

VIRGINIA STANDARDS OF LEARNING  
**Spring 2009 Released Test**

**GRADE 5  
SCIENCE**

©2009 by the Commonwealth of Virginia, Department of  
Education, P.O. Box 2120, Richmond, Virginia 23218-2120.

## **Directions**

Read each question and choose the best answer.

## **SAMPLE**

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

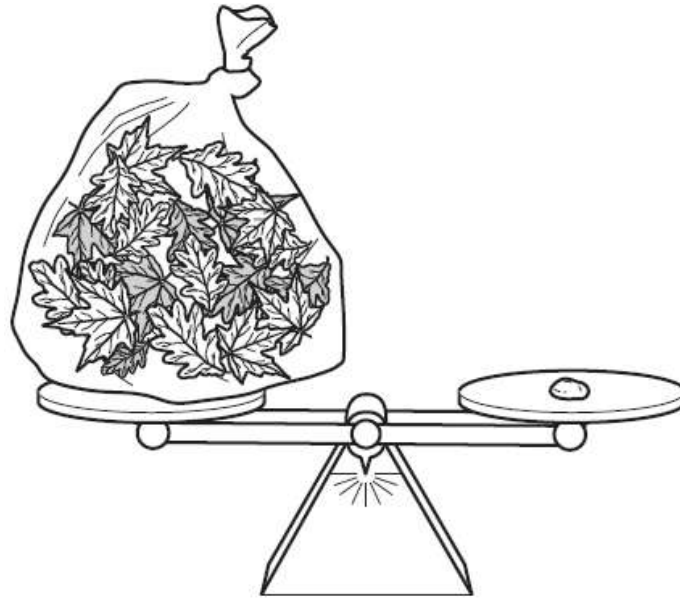
**A ice**

**B mountains**

**C oceans**

**D deserts**

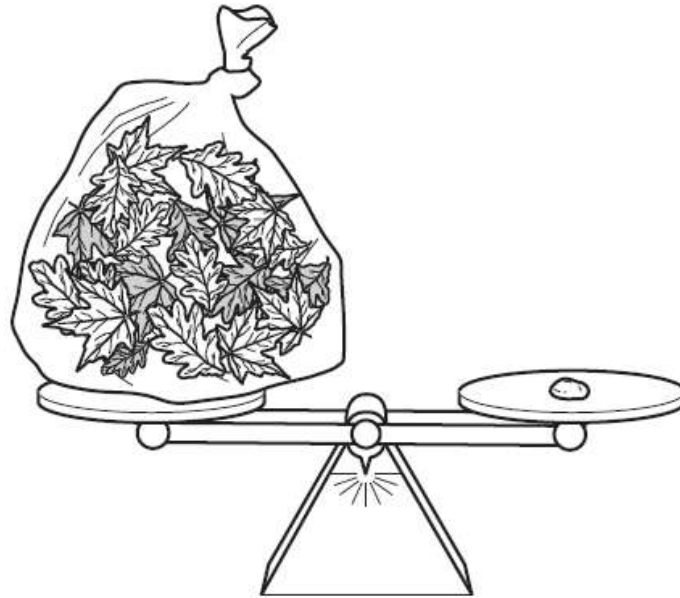
1.



**Based on the picture, the bag of leaves has —**

- A less mass than the pebble**
- B the same mass as the pebble**
- C the same volume as the pebble**
- D less volume than the pebble**

1.

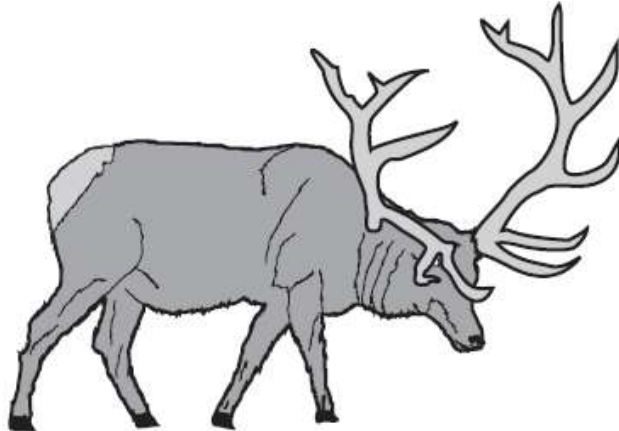


Based on the picture, the bag of leaves has —

- A less mass than the pebble
- ☒ B the same mass as the pebble
- C the same volume as the pebble
- D less volume than the pebble

