

VIRGINIA STANDARDS OF LEARNING

TEST ITEM SET

GRADE 5 SCIENCE

2010 Science Standards of Learning

Released Spring 2015

Property of the Virginia Department of Education

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SAMPLE A

When Earth is seen from outer space, it looks mainly blue. This is because most of Earth is covered with —

- A** ice
- B** mountains
- C** oceans
- D** deserts

Directions: Click on the term you want to select. Drag the term to the appropriate box.

SAMPLE B

Use the terms to label these statements.

If plants are watered every day, then they will grow faster than plants watered once a week.

The stems are drooping, so the plants need water.

Terms

Inference

Hypothesis

A fungus is found growing on dead leaves on the forest floor. The fungus is an example of a —

- A** decomposer
- B** carnivore
- C** predator
- D** producer

Monthly Rainfall in Norfolk in Inches

	May	June	July
2008	21.4	18.7	12.3
2009	23.6	15.1	11.3
2010	24.6	16.3	12.1
2011	?	?	?

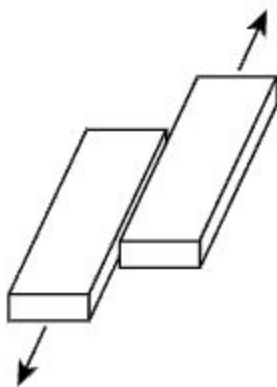
Based on the table, how much rainfall should a scientist have predicted for May of 2011 in Norfolk?

- A** 12–17 inches
- B** 15–20 inches
- C** 18–23 inches
- D** 21–26 inches

Which of these best explains why the sun is not visible during the night?

- A** The moon blocks the sun from view.
- B** That side of the sun faces away from Earth.
- C** The sun stops creating light at night.
- D** That side of Earth faces away from the sun.

Sliding Plate Boundary



A model of a plate boundary is shown. What most likely happens as the plates slide past each other?

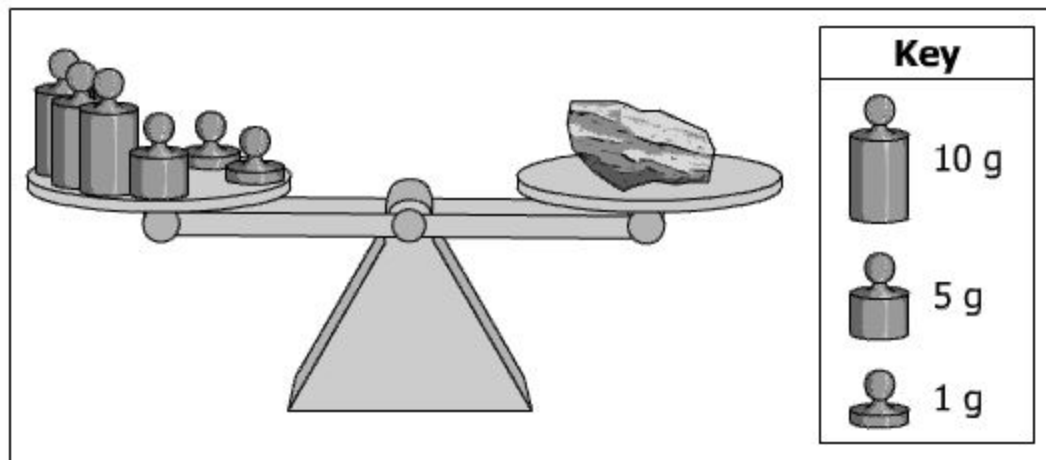
- A** A mountain forms.
- B** An earthquake occurs.
- C** The ocean floor widens.
- D** Magma comes to the surface.

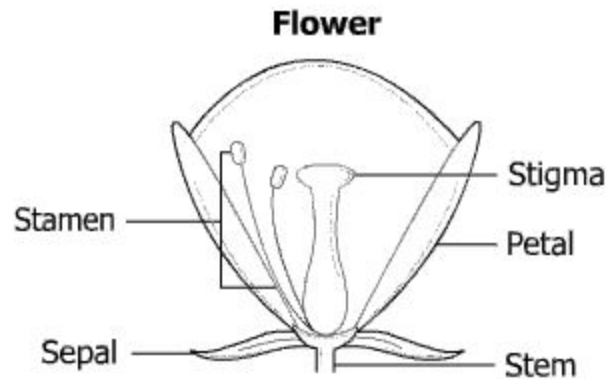
Directions: Type your answer in the box. Use a whole number.

What is the mass of the rock shown?

g

Student Investigation





During pollination, pollen is transferred from a stamen to a —

- A** petal
- B** stem
- C** sepal
- D** stigma

Which of these is an impact made by humans?

