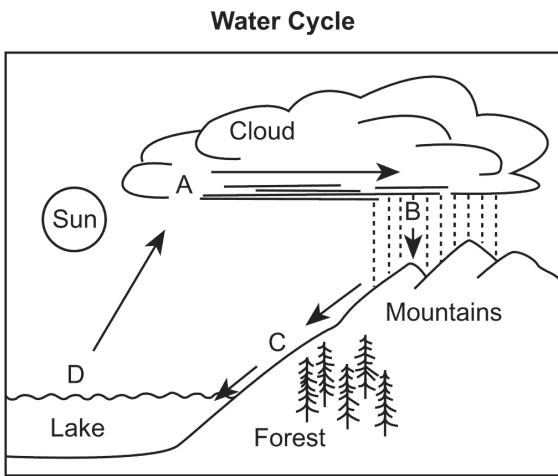


- Which cycle is correct?
  - (A) morning → sunrise → afternoon → sunset
  - (B) summer → fall → winter → spring
  - (C) seed → mature plant → fruit → seedling
  - (D) baby → teenager → child → adult

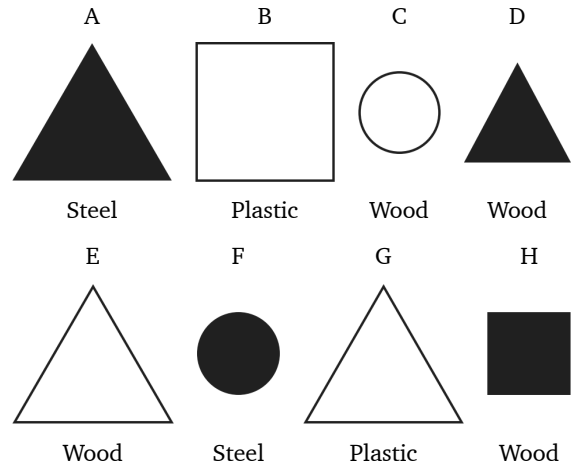
- Base your answers to the questions on the water cycle shown below. Four parts of the water cycle are labeled A, B, C, and D.



Which process is occurring at D?

- (A) condensation      (B) evaporation
  - (C) precipitation      (D) runoff
- Water flowing on Earth's surface at C is called
    - (A) condensation      (B) evaporation
    - (C) precipitation      (D) runoff
  - A student has a ball of clay that sinks when placed in a pan of water. Which property should he change to make the clay float?
    - (A) color                      (B) texture
    - (C) mass                      (D) shape

- Base your answers to the questions on the diagram below and on your knowledge of science. The diagram shows eight blocks. Each is labeled with a letter, A through H. The blocks have different shapes and colors. The material the block is made of is given below each block.



Identify the property used to sort all of the blocks into the two groups shown below.

<b>Group 1</b>
A D F H

<b>Group 2</b>
B C E G

- The blocks can be sorted based on the property of shape. The two boxes below are labeled *Triangles* and *Not Triangles*. Sort the blocks by writing the letter of each block in the box where it belongs.

<b>Triangle</b>

<b>Not Triangles</b>

7. Complete the chart below by identifying the state of matter described by each set of properties. The first set of properties and state of matter are shown.

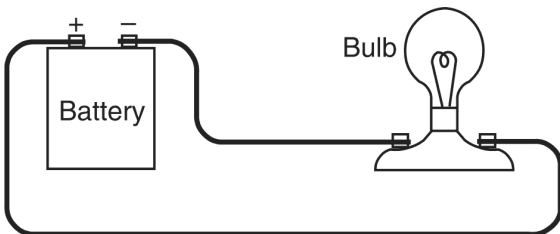
### Properties of Different States of Matter

Properties	State of Matter
definite shape definite volume	solid
no definite shape no definite volume	
no definite shape definite volume	

8. Which kind of energy is produced when a student beats a drum?

- (A) electrical                      (B) sound  
(C) light                              (D) chemical

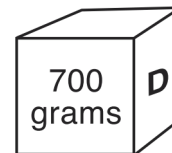
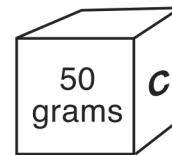
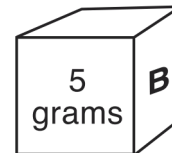
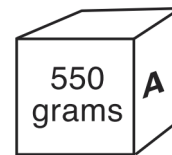
9. The diagram below shows an electric circuit.



Chemical energy from the battery is changed into electrical energy. This electrical energy is then changed to which type of energy?

