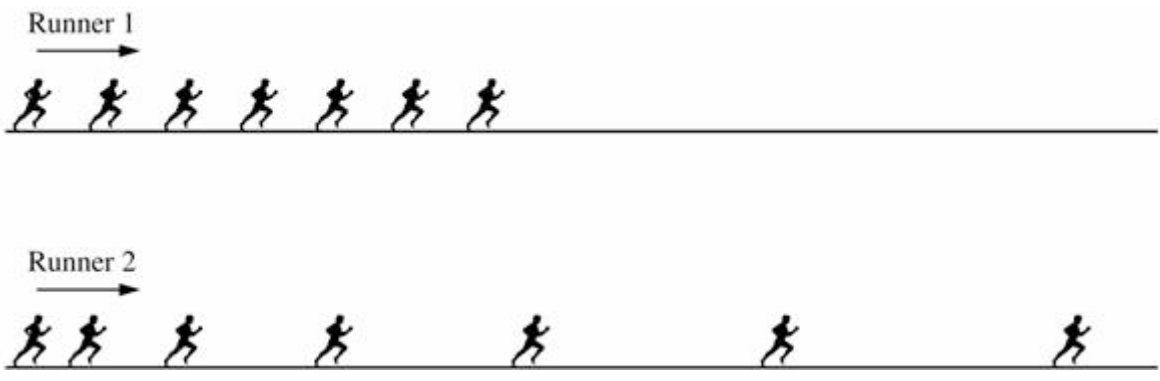
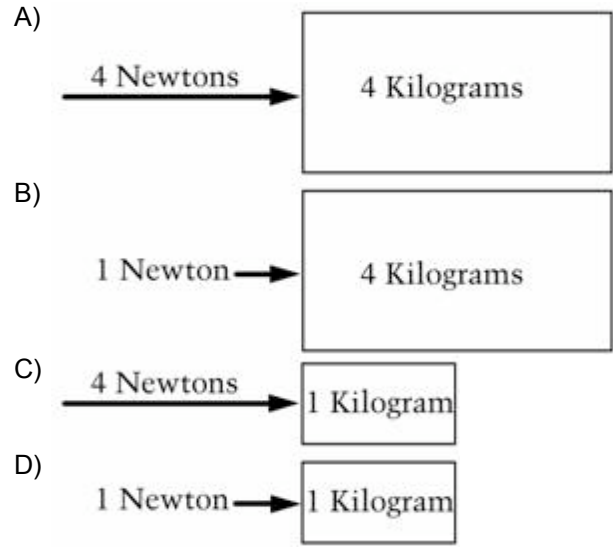


1. Household appliances convert electricity into one or more different forms of energy. An electric fan can best be described as converting electricity into
- A) heat energy only
 - B) heat energy and sound energy only
 - C) heat energy, sound energy, and mechanical energy only
 - D) heat energy, sound energy, mechanical energy, and chemical energy



2. Which zones in the map above are most likely to have a temperate climate (warm summers and cold winters) ?
- A) 1 and 6
 - B) 2 and 5
 - C) 3 and 4
 - D) 1, 2, and 3
3. An unusual type of fossil clam is found in rock layers high in the Swiss Alps. The same type of fossil clam is also found in the Rocky Mountains of North America. From this, scientists conclude that
- A) glaciers carried the fossils up the mountains
 - B) the Rocky Mountains and the Swiss Alps are both volcanic in origin
 - C) clams once lived in mountains, but have since evolved into sea-dwelling creatures
 - D) the layers of rocks in which the fossils were found are from the same geologic age

4. Each figure below shows a force measured in newtons pushing on a block. If there are no other forces pushing on the block, in which case is the acceleration of the block greatest?