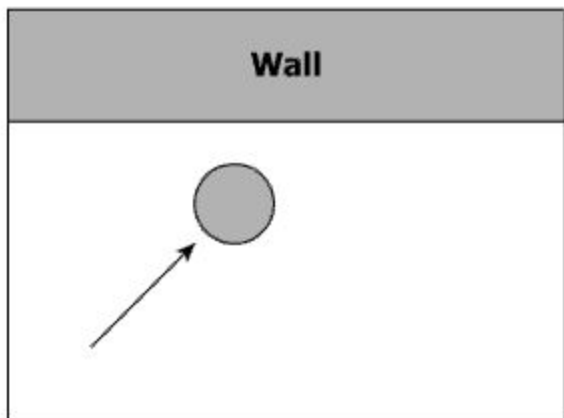
- A** Marble being dug from a rock quarry
- B** Marble forming from sedimentary rock
- C** Oceans drying and exposing limestone
- D** Limestone forming from shells of ocean animals

Lobster pots are used by fishermen to catch lobsters in shallow water. In which area of the ocean would commercial fishermen most likely place their lobster pots?

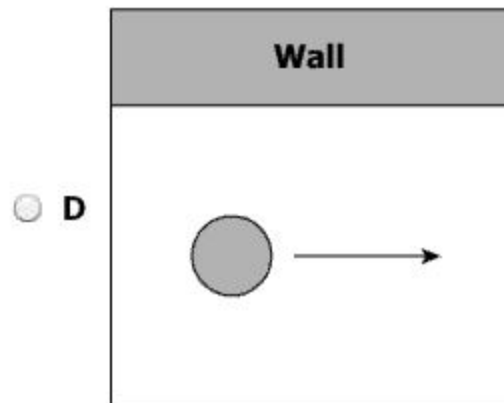
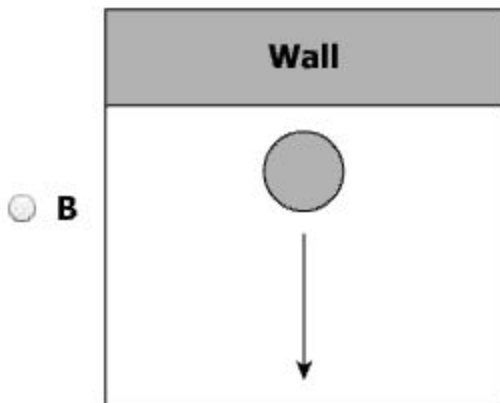
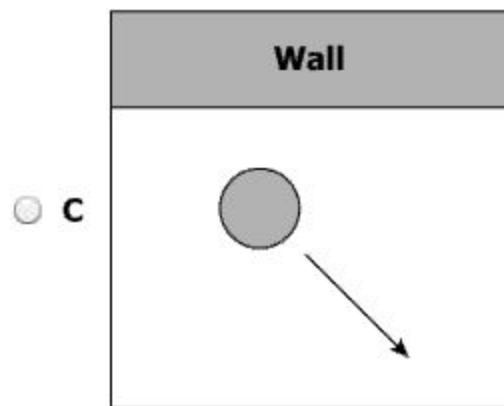
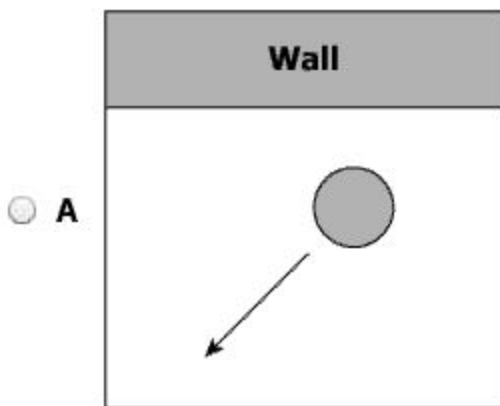
- A** On the bottom of an ocean trench
- B** On top of a mid-ocean ridge
- C** On the continental slope
- D** On the continental shelf

Which unit is best to use to measure the distance a runner covered in 30 seconds?