## 2. Which of these is an important natural resource of the Chesapeake Bay?

F



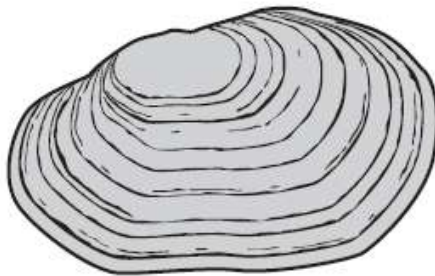
Elk

H



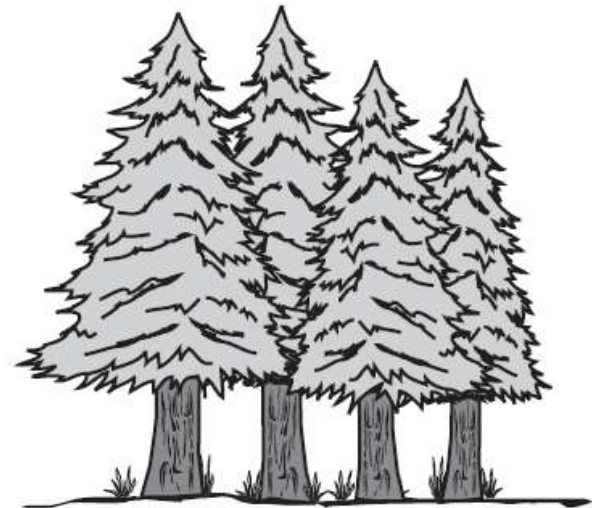
Coal

G



Shellfish

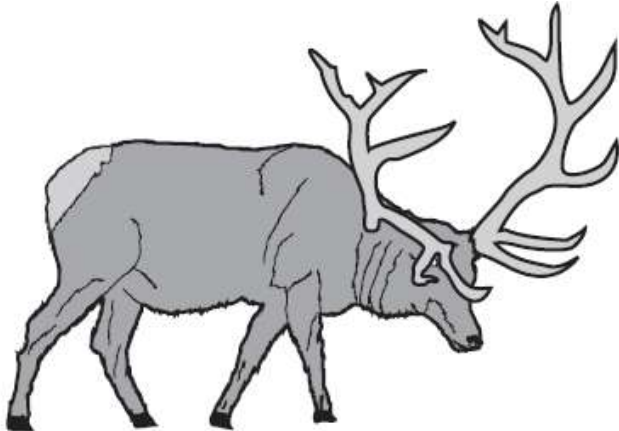
J



Pine Trees

## 2. Which of these is an important natural resource of the Chesapeake Bay?

F



Elk

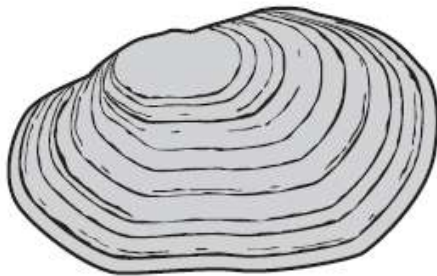
H



Coal

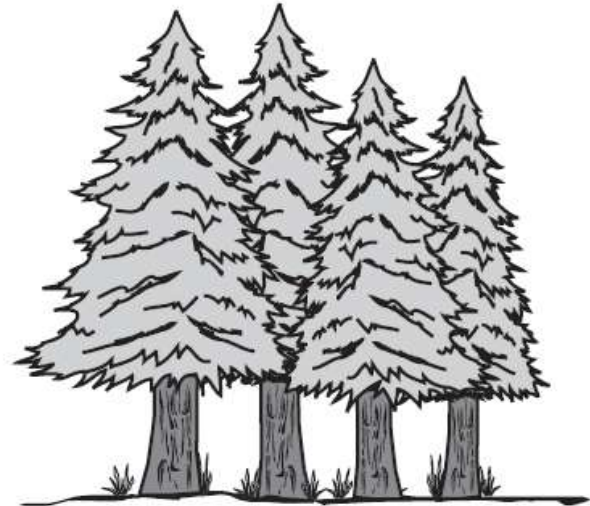


G



Shellfish

J



Pine Trees

**3 The Apollo 11 mission was able to retrieve samples of the Moon's surface because it was the first mission to have astronauts —**

- A land on the Moon**
- B orbit a planet**
- C return to Earth**
- D walk in space**

**3 The Apollo 11 mission was able to retrieve samples of the Moon's surface because it was the first mission to have astronauts —**

**A  land on the Moon**

**B orbit a planet**

**C return to Earth**

**D walk in space**



**4 When ice cream is left out of a freezer, the ice cream changes from a —**

**F solid to a gas**

**G gas to a liquid**

**H solid to a liquid**

**J liquid to a gas**

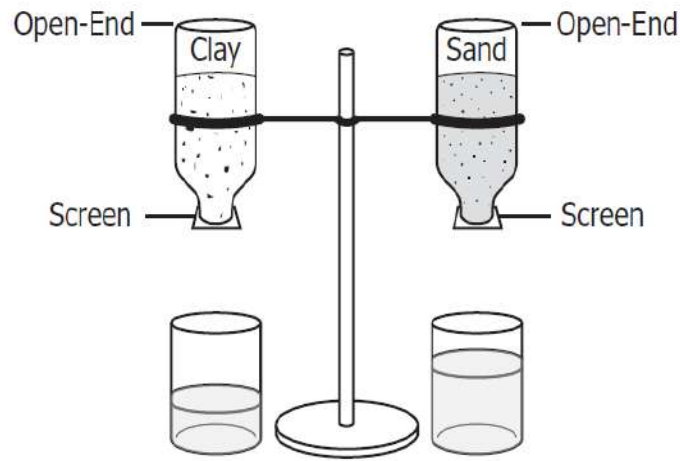
**4 When ice cream is left out of a freezer, the ice cream changes from a —**

**F solid to a gas**

**G gas to a liquid**

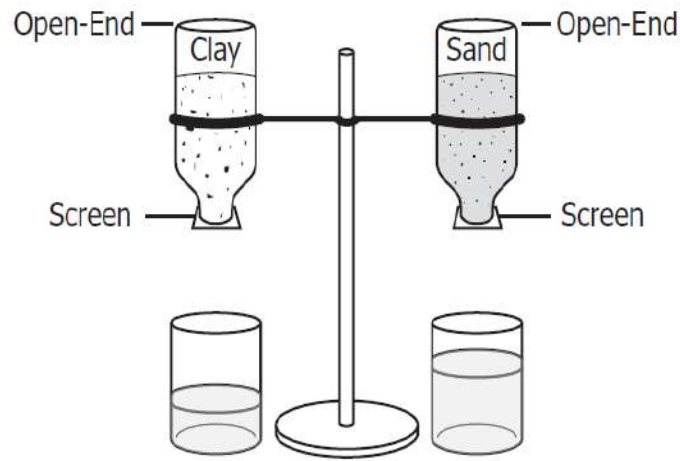
** H solid to a liquid**

**J liquid to a gas**



**5. Students want to learn which of two soils holds more water. They put clay in one bottle and sand in the other. Then they put equal amounts of water in the bottles. Some of the water drained into beakers. Which of these is the manipulated, independent variable?**

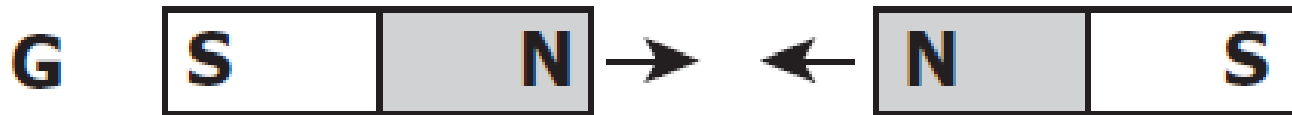
- A Type of soil**
- B Type of beaker**
- C Amount of water**
- D Number of bottles**



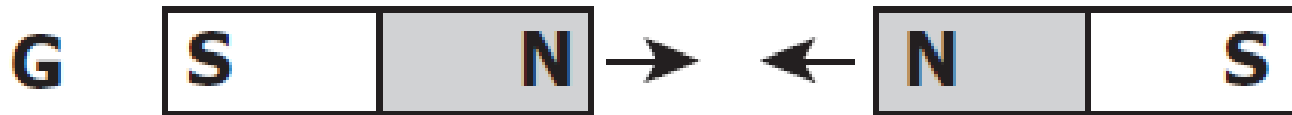
**5. Students want to learn which of two soils holds more water. They put clay in one bottle and sand in the other. Then they put equal amounts of water in the bottles. Some of the water drained into beakers. Which of these is the manipulated, independent variable?**

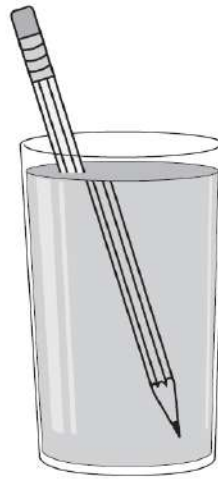
- ★ **A Type of soil**
- B Type of beaker**
- C Amount of water**
- D Number of bottles**