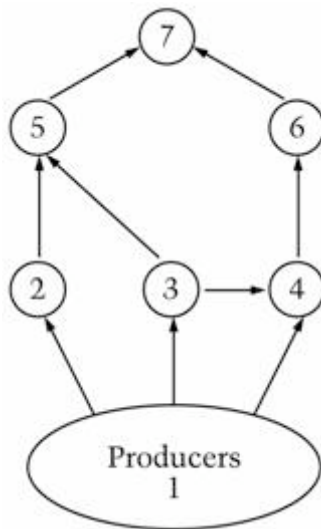


5. The picture above shows the positions of two runners at one-second intervals as they move from left to right. For each runner, indicate whether the runner's speed seems to be constant, increasing, or decreasing.

Explain how you can tell this from the pictures.

6. Recent studies indicate that ozone in the upper layers of Earth's atmosphere is being depleted. What effect does the depletion of ozone have, and how is this effect harmful to humans?

7. Tom's younger brother is learning how to read a thermometer and asks, "Why does the red stuff in the thermometer go up when it gets hot outside?" What is a correct explanation that Tom can give to his brother?



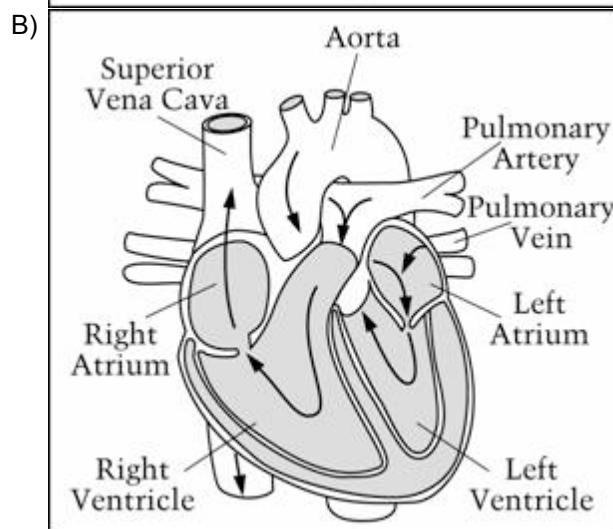
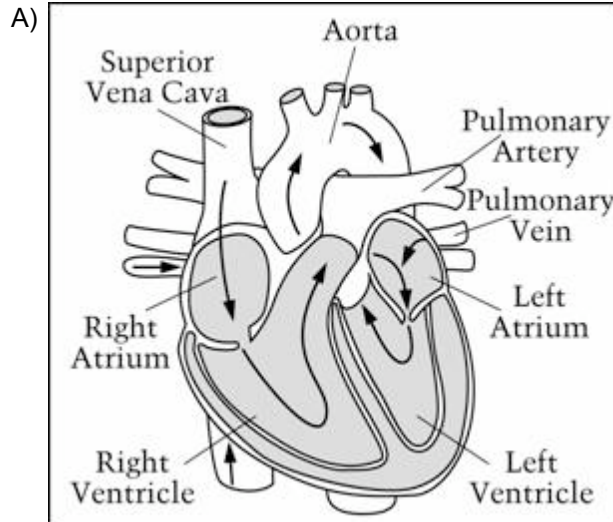
8. The diagram above shows a food web in a large park. Each circle represents a different species in the food web. Which of the organisms in the food web could be referred to as primary consumers?