- A** mm
- B** cm
- C** m
- D** km

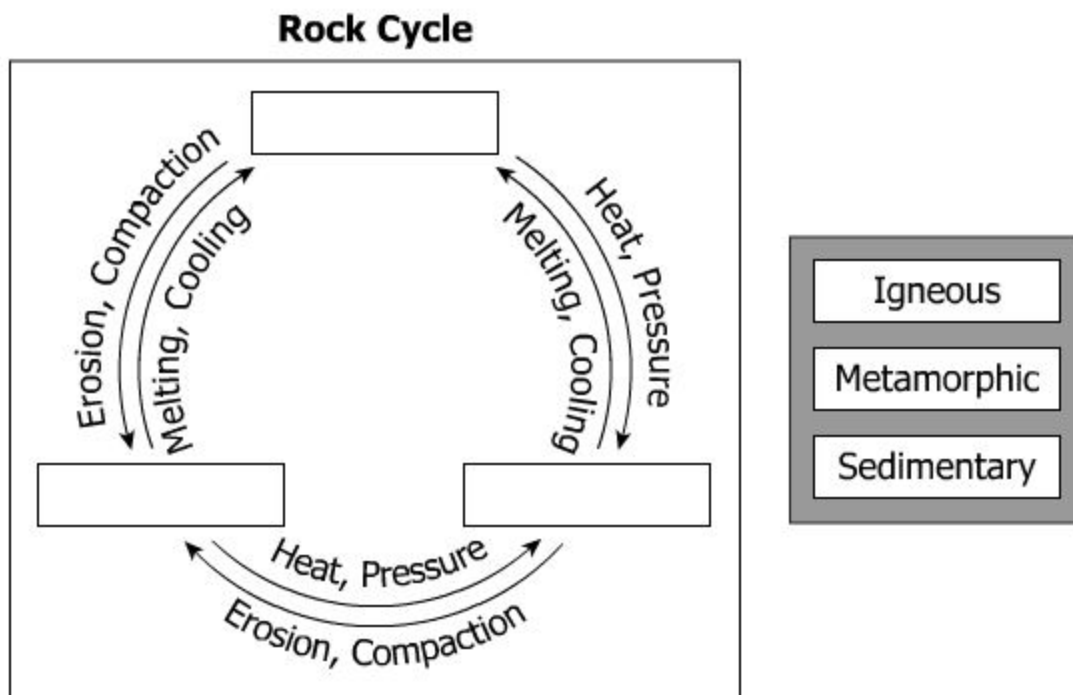


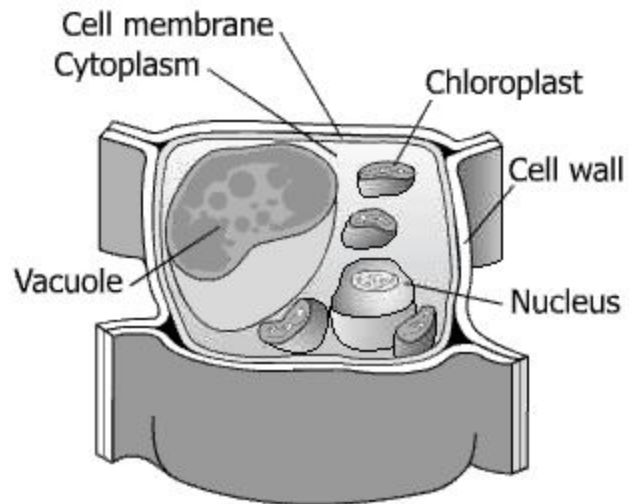
In which direction will the ball most likely go after it hits the wall?



Directions: Click and drag the answers to the correct boxes.

Place the type of rock in the correct space.





Which cell part is necessary for producing food?

- A** Cell membrane
- B** Vacuole
- C** Chloroplast
- D** Cytoplasm

One way in which light waves are different from sound waves is that light waves —

- A** can move through empty space
- B** are caused by rapid vibrations
- C** travel more slowly
- D** can be reflected

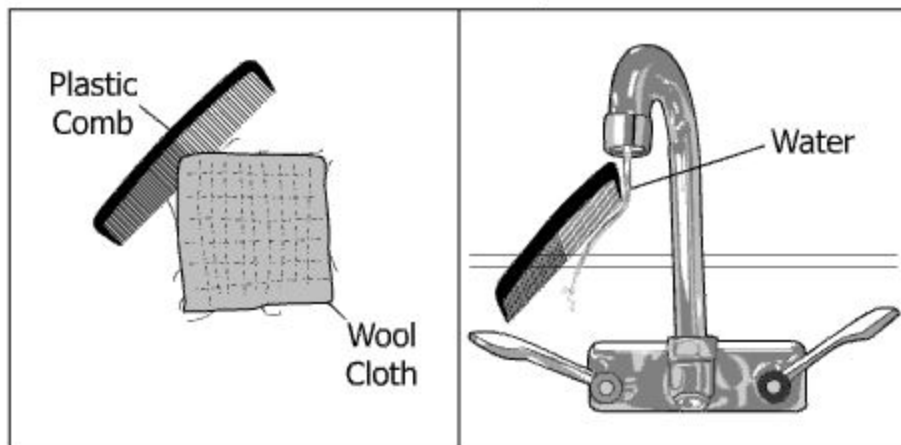
Substances

Compounds	Elements
Carbon dioxide	Silver
Sugar	Oxygen
?	Iron

Which material will correctly complete the chart?

- A** Gold, because it is a shiny metal
- B** Salt, because it is made of two types of atoms
- C** Nitrogen, because it is a gas in the atmosphere
- D** Carbon, because it is part of many different molecules

Student Investigation







A student rubbed a plastic comb with a piece of wool cloth and then placed the comb near a stream of water. The water bent toward the comb as shown because of —

- A** thermal energy
- B** static electricity
- C** magnetism
- D** gravity

Which plant part develops into a fruit?

- A** Flower
- B** Stem
- C** Leaf
- D** Root

How Long Does It Take Objects to Reach the Ground?