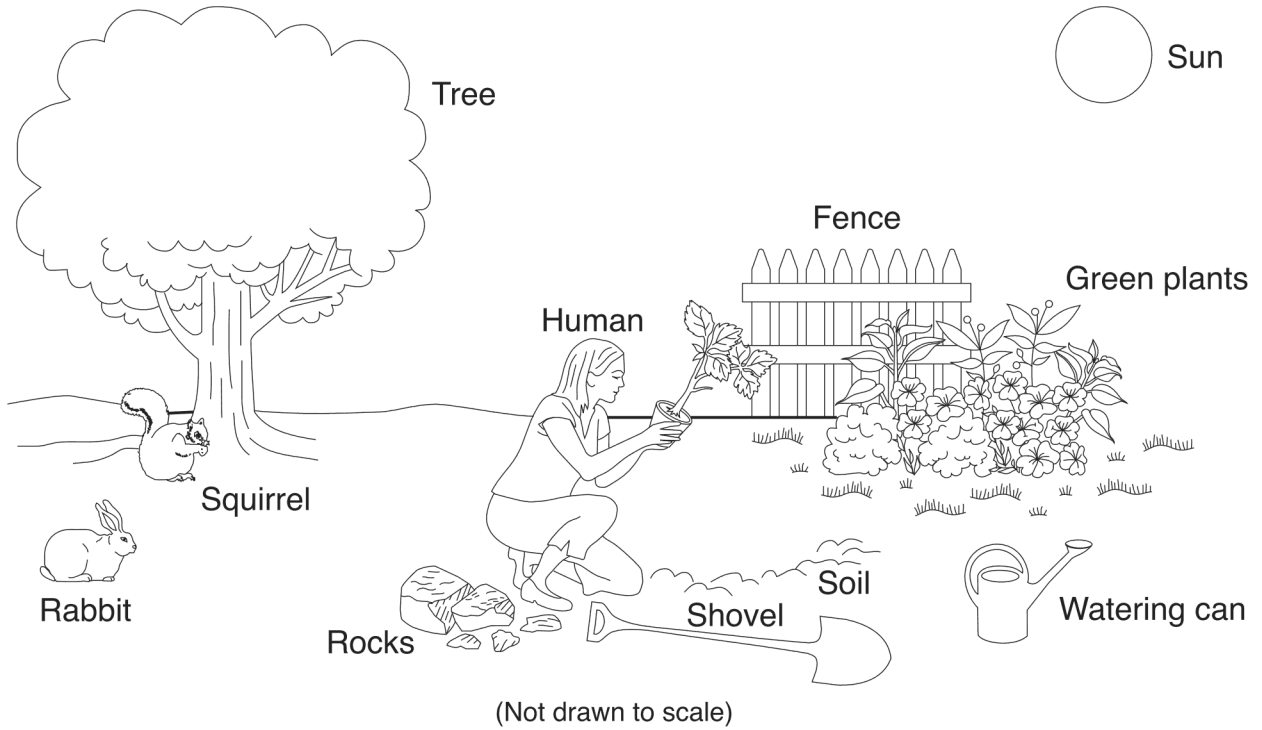
10. Two empty metal cans, one black and one white, were placed outside on a hot day. Both cans were the same size and were left in the Sun for 3 hours. Compared to the white can, the black can would most likely be
- (A) cooler, because it absorbs less sunlight  
(B) cooler, because it absorbs more sunlight  
(C) warmer, because it absorbs less sunlight  
(D) warmer, because it absorbs more sunlight

11. The diagram shows five boxes labeled A, B, C, D, and E. The mass of each box is shown.



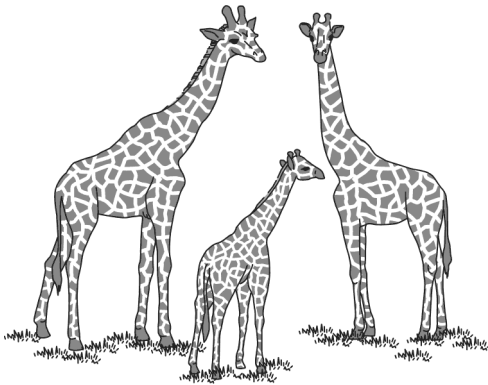
Write the letters of the *two* boxes that are next to the box with the *greatest* mass.

12. Base your answers on to the questions the diagram below and on your knowledge of science. The diagram shows some living and nonliving things in a garden.



List *two nonliving* things labeled in the diagram that were made by humans.