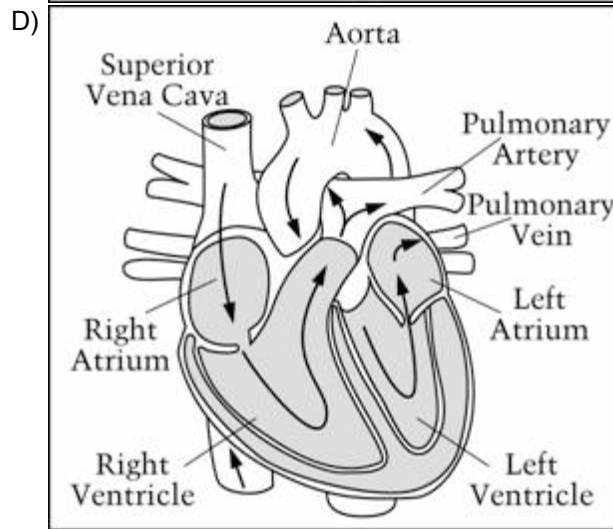
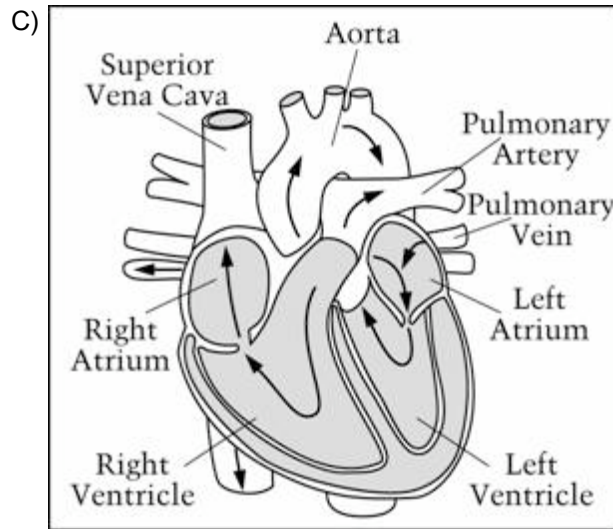
- A) 7 only
- B) 5 and 6 only
- C) 2, 3, and 4 only
- D) 2, 5, and 7 only

9. What two gases make up most of the Earth's atmosphere?

- A) Hydrogen and oxygen
- B) Hydrogen and nitrogen
- C) Oxygen and carbon dioxide
- D) Oxygen and nitrogen

10. Each diagram below shows the same front view of a human heart. Which diagram has arrows that correctly show the path of blood flow through the heart and the blood vessels leading to and from the heart?





11. A person produces two sound waves with a flute, one immediately after the other. Both sound waves have the same pitch, but the second one is louder. Which of the following properties is greater for the second sound wave?

- A) Frequency
- B) Amplitude
- C) Wavelength
- D) Speed in air

12. Explain how you can find out the volume of a solid object, such as a small rock, using only water and either a measuring cup or a graduated cylinder.

13. When you exercise strenuously, your body produces excess heat. Describe what your body does to help prevent your temperature from rising excessively, and explain why the body's response is effective.

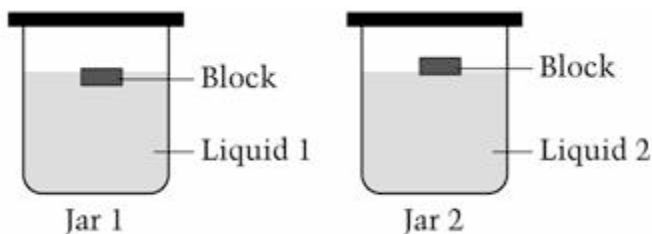
14. A human CANNOT survive the loss of which of the following?

- A) The appendix
- B) The liver
- C) A lung
- D) A kidney

15. Which of the following is an example of genetic engineering?

- A) Growing a whole plant from a single cell.
- B) Finding the sequences of bases in plant DNA.
- C) Inserting a gene into plants that makes them resistant to insects.
- D) Attaching the root of one type of plant to the stem of another type of plant.

16. Look at the two pictures below. They show what happened when two solid blocks were each put in a jar containing a liquid. Based just on what you can see in the pictures, what can you say about the blocks and the jars?



- A) The liquid in the jars must be water.
- B) The block in jar 1 weighs more than the block in jar 2.
- C) The block in jar 1 is floating lower in its liquid than is the block in jar 2.
- D) The block in jar 1 must be made of metal and the block in jar 2 must be made of wood.

17. In your body, what two organs work together to make sure that oxygen gets to all the other organs of your body?

- A) Lungs and kidneys
- B) Heart and lungs
- C) Brain and kidneys
- D) Heart and liver

18. Is a hamburger an example of stored energy? Explain why or why not.

19. If you breathe on a mirror, part of the mirror clouds up. What are you actually seeing when you see the mirror cloud up?