Object	Drop Height (m)	Time (sec)
 Cotton Ball	10	
 Marble	10	
 Crumpled Paper	10	
 Tennis Ball	10	

A student is investigating the time it takes for different objects to reach the ground after they are dropped. The constant in this investigation is the —

- A time to reach the ground
- B distance to the ground
- C weight of each object
- D object being dropped

Directions: Click and drag the answers to the correct boxes.

Identify the data shown for the unknown substance as either quantitative or qualitative.

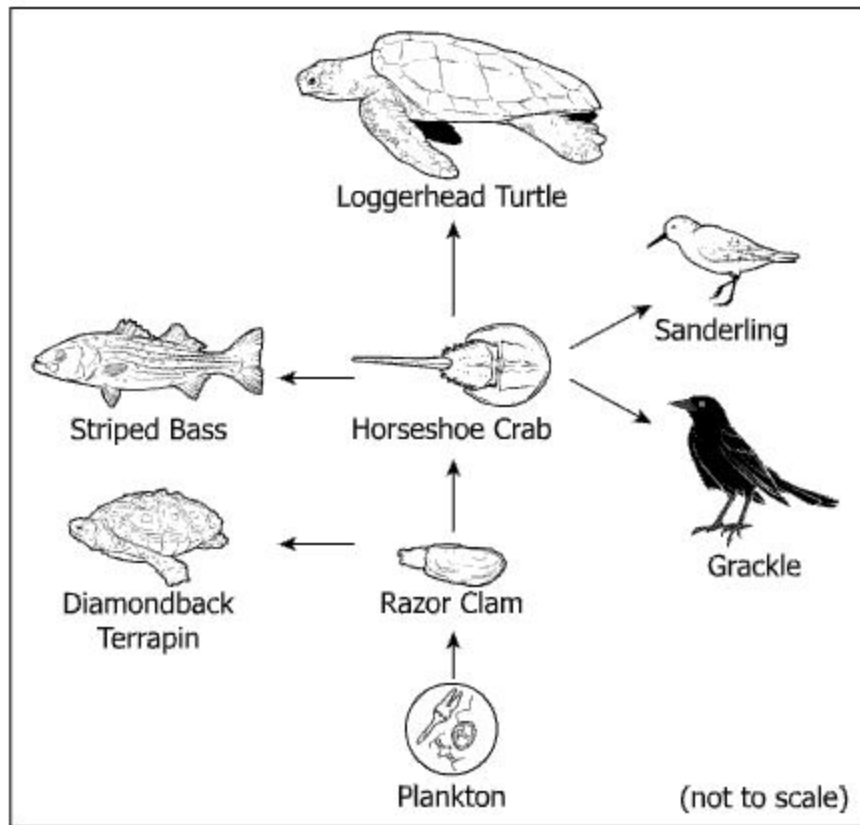
Data for an Unknown Substance

Quantitative	Qualitative

Data

Gold color
Weighs 20.5 g
Greenish black streak
About 4 cm ³
Sinks in water
Hardness of 6–6.5

Food Web



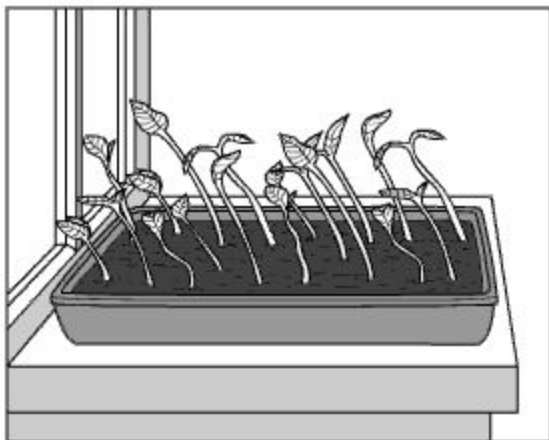
Which of these represents a correct flow of energy based on the food web shown?

- A Loggerhead Turtle → Horseshoe Crab → Razor Clam
- B Horseshoe Crab → Loggerhead Turtle → Sanderling
- C Diamondback Terrapin → Razor Clam → Plankton
- D Razor Clam → Horseshoe Crab → Sanderling

When stirred together, which two substances form a solution?

- A** Sand and salt
- B** Sugar and salt
- C** Sand and water
- D** Sugar and water

Plants on a Shelf



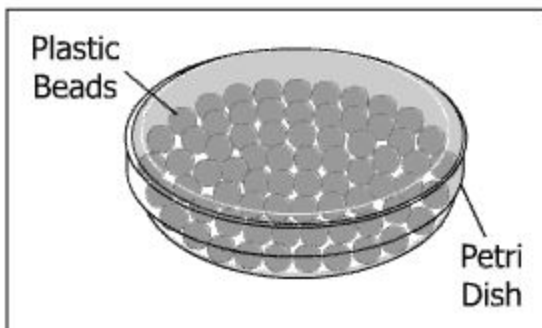
The plants are most likely responding to which factor in the environment?

