

VIRGINIA STANDARDS OF LEARNING

Spring 2010 Released Test

GRADE 5 SCIENCE

Form S0110, 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 human activities *most* relies on high-quality soil?

- A** Hiking
- B** Hunting
- C** Coal mining
- D** Growing crops

2

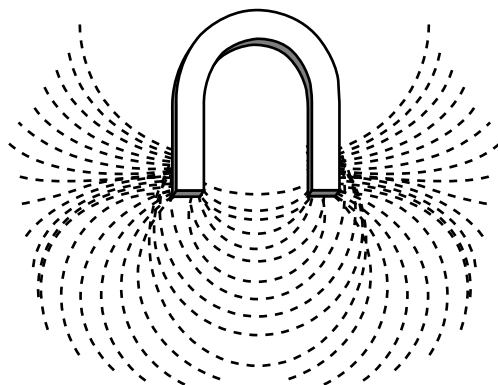
Mineral Identification Chart

Mineral	Color	Hardness
Amphibole	Green to black	Less hard than a nail
Feldspar	White, pink, gray, green	Harder than glass
Garnet	Dark red	Harder than glass
Quartz	Colorless, gray, white	Harder than glass

A student observes a mineral that is colorless and harder than glass. Based on the chart, which mineral is the student observing?

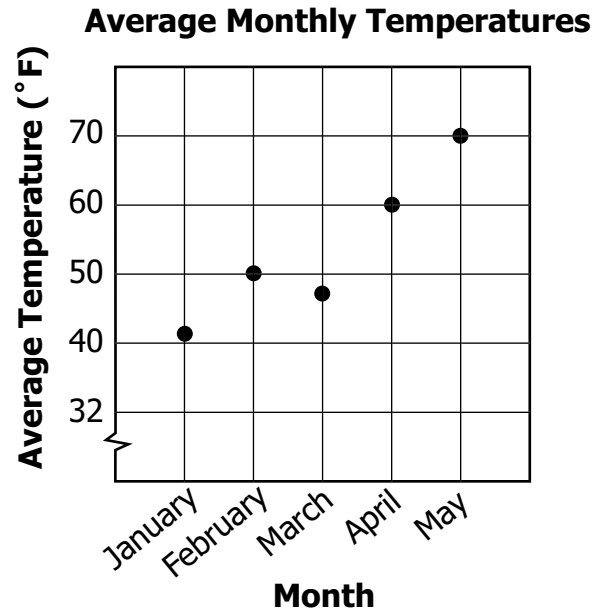
- F** Amphibole
- G** Feldspar
- H** Garnet
- J** Quartz

3



In this picture, the iron filings show the shape of the magnetic —

- A axis
- B core
- C field
- D pole



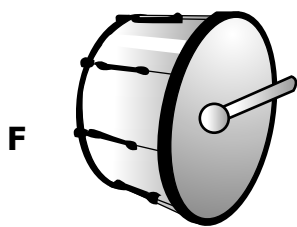
Temperatures normally increase every month from January through August. During which month was the average temperature *most* unusual?

- F** January
- G** February
- H** March
- J** April

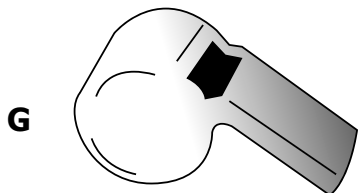
5 For the native birds and mammals of Virginia to survive, plant life must be conserved. What do plants provide directly to all animals?