13. The diagram below shows a baby giraffe with its parents.



The long neck on the baby giraffe is

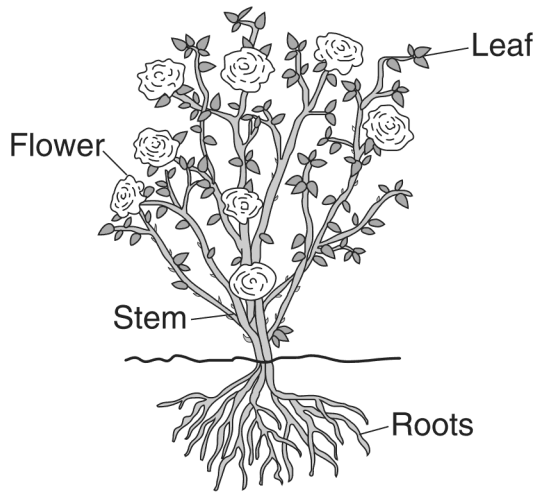
- (A) a learned trait
- (B) an inherited trait
- (C) a seasonal adaptation
- (D) an environmental condition

14. The diagram below shows a potato plant in a cup. The cup was originally filled to the top with water. Which statement best explains why the cup no longer contains water?



- (A) The water froze.
- (B) The water condensed.
- (C) The water was taken in by the roots.
- (D) The water was moved by gravity.

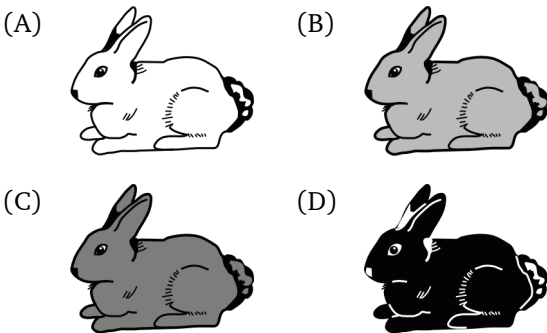
15. Base your answers to the questions on the diagram of a flowering plant below and on your knowledge of science. Four structures that help the plant to survive, grow, and reproduce are labeled.



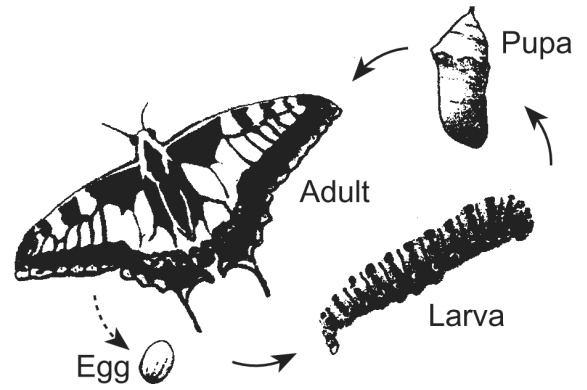
(Not drawn to scale)

Which structure takes in water and nutrients from the soil?

- (A) flower                      (B) leaf  
 (C) roots                        (D) stem
16. Which structure produces seeds for reproduction?
- (A) flower                      (B) leaf  
 (C) roots                        (D) stem
17. The diagrams below show four rabbits. Which rabbit would have the best chance of survival in a snowy environment?