- A) Water droplets that formed from cooled water vapor in your breath
- B) Carbon dioxide that you are breathing out from your lungs
- C) Oxygen that you are breathing out from your lungs
- D) Cooled nitrogen in the air around you

20.

Suppose you are riding in a car along the highway at 55 miles per hour when a truck pulls up along the side of your car. This truck seems to stand still for a moment, and then it seems to be moving backward.

Tell how the truck can look as if it is standing still when it is really moving forward.

Tell how the truck can look as if it is moving backward when it is really moving forward.

21. Right before Anna was about to run in a long race, she drank a large glass of orange juice to get energy. Tell how the energy that was in the orange juice actually came from the Sun.

22. There are many different kinds of human-made satellites orbiting the Earth. List three things that these satellites are used for.

23. Which is an example of water condensing?

- A) A puddle disappearing on a hot summer afternoon
- B) Sweat forming on your forehead after you do a lot of exercise
- C) Ice cubes melting when you put them out in the sun
- D) Dew forming on plants during a cold night

24. Lightning and thunder happen at the same time, but you see the lightning before you hear the thunder. Explain why this is so.

Some scientists think that the Earth's climate is getting warmer.

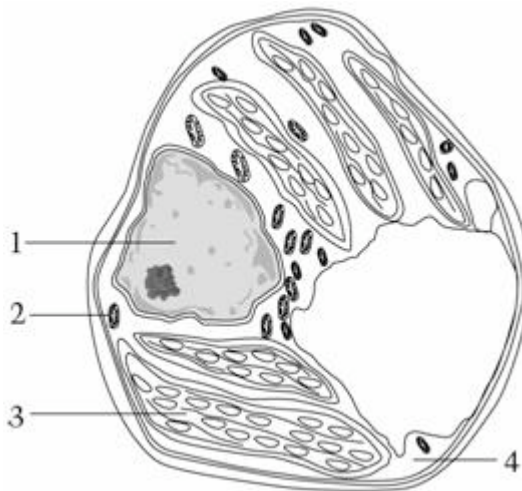
25. If these scientists are correct and the Earth keeps getting warmer for the next 50 years, what will happen to the oceans? Explain why this would happen.

If these scientists are correct, what things about the Earth's weather will change? Explain why this would happen.

If these scientists are correct, what will happen to plants? Explain why this would happen.

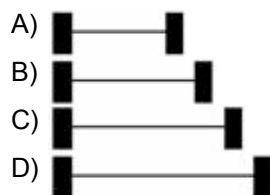
26. The Earth's climate may be getting warmer because of some things that people do. List two human activities that may contribute to warming of the Earth's climate.

27. In the picture of a cell below, which label indicates the part of the cell that contains most of the cell's genetic material?



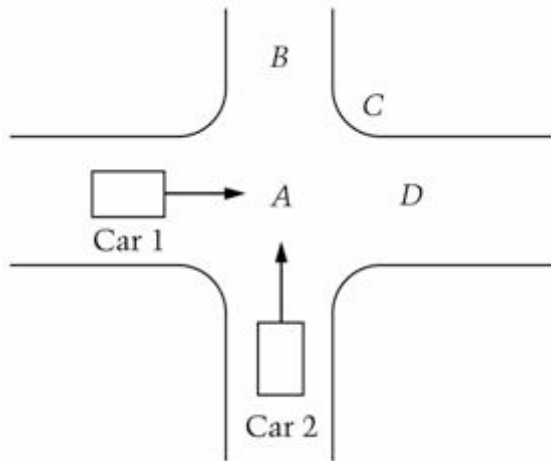
- A) 1
- B) 2
- C) 3
- D) 4

28. A wire is cut into four pieces of different lengths. Each piece is stretched between two supports to the same tightness. Which of the pieces, shown below, would give the highest pitch if it were plucked in the middle?



29. Viet and Andrea were using a microscope to look at a slide of some cells. They looked at some interesting cells that Viet thought were plant cells. Andrea thought they looked more like animal cells. If you looked at these same cells, how could you tell whether they were plant cells or animal cells?