- A** Oxygen
- B** Minerals
- C** Light
- D** Hydrogen

6 Which of these makes a sound with the *slowest* vibration?



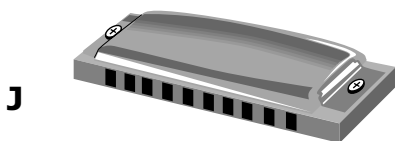
Drum



Whistle



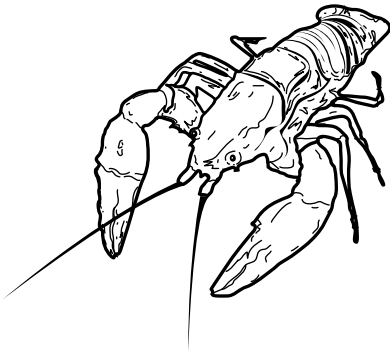
Flute



Harmonica

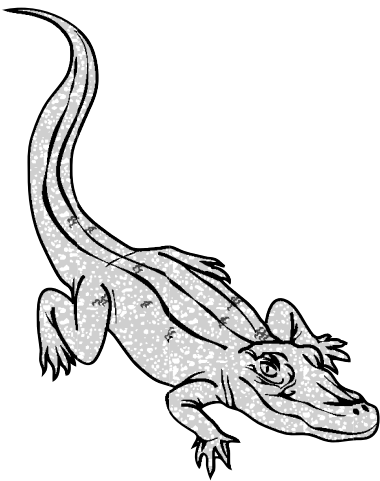
7 Which of these animals is *least* likely a member of the pond community?

A



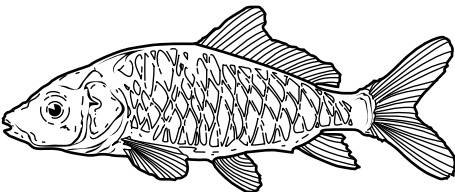
Crayfish

B



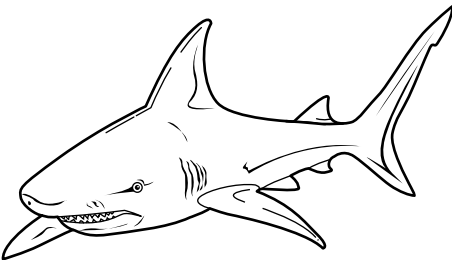
Alligator

C

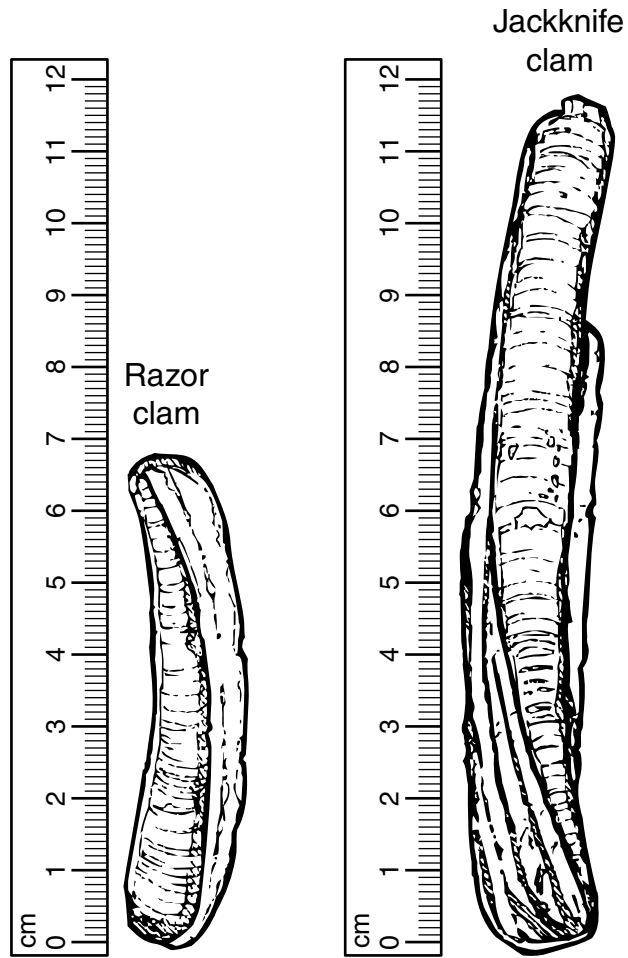


Carp

D



Shark



About how much longer is the jackknife clam than the razor clam?

- F** 5 centimeters
- G** 7 centimeters
- H** 10 centimeters
- J** 12 centimeters

9 Which structure does a plant cell have that an animal cell does not have?

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

10 Which of these objects in the solar system has been visited by people from Earth?

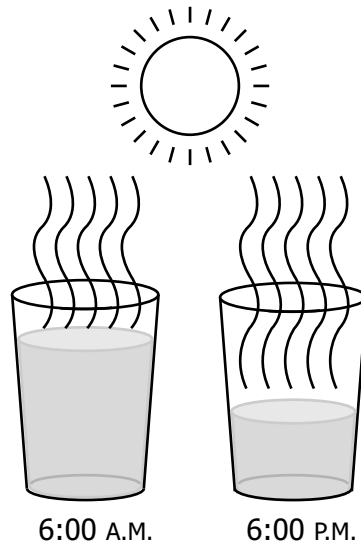
- F** Moon
- G** Sun
- H** Mars
- J** Asteroid

**Virginia Long-Term Average Temperature
and Precipitation (1895–1998)**

Month	Average Temperature (°F)	Average Precipitation (inches)
January	35.9	3.13
February	37.2	3.08
March	45.5	3.86
April	54.9	3.29
May	64.0	3.99
June	71.5	3.69

A teacher asked his class to help plan their science field trip schedule from January to June. Based on the table, which month with an average temperature above 50°F has the *least* amount of average precipitation?

- A** March
- B** April
- C** May
- D** June

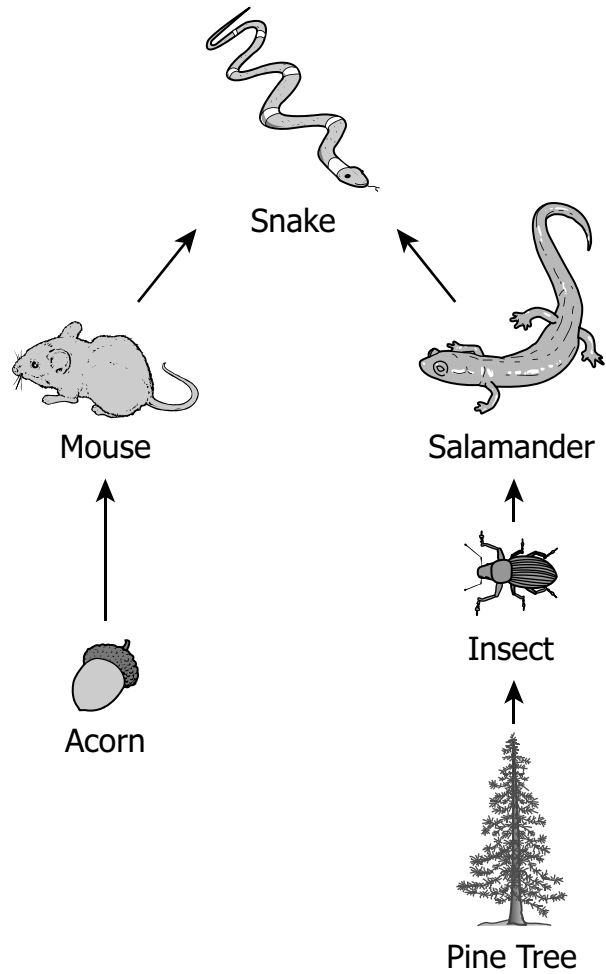


The process shown would be classified as —

- F** precipitation
- G** condensation
- H** transpiration
- J** evaporation

13 Max is doing an experiment on tomato plants. His hypothesis is, "A tomato plant will not grow in a shady area." On which of these relationships did Max base his hypothesis?

- A** Warm temperature causes plant growth.
- B** Sunlight causes plant growth.
- C** Tall plants cause shade.
- D** New plants need fresh water.

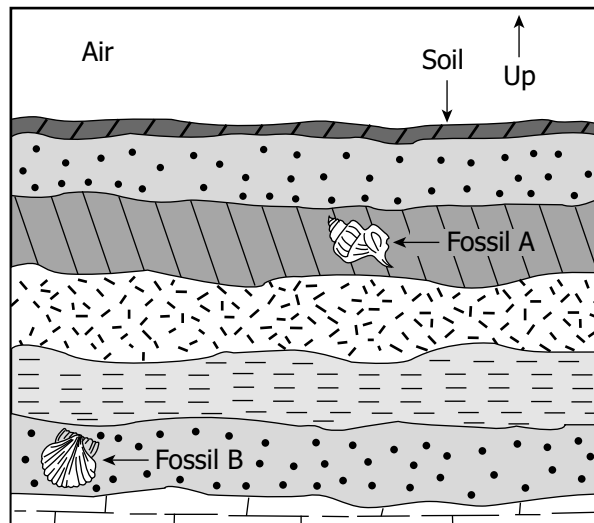


Which describes energy through this food web?

- F** Salamanders get energy from snakes and mice.
- G** Acorns get energy from insects and pine trees.
- H** Mice get energy from salamanders and insects.
- J** Snakes get energy from salamanders and mice.

- 15 Which do meteorologists use to measure the amount of precipitation that falls during a storm?**
- A** Anemometer
 - B** Barometer
 - C** Rain gauge
 - D** Weather vane

- 16 Which of these transmits sound the *fastest*?**
- F** Water in a pool
 - G** A metal rod
 - H** Air in a balloon
 - J** Empty space

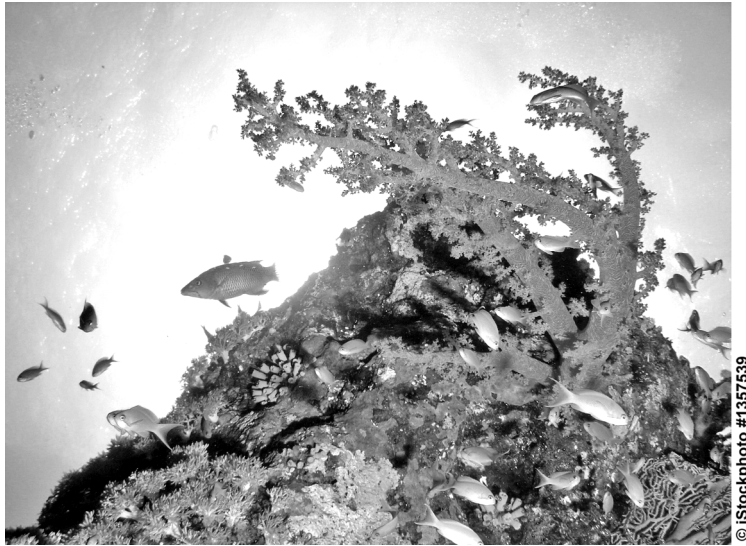


When comparing fossil A to fossil B, which is *most likely* correct?

- A** Fossil B is older.
- B** Fossil B is larger.
- C** Only fossil B is metamorphic.
- D** Only fossil B was once an organism.

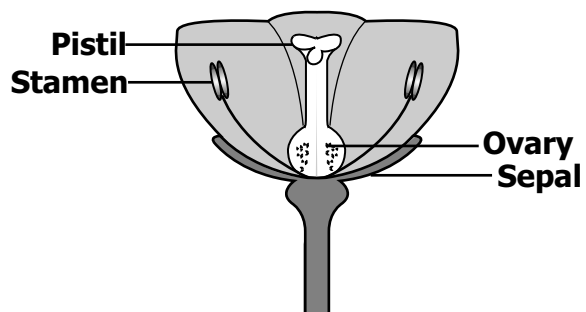
18 Photosynthesis occurs in which of these organisms?

- F** Sunflower plant
- G** Mushroom
- H** Sunfish
- J** Luna moth



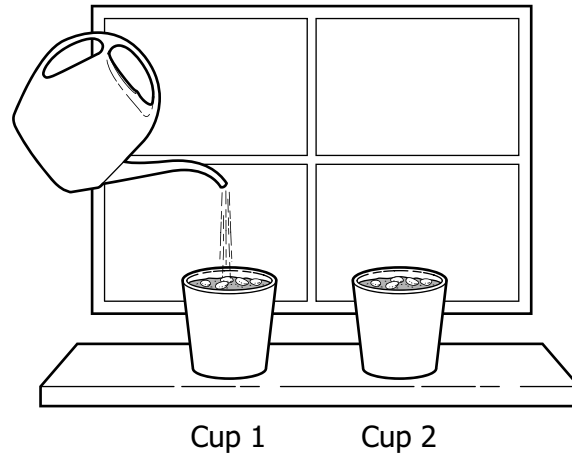
Part of a coral reef is shown. A coral reef is —

- A** a rock
- B** an ecosystem
- C** an ocean current
- D** an underwater cave



In a flower, what *most* likely happens when pollen from the stamen gets into the ovary?

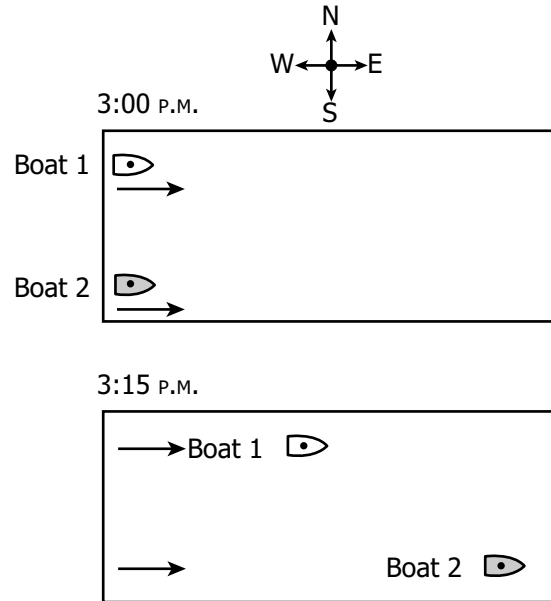
- F** The plant dies.
- G** A seed develops.
- H** The flower closes.
- J** The sepals fall off.



Students planted bean seeds in the same kind of soil in separate cups. The cups were put next to each other on a sunny windowsill. Cup 1 was given 10 mL of water every other day. Cup 2 was given no water. Which of these is the independent (manipulated) variable in the experiment?

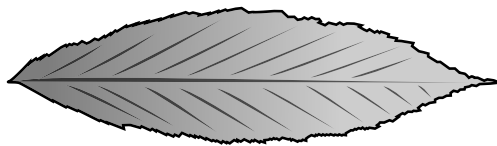
- A** The type of soil
- B** The type of seed
- C** The amount of water
- D** The amount of sunlight

Diagram of Photographs



Two moving boats are photographed from above at 3:00 p.m. and 3:15 p.m. Which statement correctly compares their motion?

- F** They are traveling in the same direction at equal speeds.
- G** They are traveling in opposite directions at equal speeds.
- H** They are traveling in the same direction, and boat 2 has a greater speed.
- J** They are traveling in opposite directions, and boat 2 has a slower speed.



According to the picture, which measurement *best* identifies the length of the leaf?

- A 5.0 cm
- B 6.0 cm
- C 6.5 cm
- D 7.0 cm

24 Which of these is a way the people of Virginia can help restore a natural ecosystem?

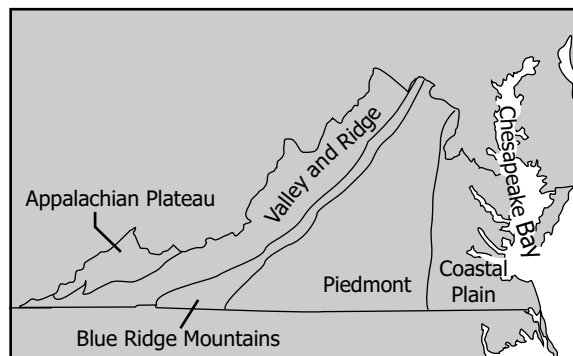
- F Burn their trash
- G Plant native plants
- H Feed leftover meals to deer
- J Drain automobile oil into the grass

25 Which of these is the *most* responsible for the changes of the seasons on Earth?

- A Position of the Moon
- B Tilt of Earth on its axis
- C Temperature of the Sun
- D Distance to Mars

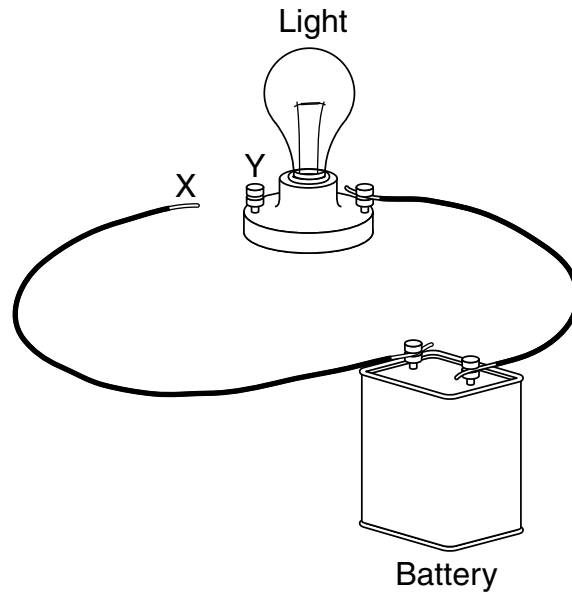
26

Geographic Regions of Virginia



Which geographic region of Virginia has the *least* impact on the water quality of Chesapeake Bay?

- F Coastal Plain
- G Piedmont
- H Blue Ridge Mountains
- J Appalachian Plateau



A fifth-grade class constructed this circuit. Which of these objects *most* likely made the light glow when connected to points X and Y?







- A** Plastic straw
- B** Cotton string
- C** Aluminum foil
- D** Rubber eraser

28 Earth is composed of four layers. Many scientists believe that as Earth cooled, the denser materials sank to the center and the less dense materials rose to the top. The *least* dense layer is the —







- F** crust
- G** mantle
- H** outer core
- J** inner core

29 In which chart are all the organisms sorted correctly?







A

Vertebrates	Invertebrates
	
	
	







B

Vertebrates	Invertebrates
	
	
	

C

Vertebrates	Invertebrates
	
	
	

D

Vertebrates	Invertebrates
	
	
	

30 Which *best* describes the part of the ocean called the continental shelf?

- F** A flat underwater valley
- G** A region of mountains in the deep ocean
- H** A shallow area of sediment near the shore
- J** A region with a higher water pressure

31 Which item is designed to change electrical energy into heat energy?

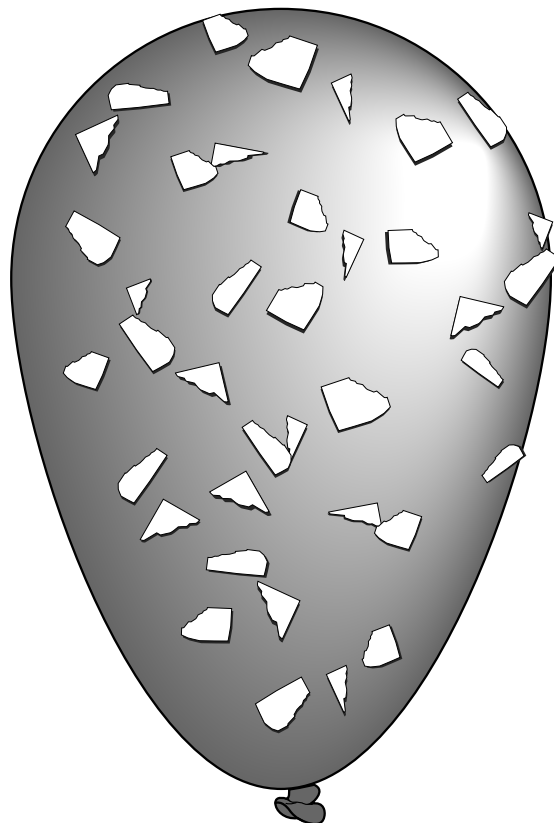
- A** Alarm clock
- B** Hand dryer
- C** Fan
- D** Telephone

32 Which of these takes about one year to complete?

- F** Earth to orbit the Sun
- G** The Sun to orbit Earth
- H** Earth to rotate on its axis
- J** The Moon to orbit Earth

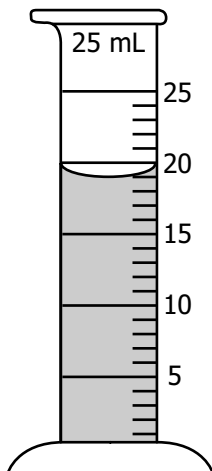
33 Roger Bacon is credited for developing the magnifying glass. His understanding of which of these was *most* useful for this development?

- A** Light
- B** Sound
- C** Gravity
- D** Electricity

Paper Pieces Stuck to Balloon

Bits of paper are attracted to the surface of this balloon. What attracts the paper pieces to the balloon?

- F** Friction
- G** Magnetism
- H** Potential energy
- J** Static electricity

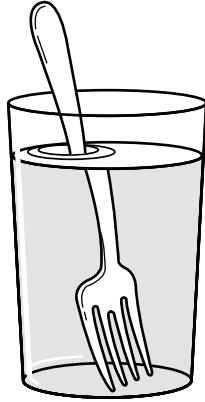


Students filled a graduated cylinder with the amount of water shown. How much more water needs to be added to the cylinder to measure 25 mL?

- A** 2 mL
- B** 4 mL
- C** 6 mL
- D** 9 mL

36 Moss is *best* classified as —

- F** a type of mold
- G** an evergreen plant
- H** a species of fungus
- J** a nonvascular plant

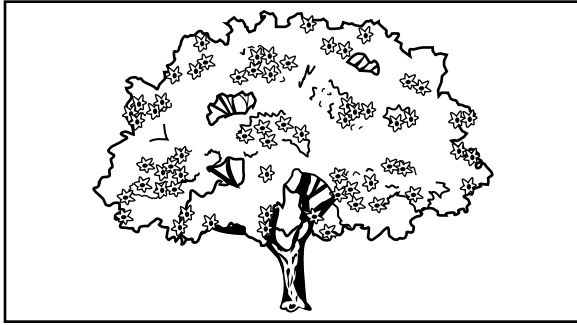


Which explains why the fork looks different under water?

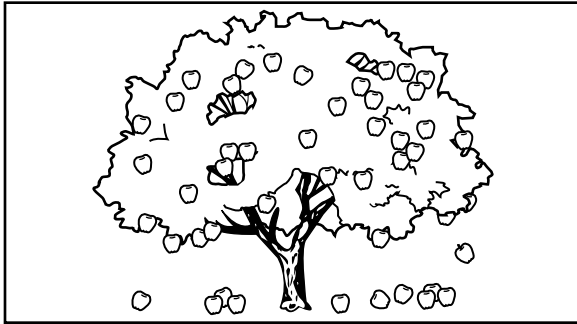
- A** Light is refracted at an angle.
- B** The wavelength of light lengthens.
- C** Light cannot pass through the glass.
- D** The amount of light increases when going through water.

38 Which of these apple trees is dormant?

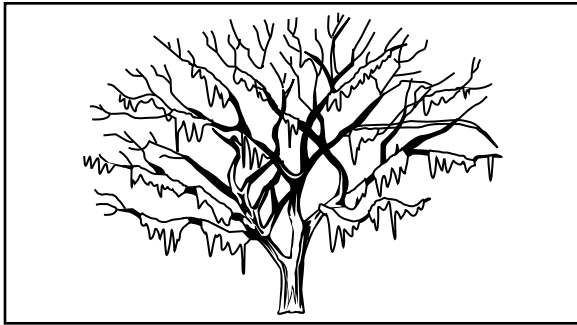
F



G



H



J



39 The distance between Richmond and Norfolk is *best* measured in —

- A** kilometers
- B** meters
- C** centimeters
- D** millimeters

40 Which tools are *best* used to determine the speed of a turtle as it walks along a path?

- F** Meter stick and graduated cylinder
- G** Stopwatch and meter stick
- H** Balance and metric ruler
- J** Balance and stopwatch



Answer Key-5005-S0110

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

Grade 5 Science, Core 1

If you get this many items correct:	Then your converted scale score is:
0	000
1	175
2	211
3	233
4	249
5	262
6	273
7	282
8	291
9	299
10	306
11	313
12	320
13	326
14	332
15	338
16	344
17	350
18	355
19	361
20	367
21	372
22	378
23	383
24	389
25	395
26	401
27	407
28	413
29	420
30	427
31	435
32	443
33	451
34	461
35	472
36	485
37	501
38	523
39	559
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.