- A Light
- B Water
- C Oxygen
- D Carbon dioxide

The greater the frequency of a sound wave, the —

- A** lower the pitch
- B** higher the pitch
- C** softer the sound
- D** louder the sound

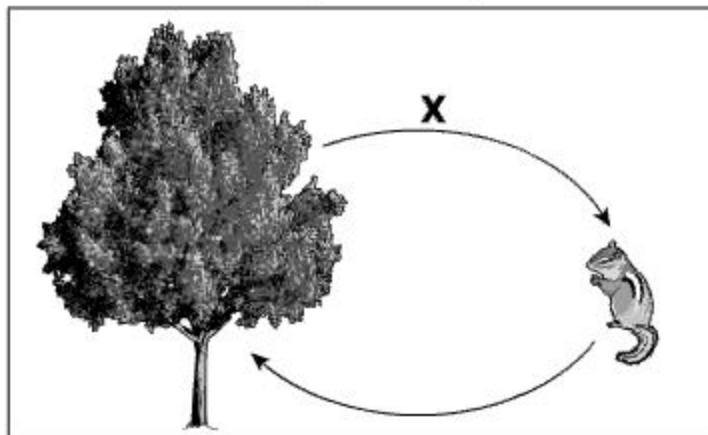
Model of a Solid



A student made the model showing the particles in a solid. To improve the model, the student should —

- A** put the beads in a square container
- B** take out some beads so the particles can move more easily
- C** shake the container gently to show how the particles vibrate
- D** use different-colored beads to make the particles easier to see

Photosynthesis Cycle



Which substance produced during photosynthesis is represented by the X in the illustration?

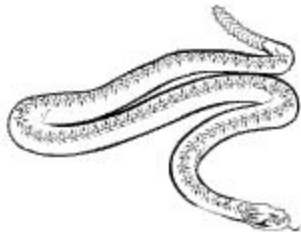
- A Water
- B Oxygen
- C Sunlight
- D Carbon dioxide

Which of these animals is classified as a vertebrate?

A



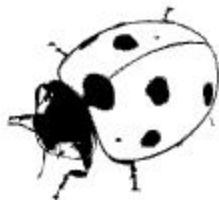
B



C



D



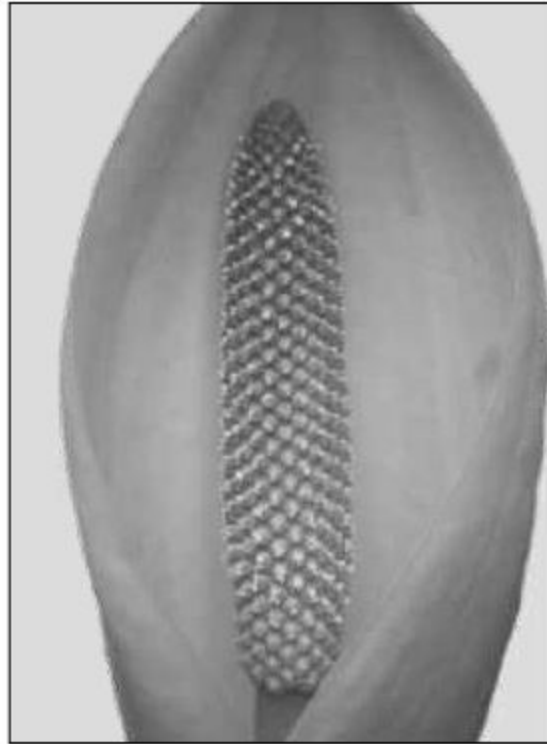
An electromagnet can be made using a battery, insulated wire, and —

- A** an iron nail
- B** an aluminum can
- C** a nickel coin
- D** a gold chain

High and low tides on the coast are caused mostly by —

- A** underwater earthquakes
- B** the gravity from the moon
- C** storms over the ocean
- D** the tilt of Earth

Skunk Cabbage

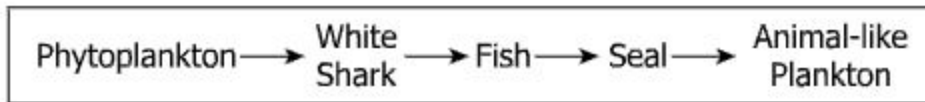


© Liz Leyden/istockphoto #42077014

The plant shown grows in swamps and produces an odor similar to a skunk. Why should people preserve a plant like the skunk cabbage?

- A** It depends on a moist environment.
- B** It has a certain role in the ecosystem.
- C** It is prized by gardeners for its flowers.
- D** It has leaves that are about the same shape as each other.