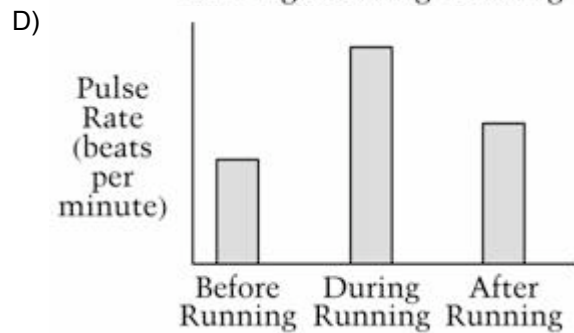
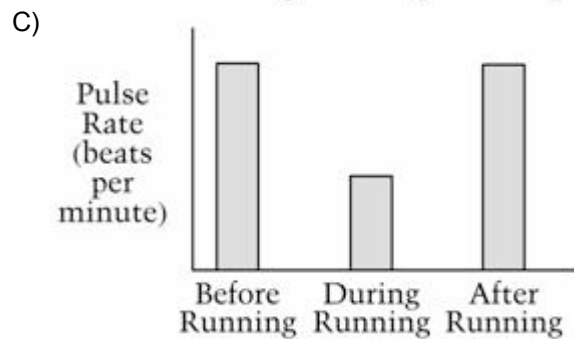
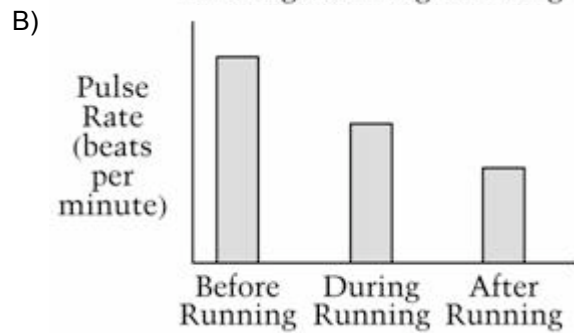
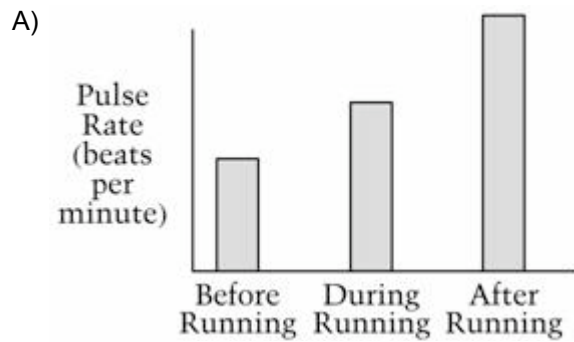
30.



Two identical cars travel at 45 miles per hour toward the center of the intersection (point A, as shown above) with equal force. The cars collide at the intersection. If after they collide the cars stick to each other and move together, they will come to rest closest to

- A) point A
- B) point B
- C) point C
- D) point D

31. Julio wanted to know how his pulse rate changed when he ran very fast. He measured his pulse rate before he started running, while he was running, and two minutes after he stopped running. Which graph best shows how Julio's pulse rate changed?