6. Which of these correctly shows what happens when two magnets are placed side by side?

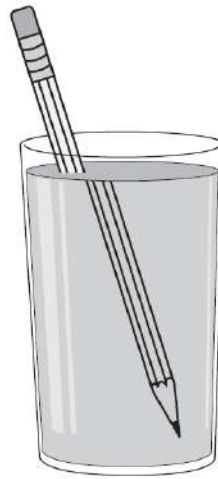


6. Which of these correctly shows what happens when two magnets are placed side by side?





- 7. Students place a pencil in a glass of water as shown. The pencil in the water looks broken because —**
- A water can dissolve pencils**
  - B water is colder than air**
  - C light bends when it enters the water**
  - D light is absorbed when it hits the glass**



**7. Students place a pencil in a glass of water as shown. The pencil in the water looks broken because —**

- A water can dissolve pencils**
- B water is colder than air**
- ★ C light bends when it enters the water**
- D light is absorbed when it hits the glass**



**8. Which of these best describes the Moon?**

**F Older than Earth**

**G Smaller than Earth**

**H Having the same climate as Earth**

**J Having the same atmosphere as Earth**

**8. Which of these best describes the Moon?**

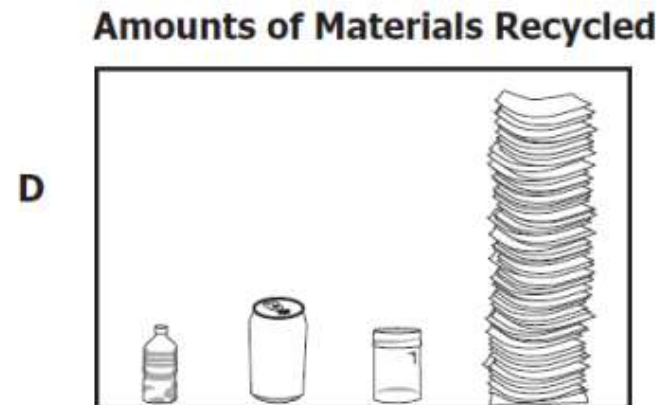
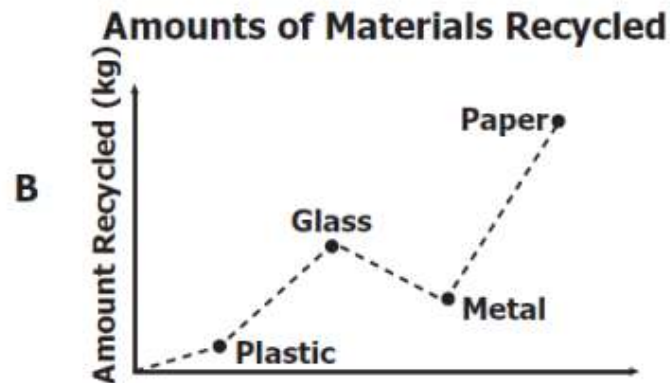
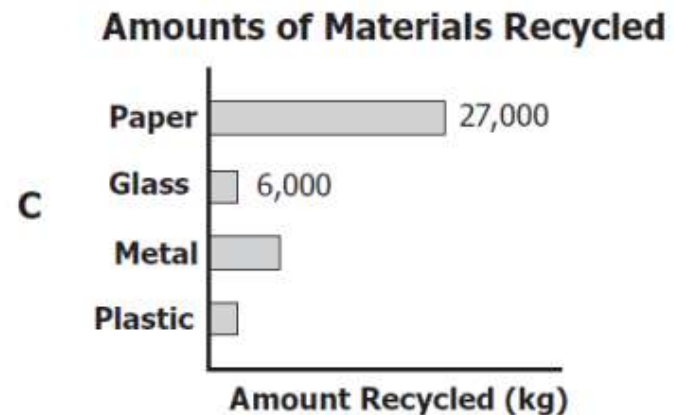
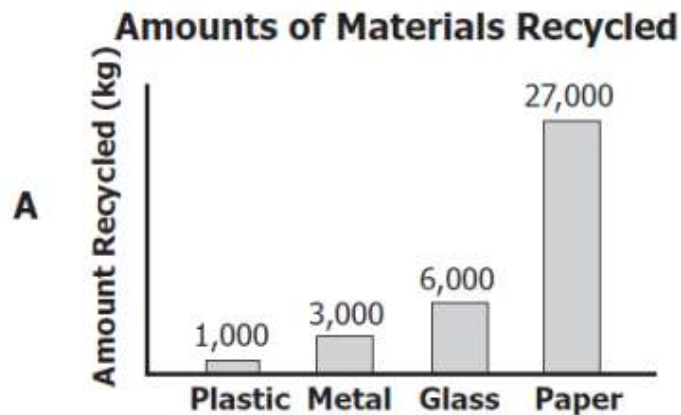
**F Older than Earth**

** G Smaller than Earth**

**H Having the same climate as Earth**

**J Having the same atmosphere as Earth**

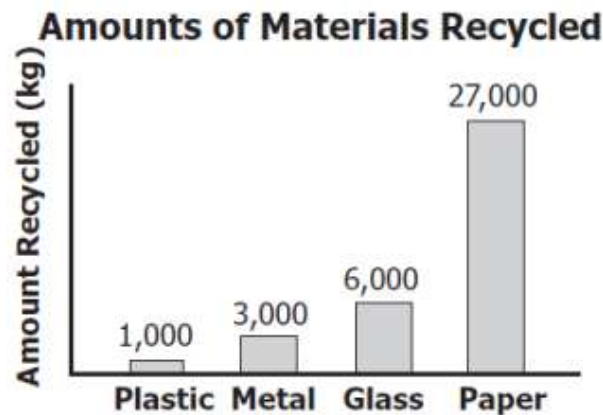
9. A student is writing a report on recycling. The student learns that different kinds of material are recycled in different amounts. Which graph best shows the data?



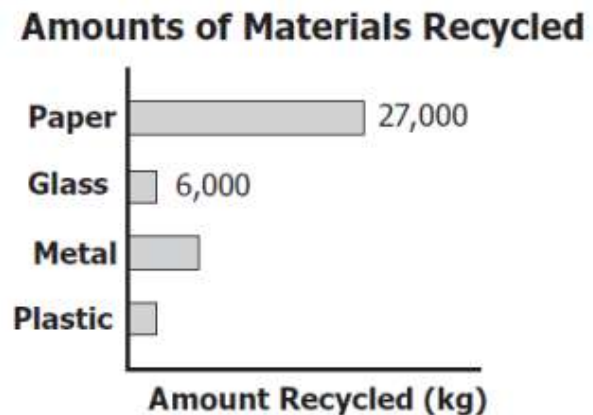
9. A student is writing a report on recycling. The student learns that different kinds of material are recycled in different amounts. Which graph best shows the data?