Ocean Food Chain



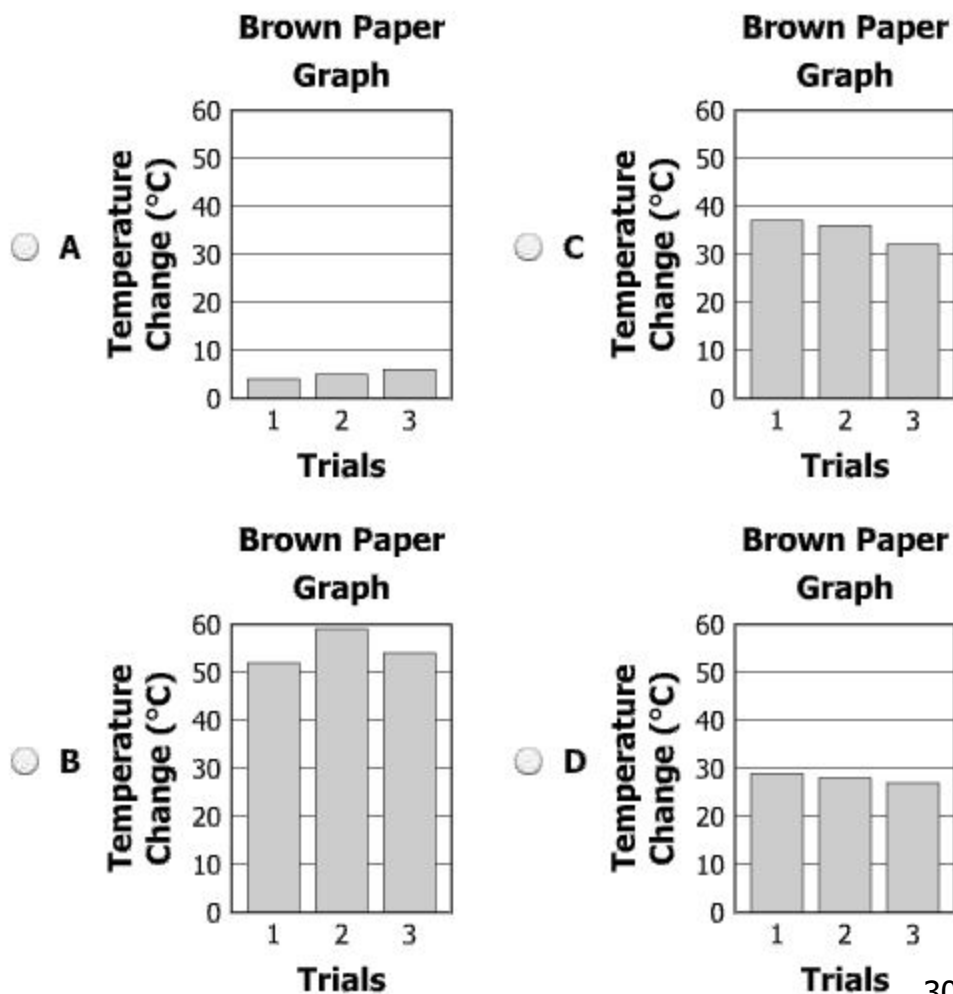
Which pair of organisms needs to switch places for the ocean food chain to be correct?

- A** Phytoplankton and fish
- B** Animal-like plankton and fish
- C** White shark and phytoplankton
- D** White shark and animal-like plankton

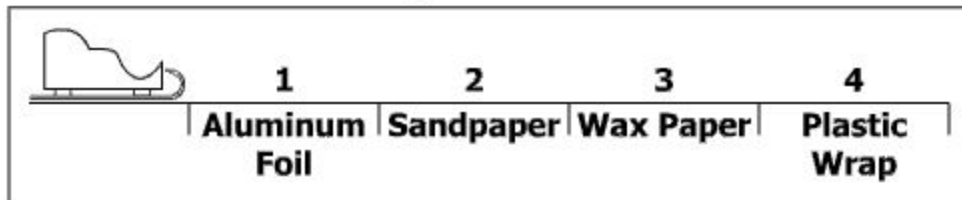
Temperatures of Water (°C)

Color of Paper	Beginning Water Temp.	Trial 1 Increase in Temp.	Trial 2 Increase in Temp.	Trial 3 Increase in Temp.
White	20	4	5	6
Black	20	52	59	54
Brown	20	37	36	32
Green	20	29	28	27

Students investigated how different colors of construction paper in a solar oven affect the heating of water. Which graph correctly represents the data for the brown construction paper?



Toy Sled Track



A student made a track for a toy sled using 4 different materials. At which section of the track is friction most likely to cause the greatest resistance to the motion of the toy sled?

- A 1
- B 2
- C 3
- D 4

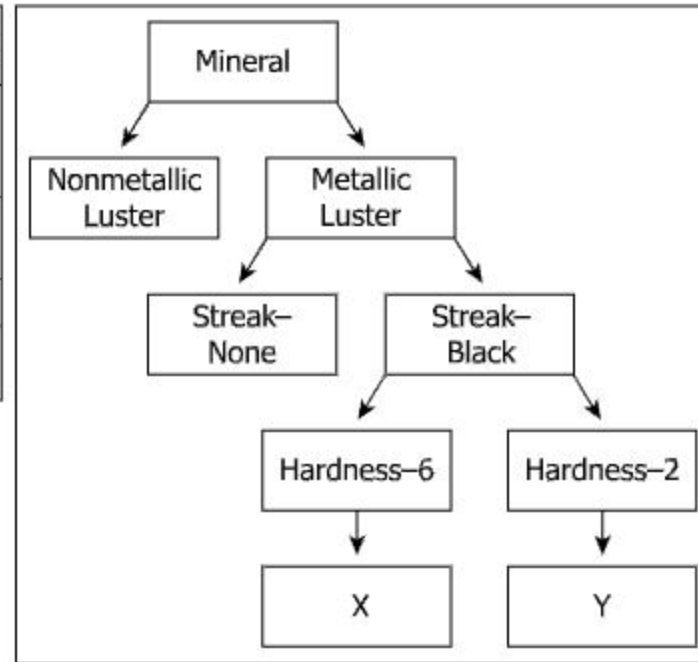
Which pair of colors is in order from the longest wavelength of light in the visible spectrum to the shortest wavelength?

- A** Green, orange
- B** Yellow, red
- C** Violet, blue
- D** Red, violet

Mineral Identification Table

Mineral Name	Luster	Streak	Hardness
Mica	Nonmetallic	None	2
Graphite	Metallic	Black	2
Magnetite	Metallic	Black	6
Hornblende	Nonmetallic	Brown-gray	6

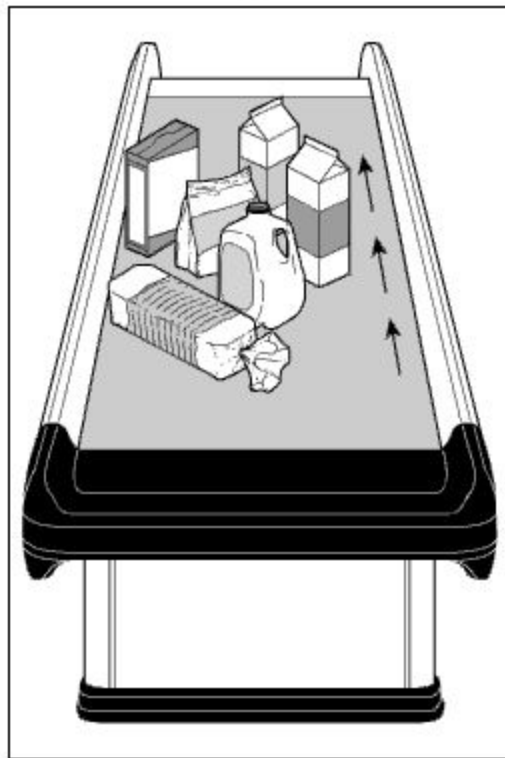
Flow Chart



Based on the mineral identification table, which mineral belongs in square X of the flow chart?

- A** Mica
- B** Graphite
- C** Magnetite
- D** Hornblende

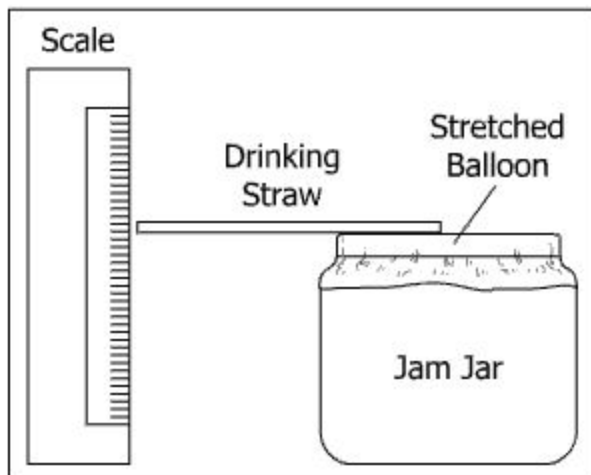
Conveyor Belt



The conveyor belt moves the groceries by transforming electrical energy into —

- A thermal energy
- B radiant energy
- C mechanical energy
- D potential energy

Classroom Barometer



Students made a classroom barometer that can be used to measure —

- A wind direction
- B temperature
- C air pressure
- D precipitation

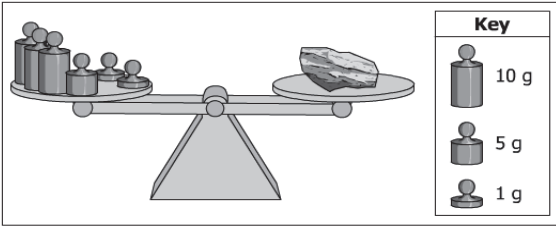



Which of these is an example of a behavioral adaptation?

- A** A cow that has flat teeth
- B** A squirrel that has buried acorns
- C** A fish that has scales
- D** An owl that has soft feathers

Coal is important for Virginia because it —

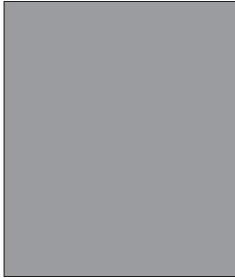
- A** can be used for energy
- B** can be divided into four types
- C** is found in many areas of the country
- D** is formed from plant and animal remains

**Grade 5 Science
Released Test Item Set Spring 2015
Answer Key**

Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
1	MC	A	003	Life Processes and Living Systems
2	MC	D	001	Scientific Investigation
3	MC	D	004	Earth/Space Systems and Cycles
4	MC	B	004	Earth/Space Systems and Cycles
5	TEI	<p>Typed response: 37</p> <div style="border: 1px solid gray; padding: 10px;"> <p>Directions: Type your answer in the box. Use a whole number.</p> <p>What is the mass of the rock shown?</p> <p style="text-align: center;"><input style="width: 50px; border: 1px solid gray;" type="text" value="37"/> g</p> <p style="text-align: center;">Student Investigation</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>Key</p> <ul style="list-style-type: none">  10 g  5 g  1 g </div> </div> </div>	001	Scientific Investigation
6	MC	D	003	Life Processes and Living Systems

Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
7	MC	A	004	Earth/Space Systems and Cycles
8	MC	D	004	Earth/Space Systems and Cycles
9	MC	C	001	Scientific Investigation
10	MC	C	002	Force, Motion, Energy, and Matter
11	TEI	<p>Answers must be placed in the correct locations: Top box: Igneous Bottom left box: Sedimentary Bottom right box: Metamorphic</p> <div data-bbox="373 751 1436 1403" style="border: 1px solid black; padding: 10px;"> <p>Directions: Click and drag the answers to the correct boxes.</p> <p>Place the type of rock in the correct space.</p> <p style="text-align: center;">Rock Cycle</p> <pre> graph TD Igneous -- "Erosion, Compaction" --> Sedimentary Sedimentary -- "Melting, Cooling" --> Igneous Sedimentary -- "Heat, Pressure" --> Metamorphic Metamorphic -- "Erosion, Compaction" --> Sedimentary Metamorphic -- "Melting, Cooling" --> Igneous Igneous -- "Heat, Pressure" --> Metamorphic </pre> <p style="text-align: center;">A gray square is positioned to the right of the diagram, representing a missing rock type to be placed in the cycle.</p> </div>	004	Earth/Space Systems and Cycles
12	MC	C	003	Life Processes and Living Systems

Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
13	MC	A	002	Force, Motion, Energy, and Matter
14	MC	B	002	Force, Motion, Energy, and Matter
15	MC	B	002	Force, Motion, Energy, and Matter
16	MC	A	003	Life Processes and Living Systems
17	MC	B	001	Scientific Investigation

Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description										
18	TEI	<p>Each answer must be placed in the correct column: Left Column: Weighs 20.5 g; About 4 cm³; Hardness of 6-6.5 Right Column: Gold color; Greenish black streak; Sinks in water The order in which the answers are placed in each column does not matter.</p> <p>Directions: Click and drag the answers to the correct boxes.</p> <p>Identify the data shown for the unknown substance as either quantitative or qualitative.</p> <p style="text-align: center;">Data</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Data for an Unknown Substance</th> </tr> <tr> <th style="text-align: center;">Quantitative</th> <th style="text-align: center;">Qualitative</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Weighs 20.5 g</td> <td style="text-align: center;">Gold color</td> </tr> <tr> <td style="text-align: center;">About 4 cm³</td> <td style="text-align: center;">Greenish black streak</td> </tr> <tr> <td style="text-align: center;">Hardness of 6–6.5</td> <td style="text-align: center;">Sinks in water</td> </tr> </tbody> </table> <div style="text-align: center; margin-top: 20px;">  </div>	Data for an Unknown Substance		Quantitative	Qualitative	Weighs 20.5 g	Gold color	About 4 cm ³	Greenish black streak	Hardness of 6–6.5	Sinks in water	001	Scientific Investigation
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19	MC	D	003	Life Processes and Living Systems										
20	MC	D	002	Force, Motion, Energy, and Matter										
21	MC	A	003	Life Processes and Living Systems										
22	MC	B	002	Force, Motion, Energy, and Matter										

Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
23	MC	C	001	Scientific Investigation
24	MC	B	003	Life Processes and Living Systems
25	MC	B	003	Life Processes and Living Systems
26	MC	A	002	Force, Motion, Energy, and Matter
27	MC	B	004	Earth/Space Systems and Cycles
28	MC	B	003	Life Processes and Living Systems
29	MC	D	004	Earth/Space Systems and Cycles
30	MC	C	001	Scientific Investigation
31	MC	B	002	Force, Motion, Energy, and Matter
32	MC	D	002	Force, Motion, Energy, and Matter
33	MC	C	001	Scientific Investigation
34	MC	C	002	Force, Motion, Energy, and Matter
35	MC	C	004	Earth/Space Systems and Cycles
36	MC	B	003	Life Processes and Living Systems
37	MC	A	004	Earth/Space Systems and Cycles