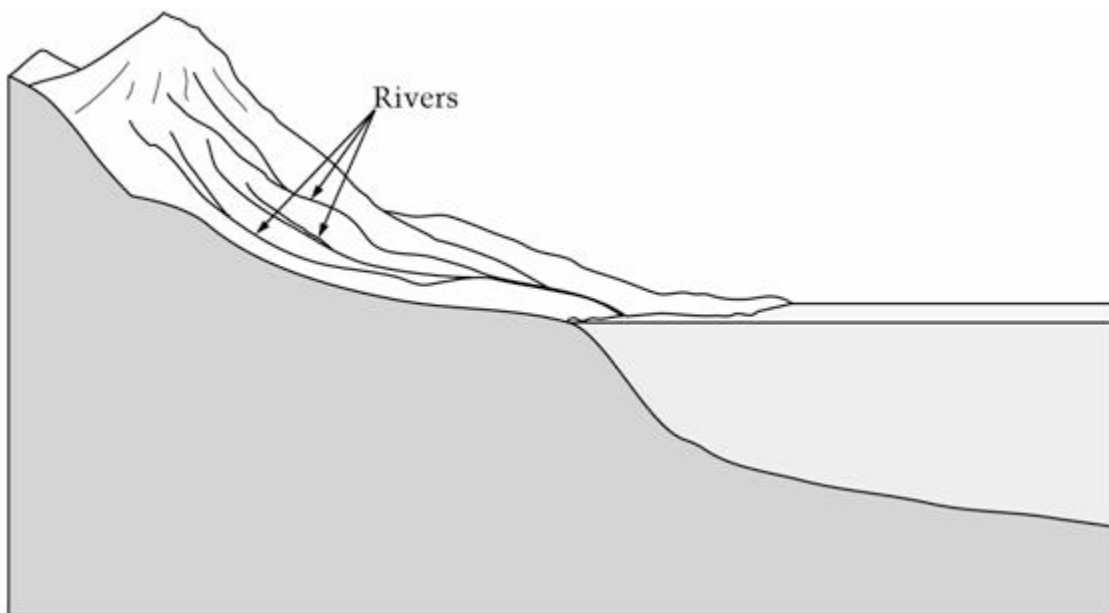
32. How do most fish get the oxygen they need to survive?

- A) They take in water and break it down into hydrogen and oxygen.
- B) Using their gills, they take in oxygen that is dissolved in water.
- C) They get their oxygen from the food they eat.
- D) They come to the surface every few minutes to breathe air into their lungs.

33. Pat has two kinds of plant food, "Quickgrow" and "Supergrow." What would be the best way for Pat to find out which plant food helps a particular type of houseplant grow the most?
- A) Put some Quickgrow on a plant in the living room, put some Supergrow on a plant of the same type in the bedroom, and see which one grows the most.
 - B) Find out how much each kind of plant food costs, because the more expensive kind is probably better for growing plants.
 - C) Put some Quickgrow on a few plants, put the same amount of Supergrow on a few other plants of the same type, put all the plants in the same place, and see which group of plants grows the most.
 - D) Look at the advertisements for Quickgrow, look at the advertisements for Supergrow, and see which one says it helps plants grow the most.

34. Maria has one glass of pure water and one glass of salt water, which look exactly alike. Explain what Maria could do, without tasting the water, to find out which glass contains the salt water.

35. The picture below can be used to show how sandstone can form along the edge of a large lake. Draw and write on the picture to show the two main processes of sandstone formation.



36. On steep slopes along the sides of new roads, highway department workers often grow plants to prevent the soil from being eroded. Describe two ways that these plants keep the soil from eroding.

/U> refer to the way electricity is conducted.

37. Look at each item in the list below. Decide if it conducts electricity or does not conduct electricity. Put an X in the box to show what you decided.

Item	Conducts Electricity	Does Not Conduct Electricity
House Key		
Rubber Band		
Coin		
Wooden Toothpick		
Metal Fork		
Plastic Spoon		
Aluminum Foil		

/U> refer to the way electricity is conducted.

38. Suppose that you have one of the items from the list in Question 7 that you believe conducts electricity, and that you also have a battery, several wires, and a light bulb.

Explain how you could use these things to do a test to find out if the item you chose from the list in Question 7 does conduct electricity. Draw a picture to help explain your answer.

