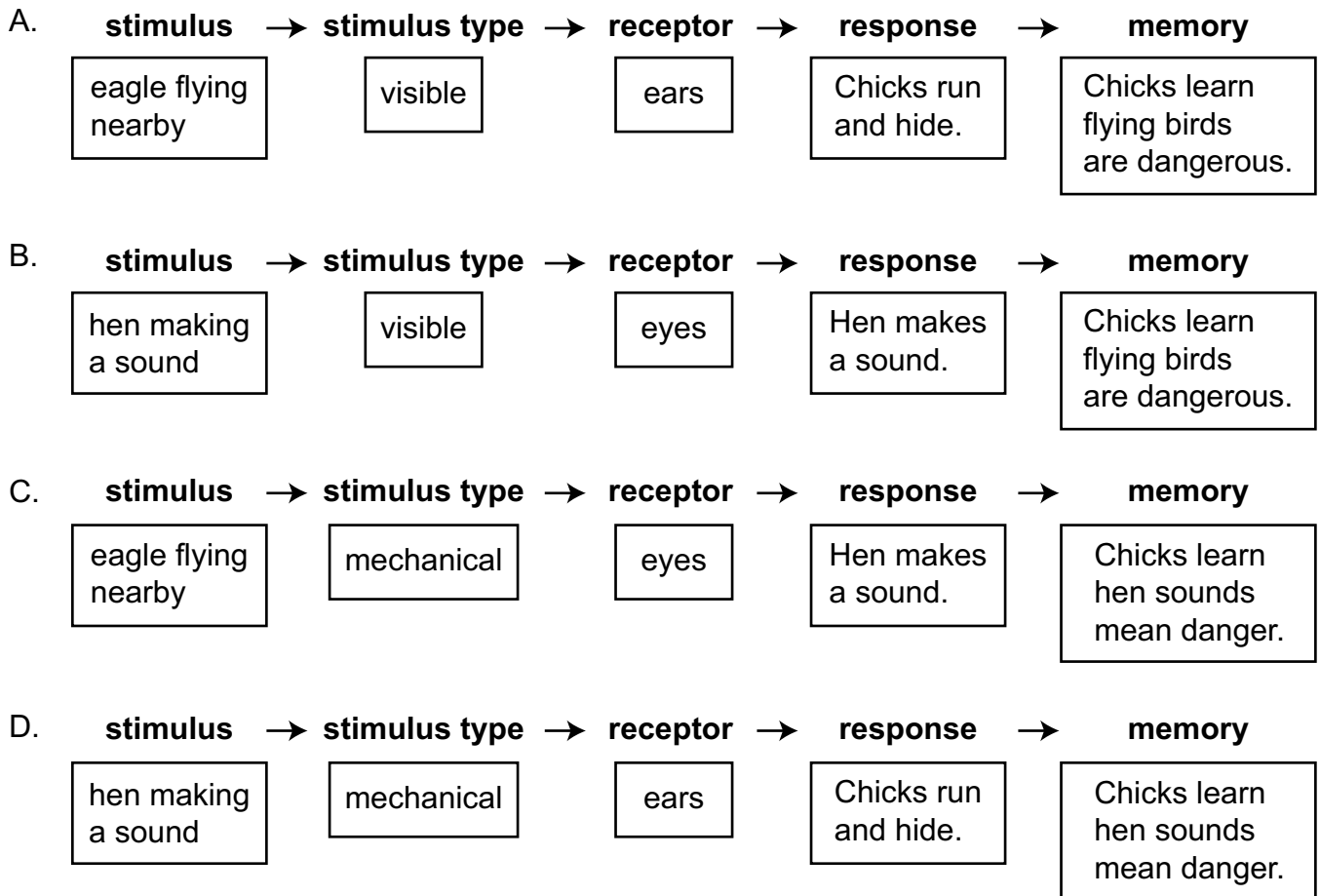
The temperature will **most likely** become , and there will also be an increased chance of .

Item information on following page

SC READY SCIENCE 6 Sample Item 6	
Standard Alignment	6-ESS2-5 (3D) SEP: Analyzing and Interpreting Data DCI: ESS2.D CCC: Cause and Effect
Standard Description	Analyze and interpret data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.
Item Type	Drop-Down
Answer Key	colder; cloudy skies with rain
Depth of Knowledge	2
Estimated Difficulty	Medium

7. An eagle is flying near a chicken coop. A hen produces a sound that acts as an alarm to her chicks. The chicks run toward the hen and hide under her feathers.

Which flowchart shows the correct cause-and-effect relationship for the behavior of the chicks?



Item information on following page 

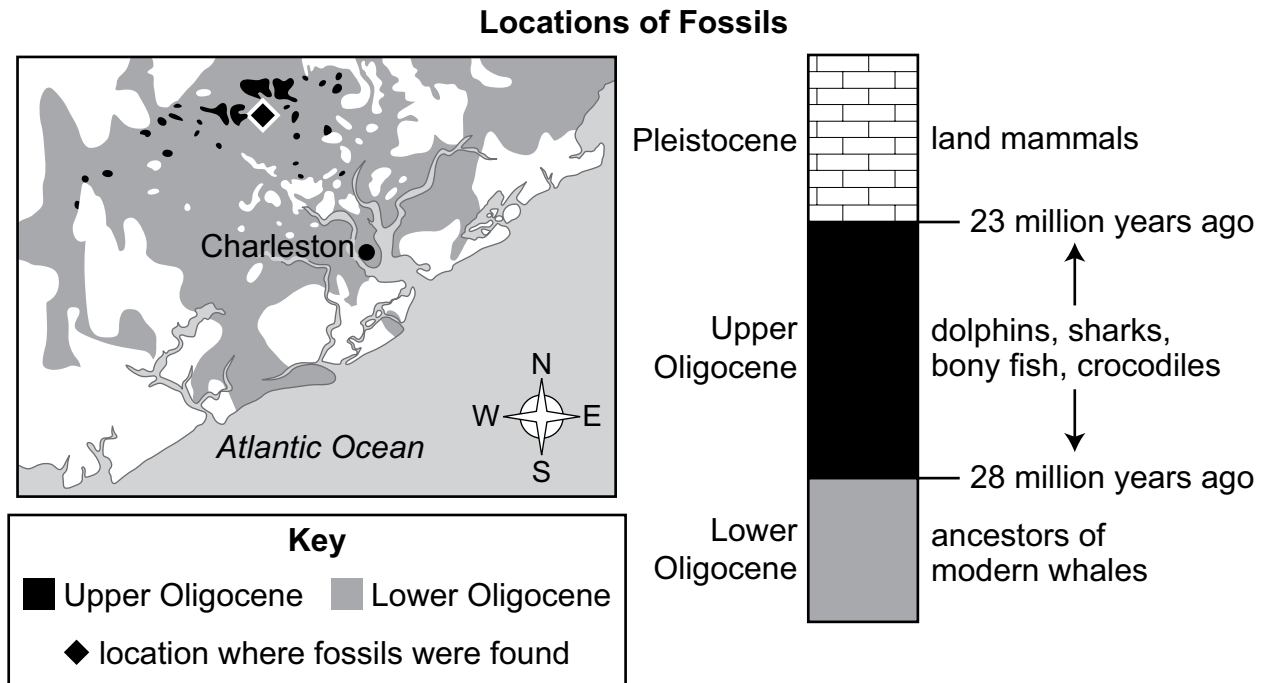
SC READY SCIENCE 6 Sample Item 7	
Standard Alignment	6-LS1-8 (3D) SEP: Obtaining, Evaluating, and Communicating Information DCI: LS1.D CCC: Cause and Effect
Standard Description	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
Item Type	Selected Response
Answer Key	D
Depth of Knowledge	2
Estimated Difficulty	High

Use the passage to answer questions 8–10.

Fossils of South Carolina

Many fossils have been found in the coastal plain of South Carolina as shown on the map.

This map and diagram give more information about these fossils and where they were found.



8. Students are developing a model of how energy and the force of gravity drive the water cycle. They want the model to show how the water cycle can create conditions where fossils could form.

Drag the phrases into the chart to correctly identify whether each part of the water cycle absorbs energy, releases energy, or is driven by the force of gravity. The phrases may be used once, more than once, or not at all.

Water evaporates from the ocean.	
Water vapor condenses to form clouds.	
Water precipitates from the clouds.	
Surface runoff moves water and sediment into the ocean.	

Key:

Water evaporates from the ocean.	absorbs energy from the Sun
Water vapor condenses to form clouds.	releases energy into the atmosphere
Water precipitates from the clouds.	is driven by the force of gravity
Surface runoff moves water and sediment into the ocean.	is driven by the force of gravity

Item information on following page 

SC READY SCIENCE 6 Sample Item 8	
Standard Alignment	6-ESS2-4 (3D) SEP: Developing and Using Models DCI: ESS2.C CCC: Energy and Matter
Standard Description	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
Item Type	Drag and Drop
Answer Key	See key
Depth of Knowledge	2
Estimated Difficulty	High

9. The thickness of the rock layer from the *Upper Oligocene* varies from 5 meters to less than 1 meter. Scientists believe that this difference is the result of erosion that occurred after the *Upper Oligocene*.

A student claims that this change took thousands of years to occur. Which statement **best** supports or refutes the student's claim?

- A. The student is most likely correct because mudslides can occur over long periods of time.
- B. The student is most likely incorrect because earthquakes can cause rapid changes in Earth features.
- C. The student is most likely incorrect because volcanic activity is common near the edges of tectonic plates.
- D. The student is most likely correct because it takes a long time for wind and water to wear away surface Earth materials.

SC READY SCIENCE 6 Sample Item 9	
Standard Alignment	6-ESS2-2 (3D) SEP: Constructing Explanations and Designing Solutions DCI: ESS2.A CCC: Scale, Proportion, and Quantity
Standard Description	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
Item Type	Selected Response
Answer Key	D
Depth of Knowledge	2
Estimated Difficulty	High

10. Which investigation would **best** confirm that fossils found in South Carolina are the remains of living organisms?
- A. using iron filings to test the materials for magnetic properties
 - B. using microscopes to search for evidence of cellular structures
 - C. using circuits to determine whether the materials conduct electricity
 - D. using digital scales and beakers of water to find the mass and volume of the fossils

SC READY SCIENCE 6 Sample Item 10	
Standard Alignment	6-LS1-1 (3D) SEP: Planning and Carrying Out Investigations DCI: LS1.A CCC: Scale, Proportion, and Quantity
Standard Description	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
Item Type	Selected Response
Answer Key	B
Depth of Knowledge	2
Estimated Difficulty	Medium