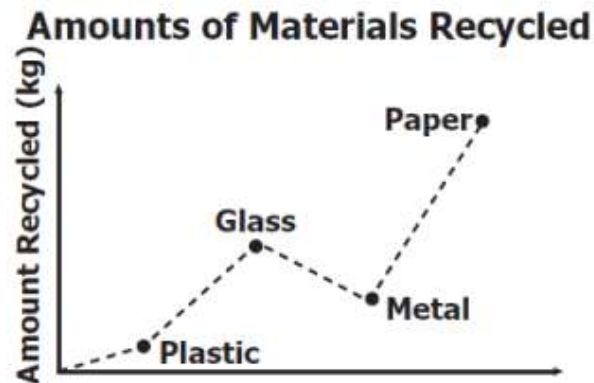
A



C



B



D



**10. A student is hiking through a forest taking pictures for science class. Which picture would most likely be used as an example of human impact on Earth?**


**F A trail built by cutting down trees**

**G A river eroding away the riverbank**

**H A bird nest made of dead branches**

**J A group of butterflies landing on flowers**

**10. A student is hiking through a forest taking pictures for science class. Which picture would most likely be used as an example of human impact on Earth?**

-  F A trail built by cutting down trees**
- G A river eroding away the riverbank**
- H A bird nest made of dead branches**
- J A group of butterflies landing on flowers**

**11 Which structure surrounds and protects an animal cell?**

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

**11 Which structure surrounds and protects an animal cell?**

**A Nucleus**

**B Vacuole**

**C Cytoplasm**

** D Cell membrane**



**12. What kind of energy do all moving objects have?**

**F Light energy**

**G Solar energy**

**H Kinetic energy**

**J Renewable energy**

**12. What kind of energy do all moving objects have?**

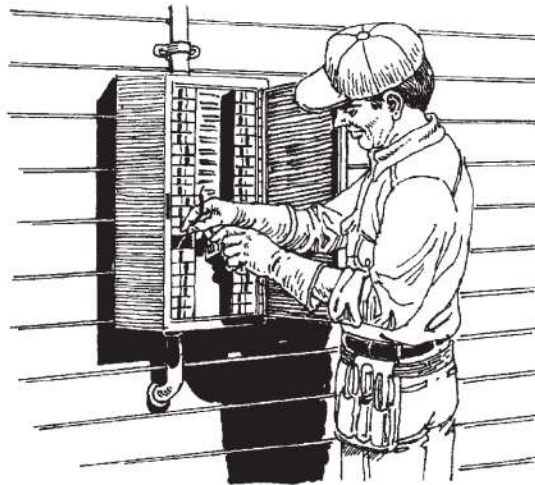
**F Light energy**

**G Solar energy**

** Kinetic energy**

**J Renewable energy**

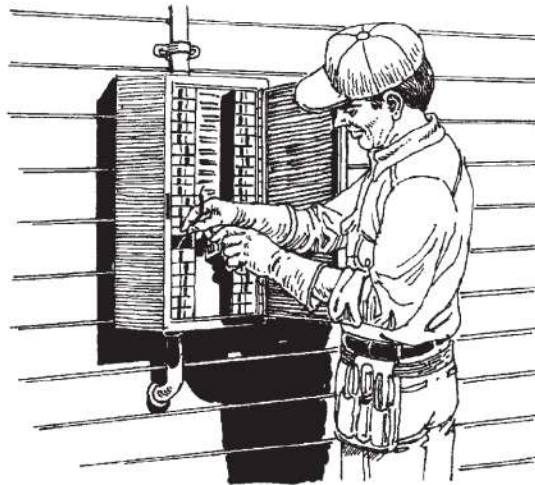
13.



The electrician in this picture is wearing rubber gloves for protection. The purpose of the rubber gloves is to —

- A keep the electrician dry
- B create an electrical circuit
- C produce electricity
- D insulate the electrician

13.



The electrician in this picture is wearing rubber gloves for protection. The purpose of the rubber gloves is to —

- A keep the electrician dry
- B create an electrical circuit
- C produce electricity
- ★ D insulate the electrician

**14. The top layers of soil are important because they —**

**F prevent earthquakes**

**G give plants nutrients**

**H protect the bedrock**

**J make walking easier**

**14. The top layers of soil are important because they —**

**F prevent earthquakes**

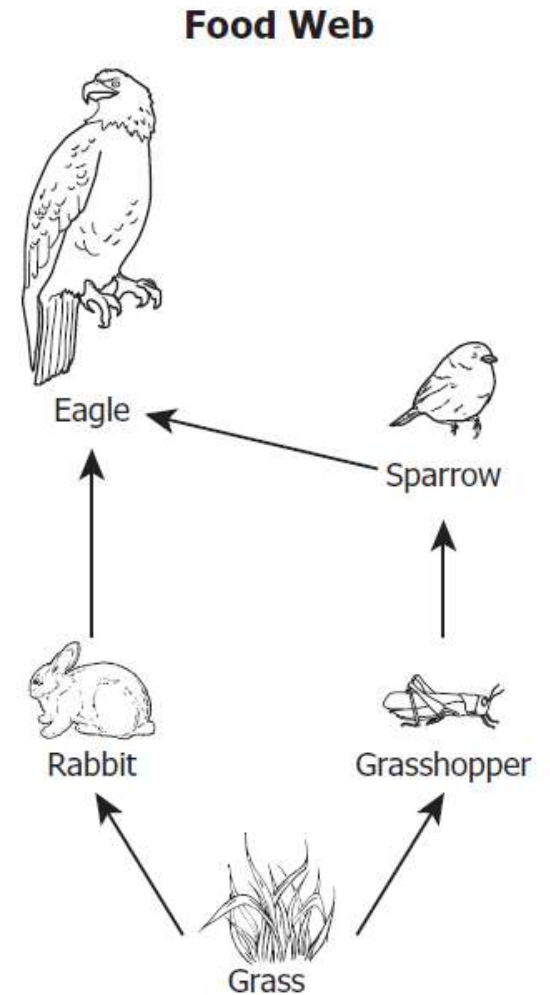
** give plants nutrients**

**H protect the bedrock**

**J make walking easier**

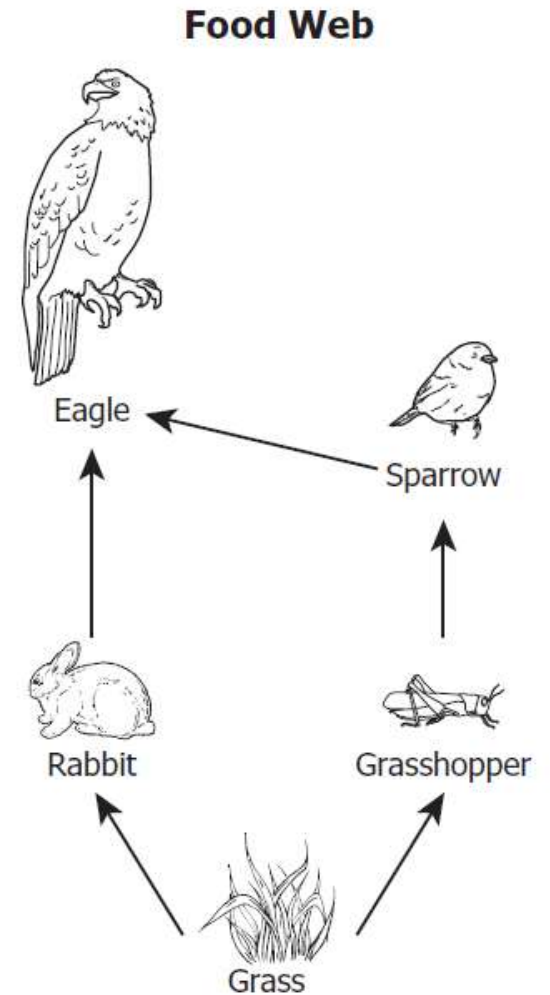
**15. Based on the food web, which of these is a producer?**

- A Eagle**
- B Grass**
- C Rabbit**
- D Sparrow**



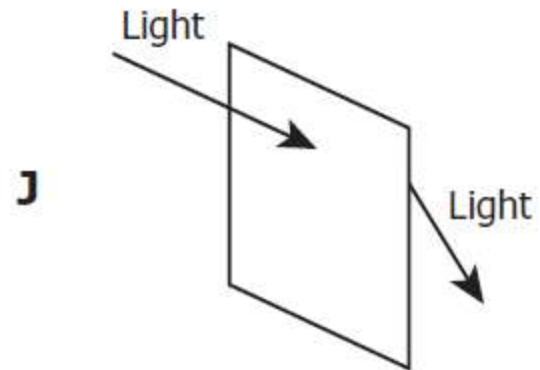
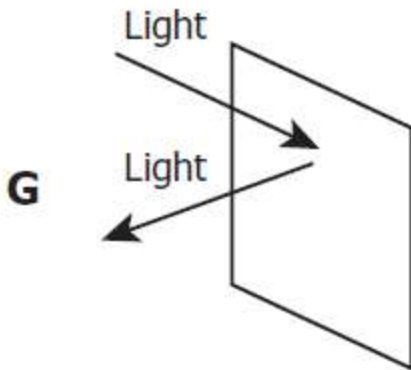
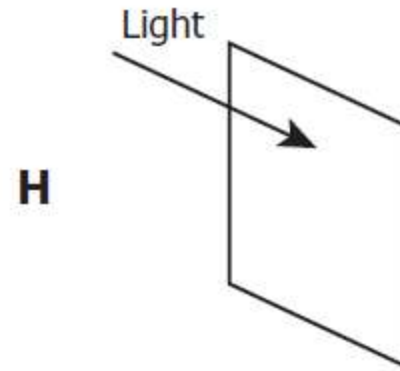
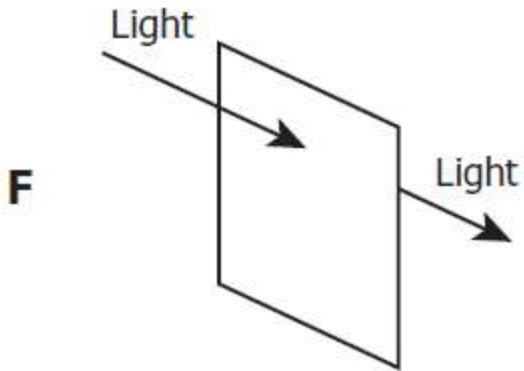
15. Based on the food web, which of these is a producer?

- A Eagle
- B ★ Grass
- C Rabbit
- D Sparrow

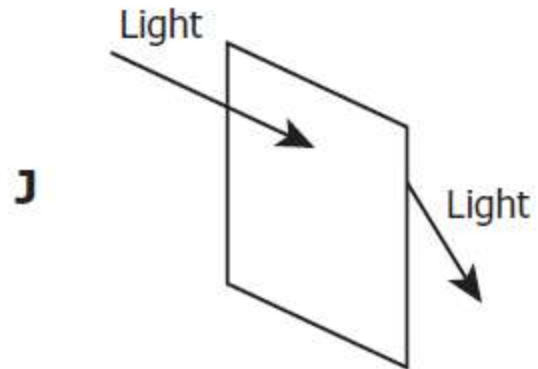
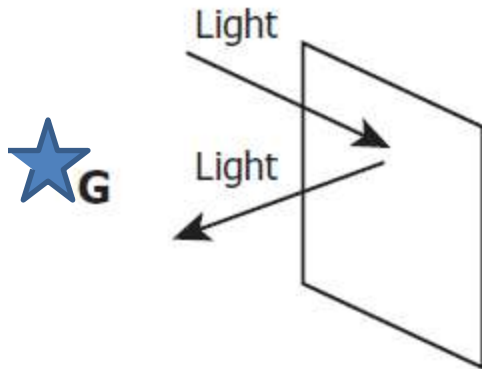
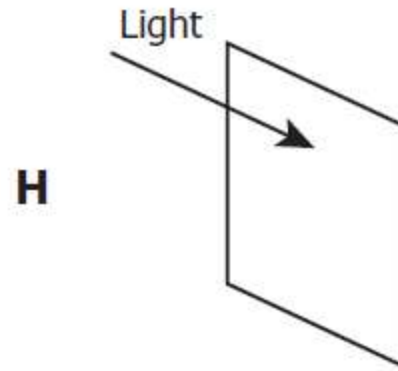
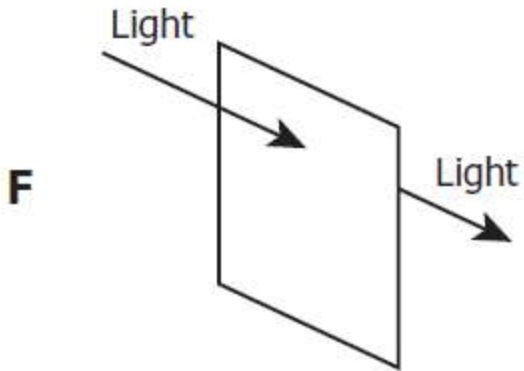




**16. Which of these correctly shows how light acts when it hits a mirror?**



**16. Which of these correctly shows how light acts when it hits a mirror?**



**17. In winter, the arctic fox has white fur. In summer, its fur changes color to brown and gray. The change in fur color helps the arctic fox to —**

- A run**
- B mate**
- C hide**
- D hibernate**

**17. In winter, the arctic fox has white fur. In summer, its fur changes color to brown and gray. The change in fur color helps the arctic fox to —**

**A run**

**B mate**

**hide**

**D hibernate**

**18. A student makes a fruit drink by stirring a powdered mix into cold water. Why is the fruit drink a solution?**


**F The powder dissolves in the water.**

**G The water changes color.**

**H The student stirs the water.**

**J The water is the proper temperature.**

**18. A student makes a fruit drink by stirring a powdered mix into cold water. Why is the fruit drink a solution?**

-  F The powder dissolves in the water.**
- G The water changes color.**
- H The student stirs the water.**
- J The water is the proper temperature.**



**19. Which unit is best to use for measuring the width of oak tree leaves?**

- A Centimeter**
- B Gram**
- C Kilometer**
- D Milliliter**



**19. Which unit is best to use for measuring the width of oak tree leaves?**

- A★ Centimeter**
- B Gram**
- C Kilometer**
- D Milliliter**



**20. At which location are oceans the deepest?**

**F Mid-ocean ridge**

**G Abyssal plain**


**H Ocean trench**

**J Volcanic island**

**20. At which location are oceans the deepest?**

**F Mid-ocean ridge**

**G Abyssal plain**

** H Ocean trench**

**J Volcanic island**

**21. Which of these is most likely harmful to an ecosystem?**

- A Building new homes in a wetland**
- B Taking away airplanes from an airport**
- C Planting trees in an orchard**
- D Adding floors to an office building**

**21. Which of these is most likely harmful to an ecosystem?**

- A  Building new homes in a wetland**
- B Taking away airplanes from an airport**
- C Planting trees in an orchard**
- D Adding floors to an office building**

**22. Which of these describes rotation?**

**F Mercury goes around the Sun every 88 days.**

**G The Moon goes around Earth every 28 days.**

**H Earth orbits the Sun about every 365 days.**

**J Earth makes one turn on its axis every 24 hours.**

**22. Which of these describes rotation?**

**F Mercury goes around the Sun every 88 days.**

**G The Moon goes around Earth every 28 days.**

**H Earth orbits the Sun about every 365 days.**

**J  Earth makes one turn on its axis every 24 hours.**

**23. When a tree is dormant, the tree is**

- A dying**
- B inactive**
- C growing taller**
- D growing its leaves**

**23. When a tree is dormant, the tree is**

**A dying**

** inactive**

**C growing taller**

**D growing its leaves**



**24. Which type of storm causes the most flooding in areas located near an ocean coastline?**

**F Tornado**

**G Hurricane**

**H Blizzard**

**J Freezing rain**

**24. Which type of storm causes the most flooding in areas located near an ocean coastline?**

**F Tornado**

**G  Hurricane**

**H Blizzard**

**J Freezing rain**

**25. Granite is a hard material and forms from cooling magma. Granite is a type of —**

- A lava stone**
- B igneous rock**
- C volcanic dust**
- D sedimentary rock**

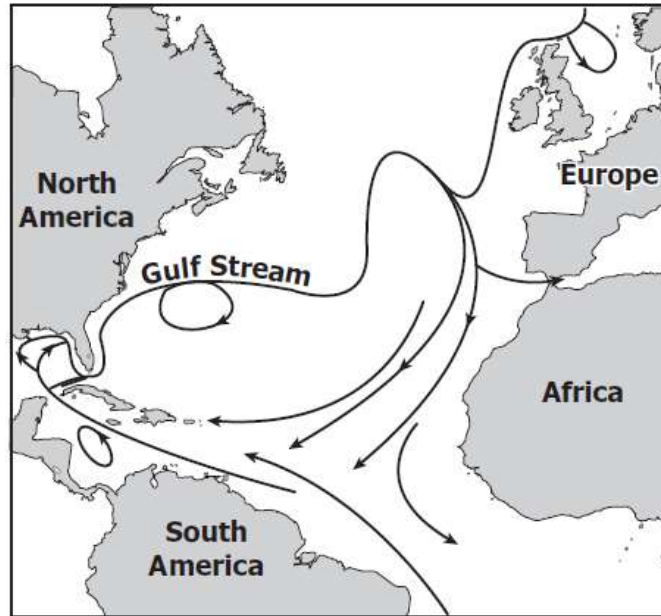
**25. Granite is a hard material and forms from cooling magma. Granite is a type of —**

**A lava stone**

** igneous rock**

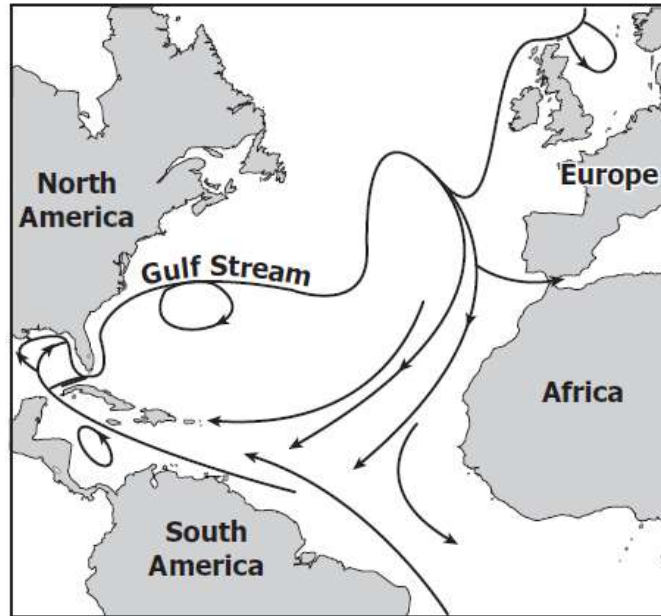
**C volcanic dust**

**D sedimentary rock**



**26. What do the arrows on the map represent?**

- F Size of waves**
- G Water density**
- H Ocean currents**
- J Time between tides**



**26. What do the arrows on the map represent?**

**F Size of waves**

**G Water density**


**H★ Ocean currents**

**J Time between tides**

**27. A student rolls a ball on the ground. Which of these causes the ball to slow down and then stop?**

- A The motion of the ball**
- B The speed of the ball**
- C Friction from the ground**
- D A magnetic field**

**27. A student rolls a ball on the ground. Which of these causes the ball to slow down and then stop?**

- A The motion of the ball**
- B The speed of the ball**
-  C Friction from the ground**
- D A magnetic field**



**28. Which of the following do plants need to make their own food?**

**F Flowers**

**G Bacteria**

**H Sunlight**

**J Oxygen**

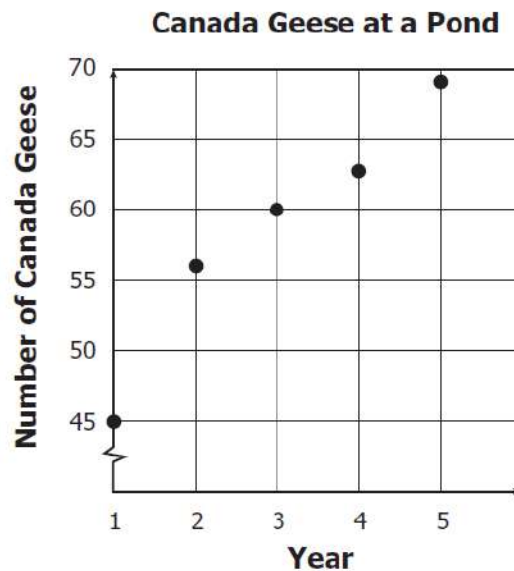
**28. Which of the following do plants need to make their own food?**

**F Flowers**

**G Bacteria**

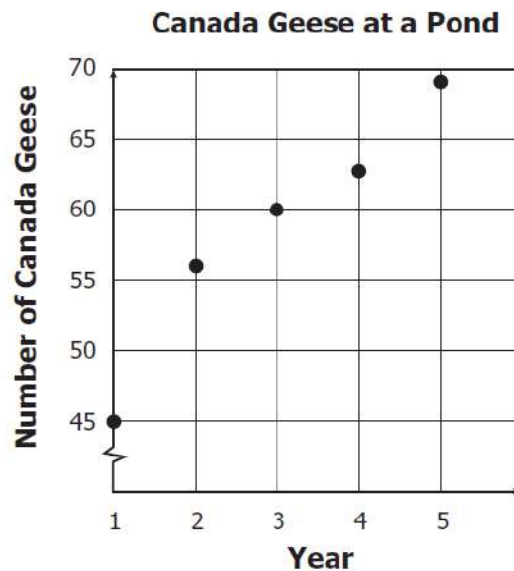
** H Sunlight**

**J Oxygen**



**29. A student counted the number of Canada geese that have lived on a pond for the past five years. Based on the graph, how many geese will probably live on the pond in year 6?**

- A 60**
- B 65**
- C 70**
- D 75**



**29. A student counted the number of Canada geese that have lived on a pond for the past five years. Based on the graph, how many geese will probably live on the pond in year 6?**

**A 60**

**B 65**

**C 70**

**D 75**

**30. Which of these objects is translucent?**

**F A student's notebook**

**G A mirror on the bus**

**H A brick wall of the school**

**J A student's sunglass lenses**

**30. Which of these objects is translucent?**

**F A student's notebook**

**G A mirror on the bus**


**H A brick wall of the school**

**J  A student's sunglass lenses**

**31. The presence of an animal fossil in a rock gives evidence of —**






- A what hunting behaviors the animal used**
- B how many babies the animal had**
- C exactly when the animal was born**
- D the time period the animal lived in**

**31. The presence of an animal fossil in a rock gives evidence of —**

- A what hunting behaviors the animal used**
- B how many babies the animal had**
- C exactly when the animal was born**
- D  the time period the animal lived in**



**32. A boy placed four leaves in a caterpillar's cage.**

Monday	Tuesday	Wednesday	Thursday	Friday
				

**He observed the number of leaves in the caterpillar's cage each day. Based on the data, the boy should infer that the caterpillar —**






**F is eating only every other day**

**G is eating each day**

**H will eat part of one leaf next Monday**

**J will stop eating during molting on Friday**

**32. A boy placed four leaves in a caterpillar's cage.**

Monday	Tuesday	Wednesday	Thursday	Friday
				

**He observed the number of leaves in the caterpillar's cage each day. Based on the data, the boy should infer that the caterpillar —**

**F is eating only every other day**

**G★ is eating each day**


**H will eat part of one leaf next Monday**

**J will stop eating during molting on Friday**

**33. What tool is used to determine the mass of an object?**

- A Balance**
- B Meter stick**
- C Thermometer**
- D Graduated cylinder**

**33. What tool is used to determine the mass of an object?**

- A  Balance**
- B Meter stick**
- C Thermometer**
- D Graduated cylinder**

**34. Which part of a sunflower plant absorbs water and nutrients?**

**F Roots**

**G Stems**

**H Leaves**

**J Flowers**

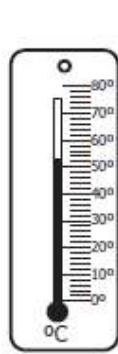
**34. Which part of a sunflower plant absorbs water and nutrients?**

**F  Roots**

**G Stems**

**H Leaves**

**J Flowers**



Thermometer



Centimeter  
ruler



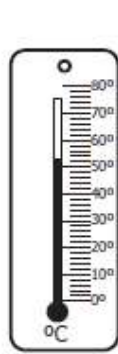
Pan balance

Month											
JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
						1	2				
3	4	5	6	7	8	9					
10	11	12	13	14	15	16					
17	18	19	20	21	22	23					
24	25	26	27	28	29	30					
31											

Calendar

**35. Juan is doing an experiment to see how long it takes an acorn to grow into a 0.5-meter-tall oak tree. Which two instruments should he choose?**

- A Thermometer and centimeter ruler**
- B Thermometer and calendar**
- C Centimeter ruler and pan balance**
- D Centimeter ruler and calendar**



Thermometer



Centimeter  
ruler



Pan balance

Month											
JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
						1	2				
3	4	5	6	7	8	9					
10	11	12	13	14	15	16					
17	18	19	20	21	22	23					
24	25	26	27	28	29	30					
31											

Calendar

**35. Juan is doing an experiment to see how long it takes an acorn to grow into a 0.5-meter-tall oak tree. Which two instruments should he choose?**

- A Thermometer and centimeter ruler**
- B Thermometer and calendar**
- C Centimeter ruler and pan balance**
- D★Centimeter ruler and calendar**



**36. An electric motor is designed to turn electrical energy into —**

**F solar energy**

**G potential energy**

**H static electricity**

**J mechanical energy**

**36. An electric motor is designed to turn electrical energy into —**

**F solar energy**

**G potential energy**

**H static electricity**

**J  mechanical energy**

**37. A group of students tested the effects of different amounts of water on ivy plant growth. Afterwards, they could not remember how much each plant grew per day. What should they have done to practice good science?**

**A Discuss their observations with other groups in their class.**

**B Conduct the experiment with more than one type of plant.**

**C Record daily information in a data table.**

**D Make up explanations for the results.**

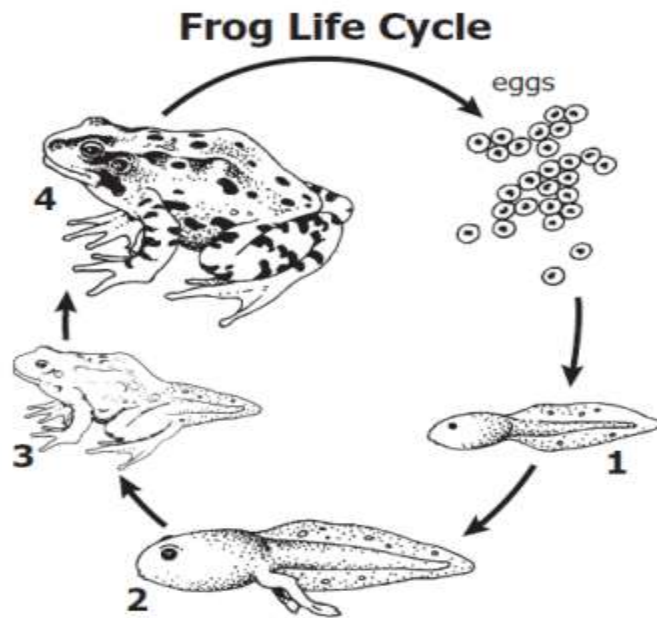
**37. A group of students tested the effects of different amounts of water on ivy plant growth. Afterwards, they could not remember how much each plant grew per day. What should they have done to practice good science?**

**A Discuss their observations with other groups in their class.**

**B Conduct the experiment with more than one type of plant.**

**C  Record daily information in a data table.**

**D Make up explanations for the results.**



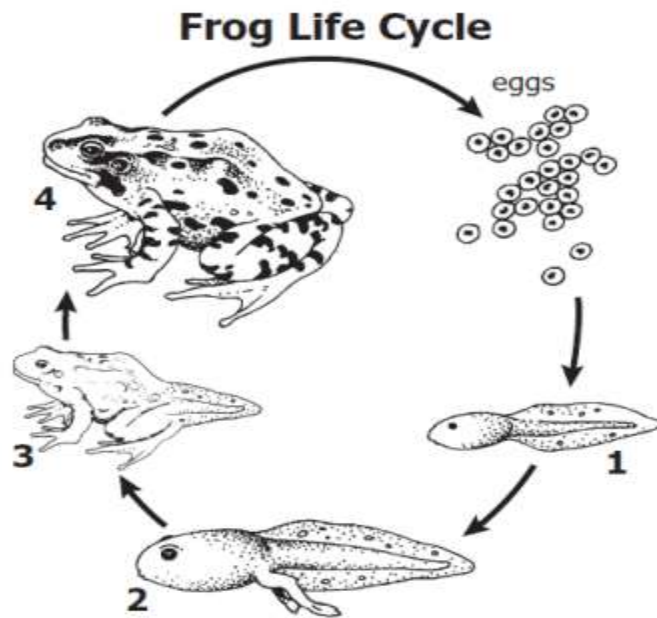
**38. In which numbered stage of the frog's life cycle does the frog begin to use lungs to breathe air?**

**F 1**

**G 2**

**H 3**

**J 4**



**38. In which numbered stage of the frog's life cycle does the frog begin to use lungs to breathe air?**

F 1

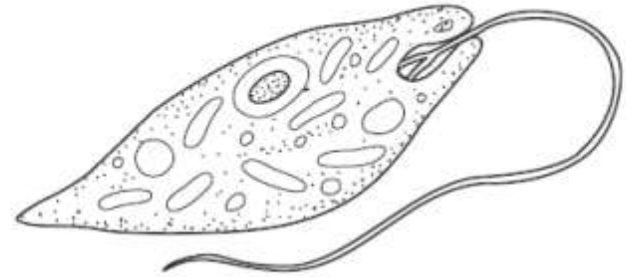
G 2

H ★ 3

J 4

39. Lee uses a microscope during science class. He sees this organism in a drop of water. Which organism did he most likely see?

- A Paramecium
- B Vorticella
- C Euglena
- D Amoeba

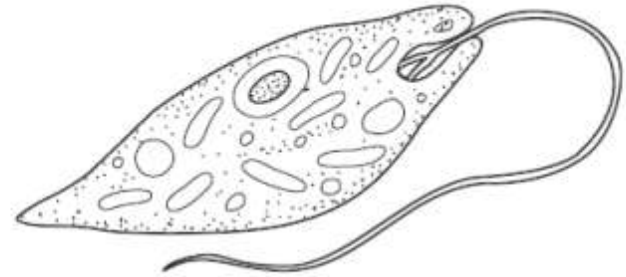


**Lab: Microscopic Organisms**

1 a. Has many tiny hairs . . . . . Go to 2	
b. Has no tiny hairs . . . . . Go to 3	
2 a. Has hairs all along edge . . . . .	<i>Paramecium</i>
b. Has hairs along one end . . . . .	<i>Vorticella</i>
3 a. Has one long tail . . . . . <i>Euglena</i>	
b. Has many arm-like shapes . . . . .	<i>Amoeba</i>

39. Lee uses a microscope during science class. He sees this organism in a drop of water. Which organism did he most likely see?

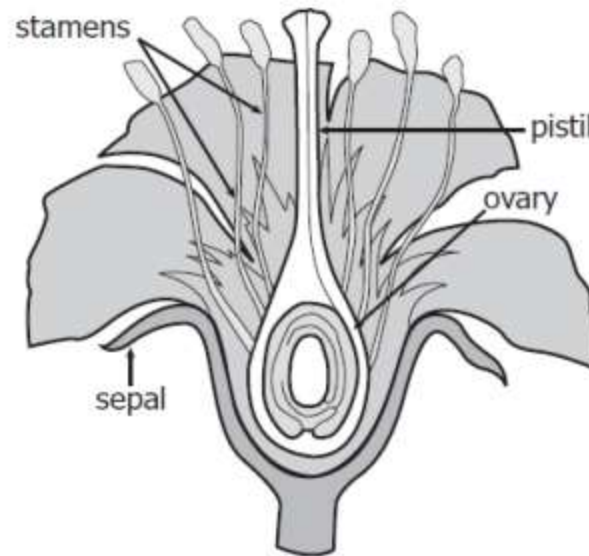
- A Paramecium
- B Vorticella
- C★Euglena
- D Amoeba



**Lab: Microscopic Organisms**

1 a. Has many tiny hairs . . . . . Go to 2	
b. Has no tiny hairs . . . . . Go to 3	
2 a. Has hairs all along edge . . . . .	Paramecium
b. Has hairs along one end . . . . .	Vorticella
3 a. Has one long tail . . . . .	Euglena
b. Has many arm-like shapes . . . . .	Amoeba





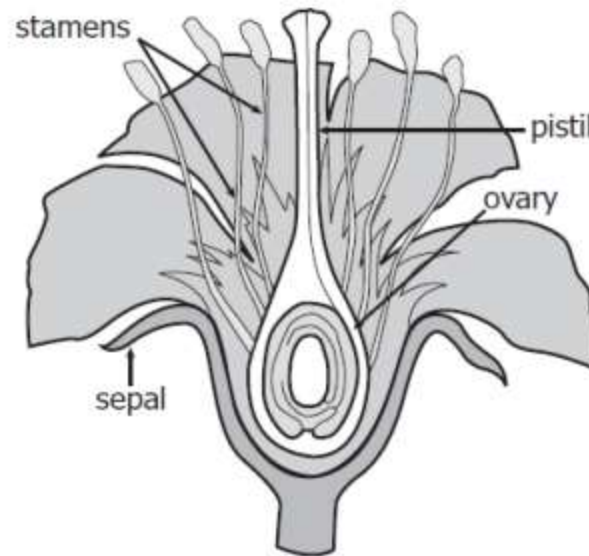
**40. What part of the flower produces pollen?**

**F ovary**

**G sepal**

**H pistil**

**J stamen**



**40. What part of the flower produces pollen?**

**F ovary**

**G sepal**

**H pistil**

**J ★ stamen**

**Answer Key-5005-S0119**

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