39. All of the following are examples of erosion **EXCEPT**:

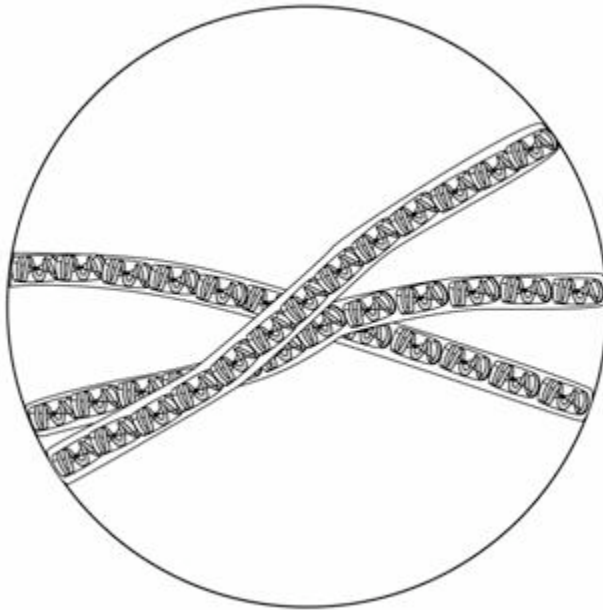
- A) The wind in the desert blows sand against a rock.
- B) A glacier picks up boulders as it moves.
- C) A flood washes over a riverbank, and the water carries small soil particles downstream.
- D) An icy winter causes the pavement in a road to crack.

40. Why does the leaf of a plant look green?

- A) Because it absorbs green light
- B) Because it reflects green light
- C) Because it absorbs only yellow and blue light
- D) Because it reflects a mixture of yellow and blue light

/U>

Sarah looked at some pond water with a microscope. She used the low-power objective lens to look at some green algae. The picture below shows what Sarah saw through the microscope.

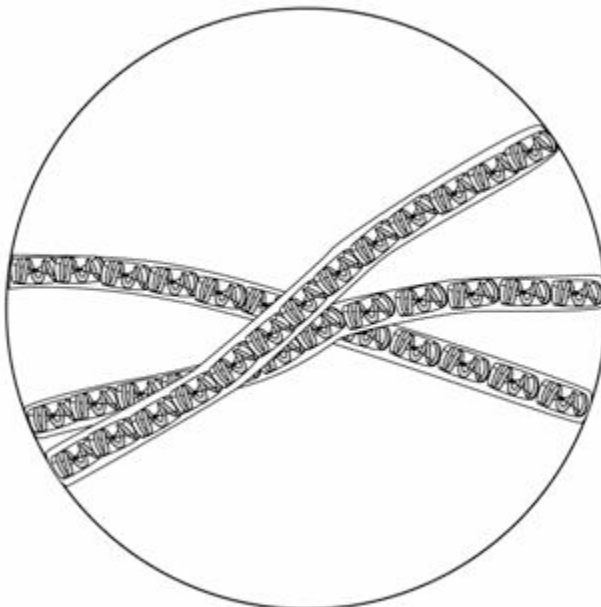


41. What is the role of the pond organisms that Sarah saw in her field of view?

- A) Producer
- B) Primary consumer
- C) Secondary consumer
- D) Decomposer

/U>

Sarah looked at some pond water with a microscope. She used the low-power objective lens to look at some green algae. The picture below shows what Sarah saw through the microscope.



42. If Sarah switched the lens from low power to high power, what would she see in the field of view?

- A) A lot more cells than with the low-power view, but in lesser detail.
- B) The same number of cells as with the low-power view, but in lesser detail.
- C) The same number of cells as with the low-power view, but in greater detail.
- D) Fewer cells than with the low-power view, but in greater detail.

43. Seedlings of the same species of plant can grow at different rates. For example, some seedlings grow tall very fast, but other seedlings grow tall much more slowly. Explain why it might be advantageous for a plant seedling to grow tall very fast.

44. Sometimes the Moon looks like a full circle, sometimes it looks like a half circle, and sometimes it looks like a crescent. Explain why the Moon appears to be different shapes at different times. You may use labeled drawings in your explanation.

45. For each of the sources of electrical energy listed below, describe an advantage and a disadvantage of relying on that energy source for a large part of our country's electrical energy.

Solar
Advantage:

Disadvantage:

Nuclear

Advantage:

Disadvantage:

Hydroelectric

Advantage:

Disadvantage:

Fossil Fuels (coal and oil)

Advantage:

Disadvantage:
