

VIRGINIA STANDARDS OF LEARNING

Spring 2011 Released Test

GRADE 5 SCIENCE

Form S0111, CORE 1

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Directions

Read each question and choose the best answer. Then fill in the circle on your answer document for the answer you have chosen.

SAMPLE

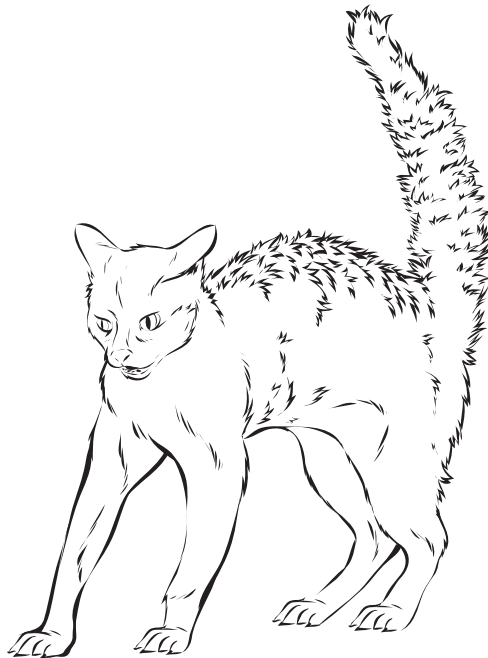
When Earth is seen from outer space, it looks mainly blue. This is because most of Earth is covered with —

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

1 Which of these is a natural resource of Virginia?

- A** A dam
- B** A glacier
- C** A river
- D** A power plant

2



According to the picture, which of these is an inference rather than an observation?

- F** This animal has hair.
- G** This animal has a tail.
- H** This animal is arching its back.
- J** This animal is frightened.

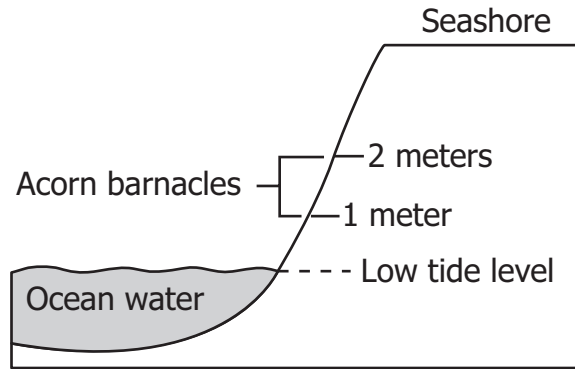
3 To make an electromagnet, a conductor should be coiled around —

- A** a glass tube
- B** an iron nail
- C** a roll of paper
- D** a wooden stick

4 Early scientists *most* likely saw a discharge of electricity for the first time when observing a —

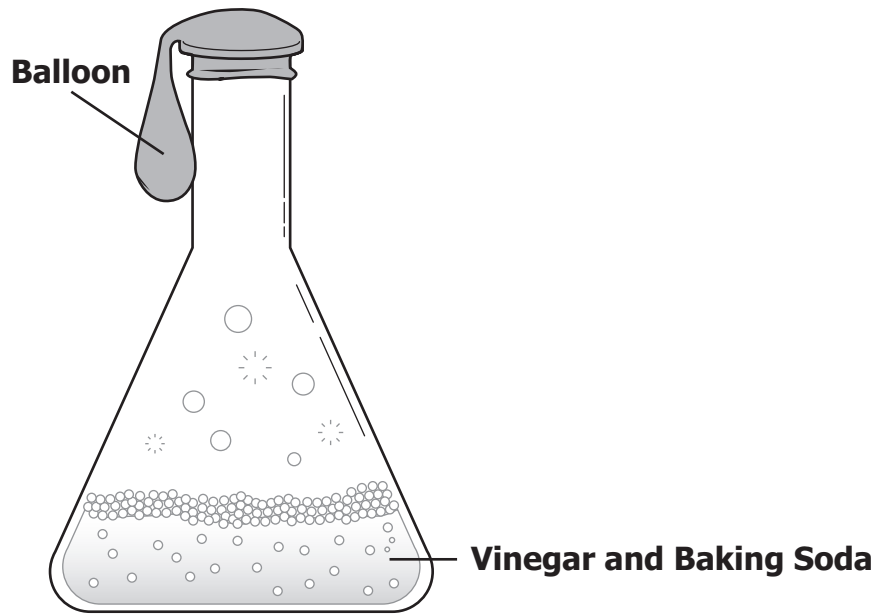
- F** waterfall
- G** rainbow
- H** lightning storm
- J** volcano erupting

5



Acorn barnacles are seashore animals found on rocks. They live 1 to 2 meters above low-tide level. These rocks are the acorn barnacles' —

- A** ecosystem
- B** community
- C** food web
- D** habitat



Which of these will *most likely* happen to the balloon as the chemicals react?

- F** It will float.
- G** It will break.
- H** It will inflate.
- J** It will change color.

Great Horned Owl



The great horned owl has a sharp beak and claws used for catching prey and tearing meat. It has good eyesight to see in low light. Which of these *most* likely describes the niche of the great horned owl?

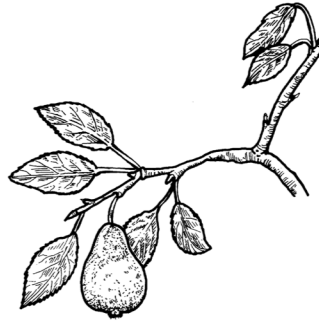
- A Hunts small animals at night
- B Grazes on grass during the day
- C Comes out at dusk to sweep the sky for insects
- D Comes out at dawn to get worms from the ground

8 Which picture shows a dormant tree branch?

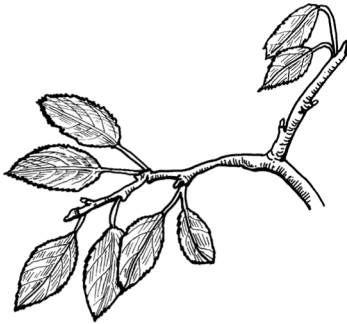
F



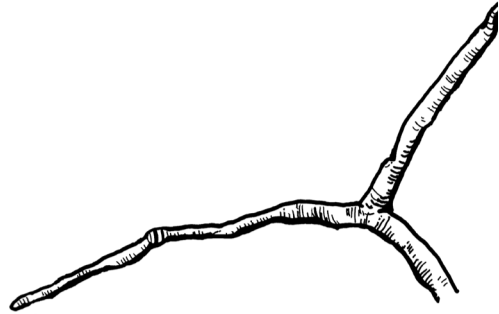
H



G



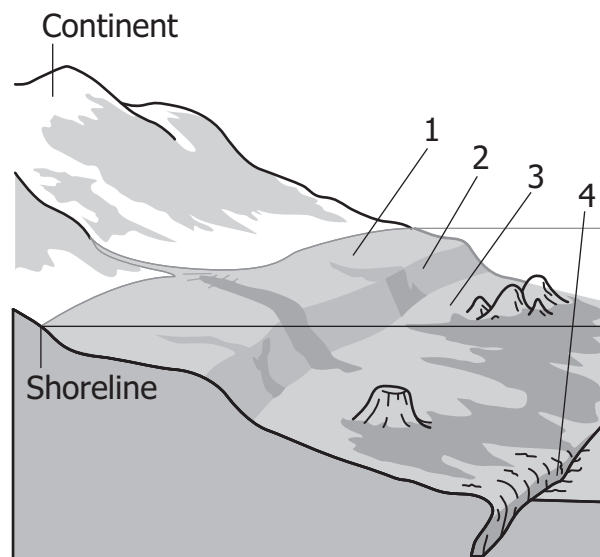
J



9 An object is traveling north at a speed of 12 kilometers per hour. Which characteristic of the object is being described?

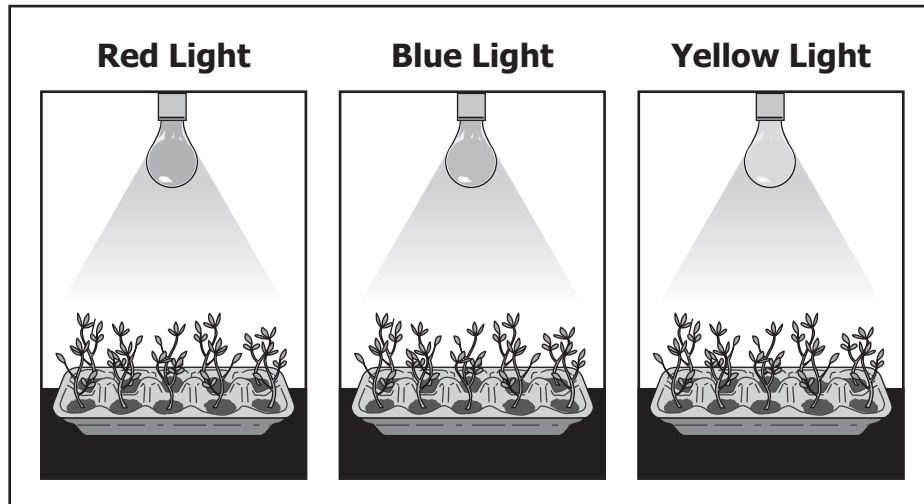
- A Matter
- B Motion
- C Volume
- D Temperature

10



The diagram shows a model of the ocean floor. Which number identifies the continental slope?

- F 1
- G 2
- H 3
- J 4

Plant Growth Investigation

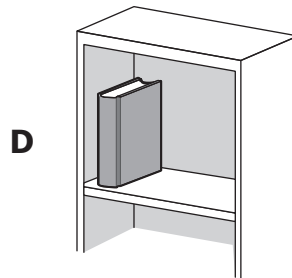
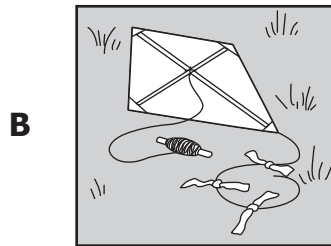
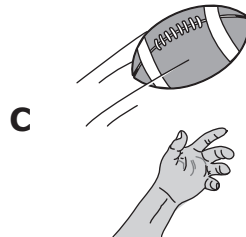
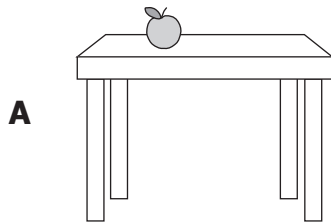
A student designed an investigation to test the effect of light color on plant growth. What was the manipulated (independent) variable in the investigation?

- A** Color of light bulb
- B** Height of plant
- C** Hours of light
- D** Size of pot

12 Which of the following is the *best* observation of the refraction of light?

- F** Looking at oneself in a mirror
- G** Looking at a shadow of an object
- H** Viewing an object through an open window
- J** Viewing an object partially in water

13 Which picture shows an object that has kinetic energy?



14 A student wants to compare the masses and volumes of three marbles. Which two instruments should be used?

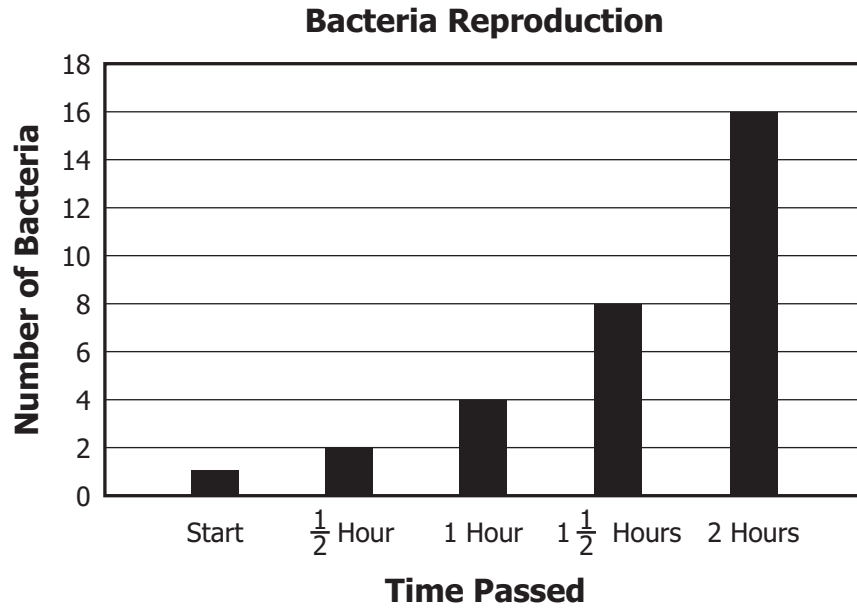
- F** Balance and graduated cylinder
- G** Centimeter ruler and thermometer
- H** Graduated cylinder and centimeter ruler
- J** Thermometer and balance

15 Which of these is a function of a leaf?

- A** Carrying nutrients throughout the plant
- B** Converting solar energy into sugar
- C** Creating shade for the plant
- D** Absorbing water from the ground

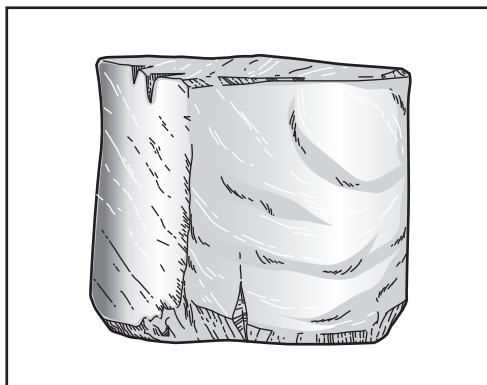
16 A scientist found a fossil of an organism that had gills. When the organism was living, the area in which it lived was *most* likely covered by —

- F** forest
- G** grassland
- H** bare rock
- J** water



On a graph, students recorded how quickly bacteria reproduced over two hours. If the rate of reproduction stayed the same, how many bacteria would be present after $2\frac{1}{2}$ hours?

- A 8
- B 16
- C 32
- D 64

Gallium

Gallium is a metal that melts at about 30°C . If a person, whose body temperature is 37°C , held a cube of gallium for five minutes, what will *most* likely happen to the gallium?

- F** It will change to a gas.
- G** It will change to a liquid.
- H** It will become a solution.
- J** It will become a mixture.

19 Sonar helps people find which information about an object?

- A** Color
- B** Weight
- C** Location
- D** Temperature

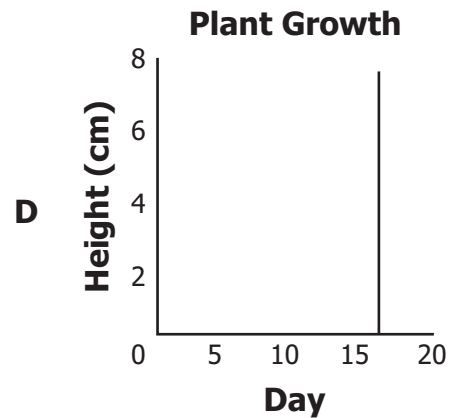
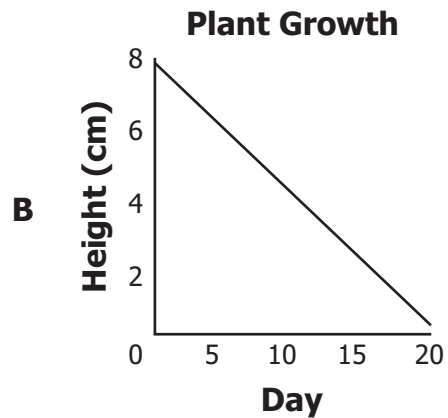
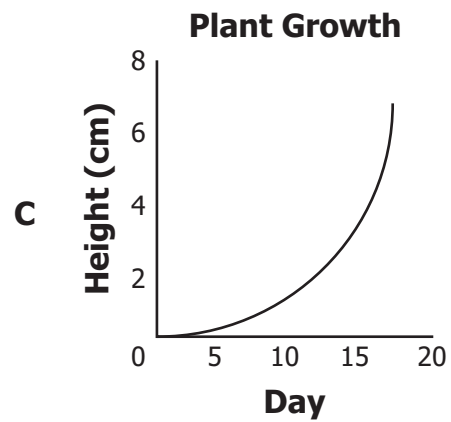
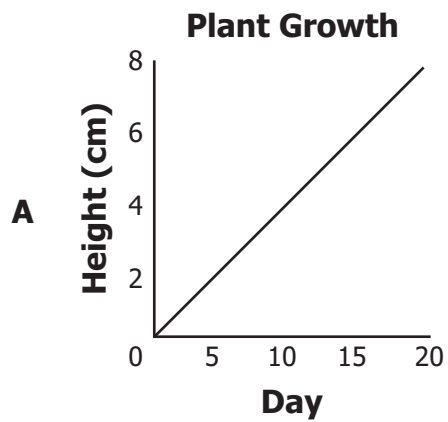
20 Which of these often occur as the Earth's crustal plates move?

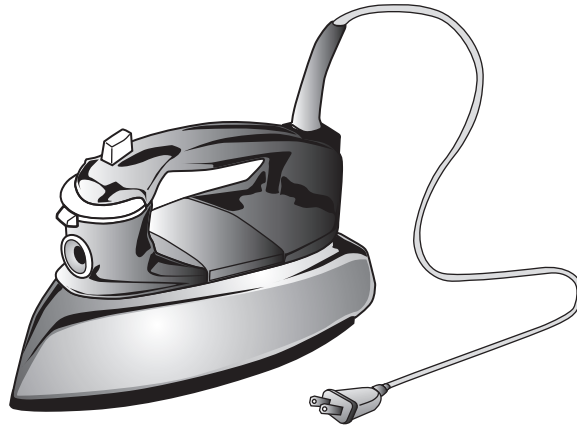
- F** Hurricanes
- G** Floods
- H** Tornadoes
- J** Earthquakes

Plant Growth

Day	Height (cm)
0	0
5	2
10	4
15	6
20	8

Which line graph *best* shows the data in the table?



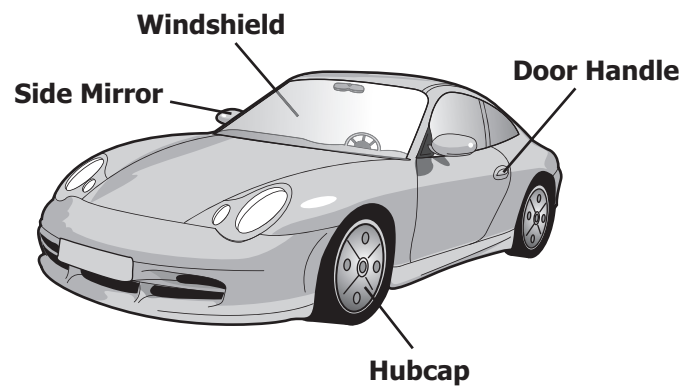


Which energy transformation *most* likely occurs in a steam iron?

- F** Electrical energy changes to heat energy.
- G** Electrical energy changes to sound energy.
- H** Mechanical energy changes to heat energy.
- J** Mechanical energy changes to light energy.

23 Which of these human activities in a forest has a positive effect on the ecosystem?

- A** Clearing the land to build new homes
- B** Planting new trees where old ones were cut down
- C** Building a new highway through the area
- D** Cutting down trees to make farmland

Automobile

Which part of an automobile is transparent?

- F** Door Handle
- G** Side Mirror
- H** Hubcap
- J** Windshield

25 All of the populations of species in an area make up a —

- A** region
- B** niche
- C** family
- D** community

26 Pumice is formed when lava from a volcano cools. Which rock type is pumice?

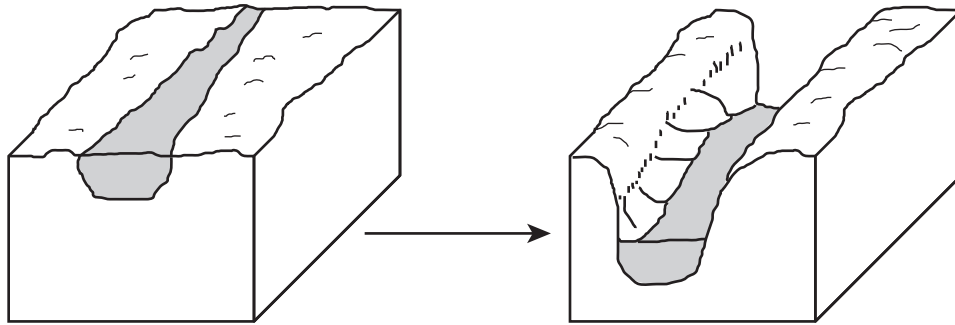
- F** Gaseous rock
- G** Igneous rock
- H** Sedimentary rock
- J** Metamorphic rock

Mineral Chart

Mineral	Color	Transparency	Luster	Hardness
Gold	gold-yellow, brass-yellow, pale yellow	opaque	metallic	2.5 to 3
Pyrite	pale yellow to brass-yellow	opaque	metallic	6 to 6.5

Based on the information in the table, the *best* way to tell gold from pyrite is by which property?

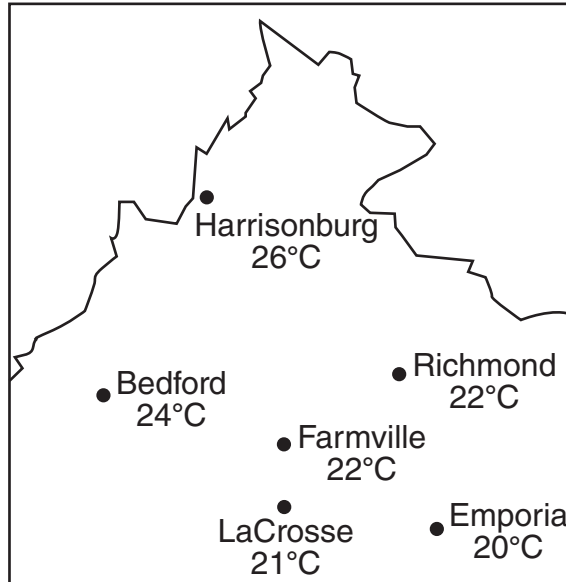
- A** Color
- B** Transparency
- C** Luster
- D** Hardness



The diagram above shows the changes to a land surface caused by a river flowing through the area for many years. Which process caused the changes to the surface?

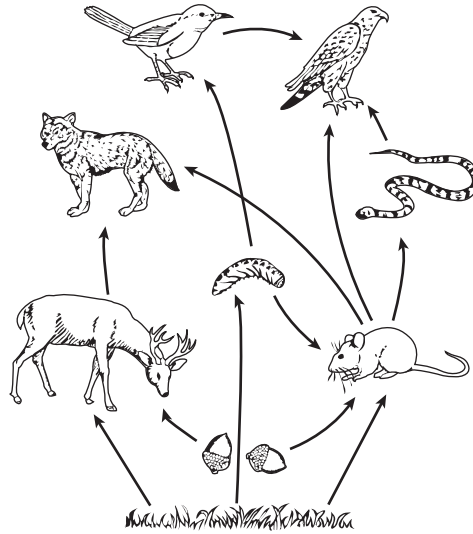
- F** Condensation
- G** Erosion
- H** Evaporation
- J** Pollution

Virginia



Which statement is supported by the data on this map?

- A** Emporia is colder than Bedford at the time of these measurements.
- B** Bedford is the hottest city in the state of Virginia.
- C** LaCrosse will become cooler over the next few days.
- D** Richmond, Farmville, and LaCrosse are all colder than Emporia.



In this food web, which two organisms could be harmed if the mouse population were to decline?

- F** Deer and caterpillar
- G** Wolf and snake
- H** Oak and grass
- J** Hawk and songbird

Garden Club Sunflower Sprouts

Pot	Number of sunflower seeds	Total number of sunflower sprouts
1	20	17
2	20	18
3	20	16
4	20	9

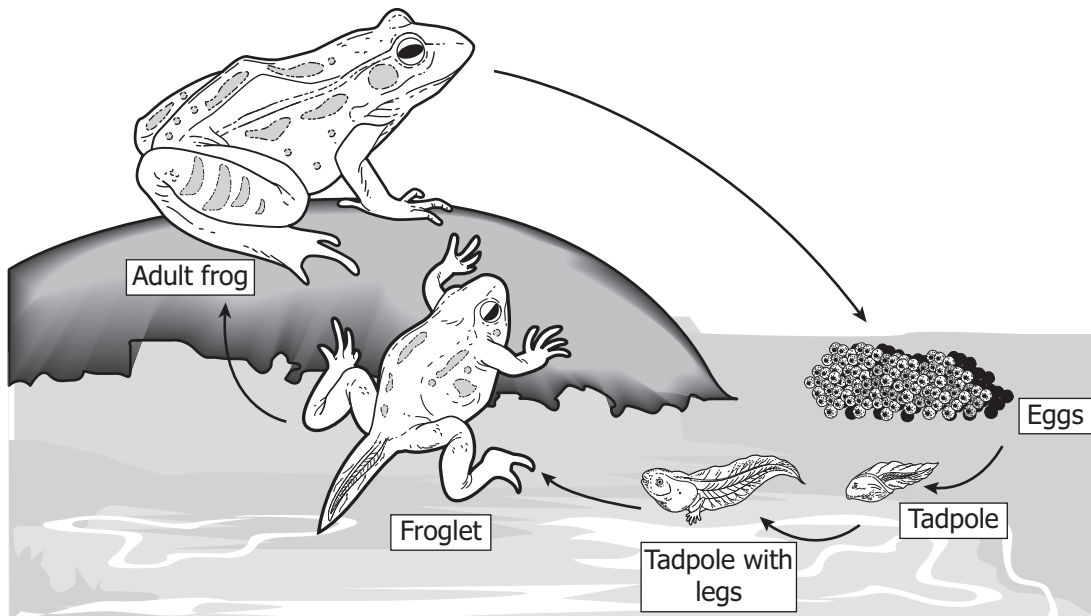
The school garden club planted sunflower seeds in 6-inch pots. Each pot was watered the same amount every two days. At the end of one month, the number of sprouts was counted. Which pot had an *unusual* number of sprouts?

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

32 Which of these organisms has cells with cell walls?

- F A bluebird
- G A pine tree
- H A ladybug
- J A fox squirrel

Frog Life Cycle



Which of these is a difference between tadpoles and adult frogs?

- A** Only tadpoles can swim.
- B** Only tadpoles can lay eggs.
- C** Only frogs are eaten by predators.
- D** Only frogs can survive on land.

34 Which layer of Earth is the *thinnest*?

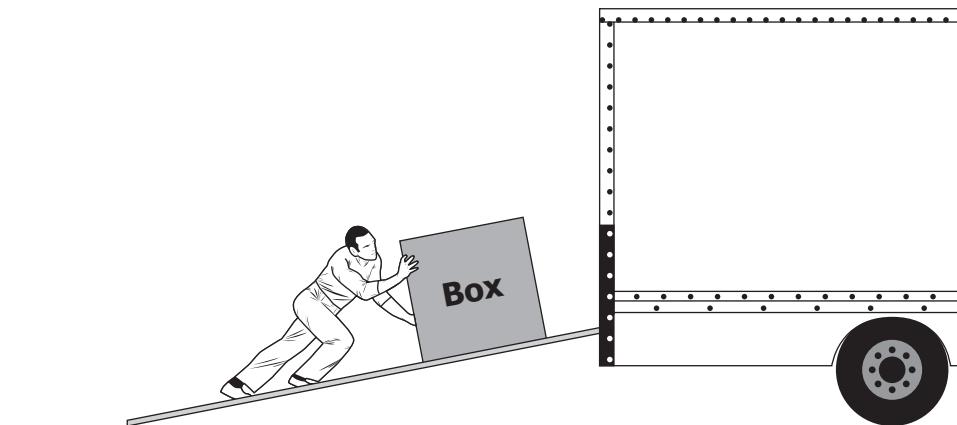
- F** Inner core
- G** Crust
- H** Outer core
- J** Mantle

35 The surface of the Moon is made up of —

- A** craters, highlands, and flat areas
- B** swirling gases
- C** large bodies of water
- D** a mixture of gases and water

36 Which is the *best* tool for measuring the temperature of lake water?

- F** Meter stick
- G** Balance
- H** Graduated cylinder
- J** Thermometer



The box would be easier to move if the surface of the ramp was smoother because there would be less —

- A mass in the box
- B friction opposing the box
- C gravity pulling on the box
- D distance to push the box

38 Which of these is the *most* important product of Virginia forests?

- F Pecan trees
- G Pine cones
- H Hardwood lumber
- J Maple leaves

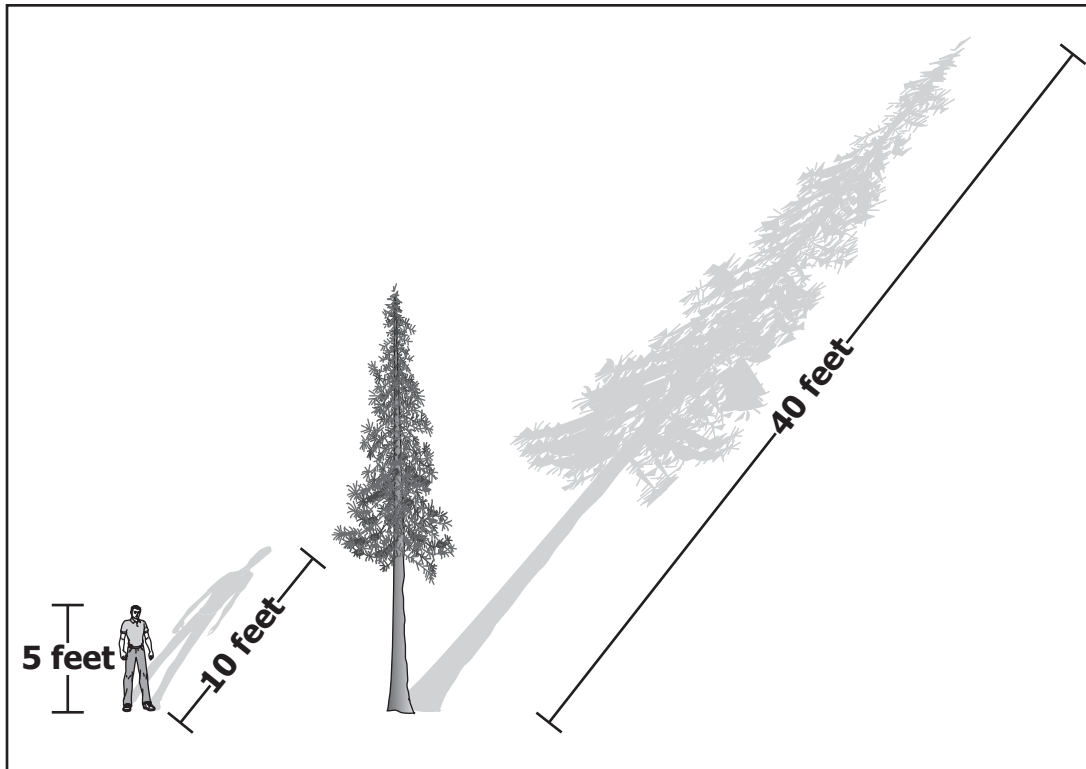
Tube Worms

© Joanna Humphries/Stockphoto #6738807

Which of these would *best* describe the tube worms shown?

- A** Mammals
- B** Vertebrates
- C** Amphibians
- D** Invertebrates

Objects and Their Shadows



Based on information in the diagram, about how tall is the tree?

- F** 10 feet
- G** 20 feet
- H** 40 feet
- J** 80 feet



Answer Key-5005-S0111

Test Sequence Number	Correct Answer	Reporting Category	Reporting Category Description
1	C	004	Earth/Space Systems and Cycles
2	J	001	Scientific Investigation
3	B	002	Force, Motion, Energy, and Matter
4	H	002	Force, Motion, Energy, and Matter
5	D	003	Life Processes and Living Systems
6	H	001	Scientific Investigation
7	A	003	Life Processes and Living Systems
8	J	003	Life Processes and Living Systems
9	B	002	Force, Motion, Energy, and Matter
10	G	004	Earth/Space Systems and Cycles
11	A	001	Scientific Investigation
12	J	002	Force, Motion, Energy, and Matter
13	C	002	Force, Motion, Energy, and Matter
14	F	001	Scientific Investigation
15	B	003	Life Processes and Living Systems
16	J	004	Earth/Space Systems and Cycles
17	C	001	Scientific Investigation
18	G	002	Force, Motion, Energy, and Matter
19	C	002	Force, Motion, Energy, and Matter
20	J	004	Earth/Space Systems and Cycles
21	A	001	Scientific Investigation
22	F	002	Force, Motion, Energy, and Matter
23	B	003	Life Processes and Living Systems
24	J	002	Force, Motion, Energy, and Matter
25	D	003	Life Processes and Living Systems
26	G	004	Earth/Space Systems and Cycles
27	D	001	Scientific Investigation
28	G	004	Earth/Space Systems and Cycles
29	A	004	Earth/Space Systems and Cycles
30	G	003	Life Processes and Living Systems
31	D	001	Scientific Investigation
32	G	003	Life Processes and Living Systems
33	D	003	Life Processes and Living Systems
34	G	004	Earth/Space Systems and Cycles
35	A	004	Earth/Space Systems and Cycles
36	J	001	Scientific Investigation
37	B	002	Force, Motion, Energy, and Matter
38	H	004	Earth/Space Systems and Cycles
39	D	003	Life Processes and Living Systems
40	G	001	Scientific Investigation

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Grade 5 Standards of Learning Science Test
Total Raw Score to Scaled Score Conversion Table for
Multiple Choice Form S0111, Core 1

Total Raw Score If you get this many items correct:	Total Scaled Score Then your converted scaled score is:
0	000
1	170
2	206
3	228
4	244
5	258
6	269
7	278
8	287
9	295
10	302
11	309
12	316
13	322
14	328
15	334
16	340
17	345
18	351
19	356
20	362
21	367
22	373
23	378
24	384
25	390
26	396
27	402
28	408
29	414
30	421
31	429
32	437
33	445
34	455
35	466
36	479
37	496
38	517
39	553
40	600

A **total raw score** (left column) is converted to a **total scaled score** (right column). The total scaled score may range from 0 to 600.

A scaled score of 400 or more means the student passed the SOL test, while a scaled score of 399 or less means the student did not pass the test. A scaled score of 500 or more indicates the student passed the SOL test at an advanced level.