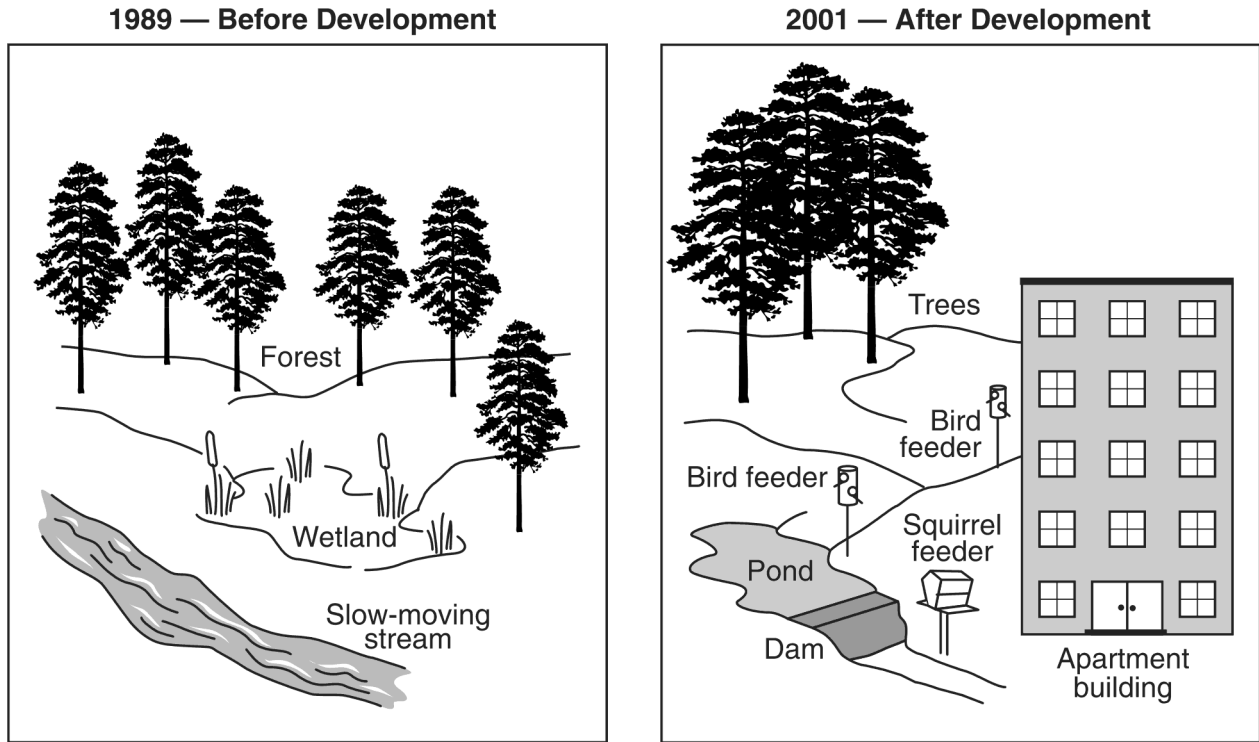


18. What is shown in the diagram below?



- (A) a life span                (B) a population  
 (C) a life cycle                (D) a community
19. Which sequence shows the order of stages in a plant's life cycle?
- (A) young plant → seed → adult plant  
 (B) seed → adult plant → young plant  
 (C) adult plant → young plant → seed  
 (D) seed → young plant → adult plant
20. Describe one change that will happen to an oak tree in New York State as the season changes from fall to winter.
21. Living things depend on energy from
- (A) the Sun                      (B) the Moon  
 (C) soil                            (D) water
22. Which organisms break down and recycle dead plants and animals?
- (A) predators                (B) prey  
 (C) decomposers              (D) producers

23. A company bought land in 1989 to build apartments. The diagram labeled 1989 shows the land before the company built the apartments. The diagram labeled 2001 shows the same land after the company built the apartments.



- a) Describe one *positive* way that the organisms living in the area have been affected by the changes shown in the diagrams.
- b) Describe one *negative* way that the organisms living in the area have been affected by the changes shown in the diagrams.

24. The data table below shows the height of a bean plant over a three-month period. The height of the plant is recorded in centimeters (cm).

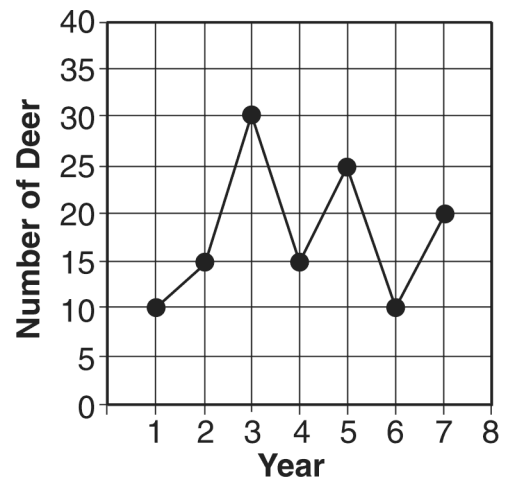
**Height of a Bean Plant**

Month	Height
March	4 cm
April	9 cm
May	14 cm

If the pattern shown continues, the height of the plant in June will be

- (A) 6 cm                      (B) 12 cm  
 (C) 14 cm                     (D) 19 cm

25. Base your answers to the questions the graph below and on your knowledge of science. The graph shows a deer population in an area over a period of seven years.



How many times was there a *decrease* in the deer population from one year to the next over the seven-year period?

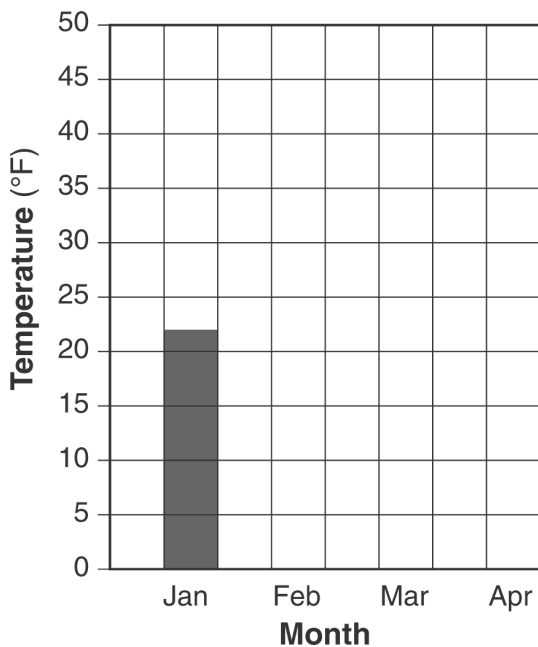
26. The data table below shows the average monthly temperature for Albany, New York, for the first four months of the year.

**Average Monthly Temperature for Albany, New York**

Month	Temperature (°F)
January	22
February	25
March	35
April	47

Use the data in the table to complete the bar graph below. The average temperature for January is shown.

**Average Monthly Temperature for Albany, New York**



27. Base your answers on to the questions the information below and on your knowledge of science.

Two students used paper clips to measure the length of the same side of their science textbook. The first student records that the length is 10 paper clips long. The second student records that the length is 6 paper clips long.

What tool could the students have used to accurately measure the length of the textbook in centimeters?

28. Protein in foods helps the body to grow. The chart below shows the amount of protein per serving in four foods.

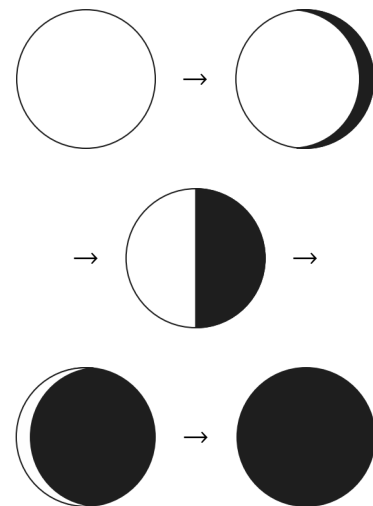
**Amount of Protein in Four Foods**

Food	Grams of Protein per Serving (g)
chicken	25
milk	10
veggie burger	14
hard-boiled egg	6

How much protein is in a meal of one glass of milk and one veggie burger?

- (A) 20 g (B) 24 g (C) 31 g (D) 35 g

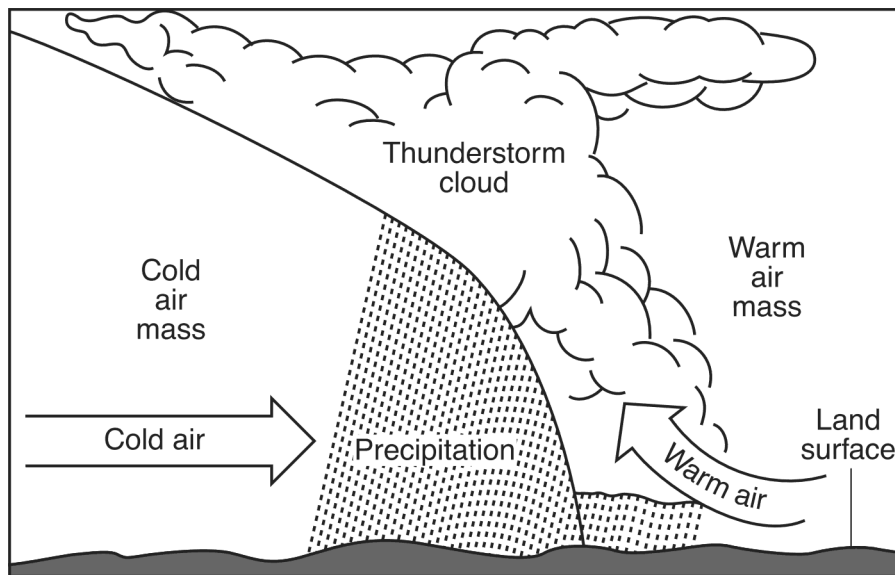
29. A student drew the pictures below to show how the Moon looked from Earth over a two-week period.



The differences shown in the student's drawings are mostly due to the changing

- (A) distance between Earth and the Moon  
 (B) speed of the Moon in its orbit  
 (C) position of the Moon in its orbit  
 (D) position of the observer on Earth

30. Base your answers to the questions on the diagram of a cold front below and on your knowledge of science. The diagram is a cross section that represents the air-mass movement and weather conditions associated with a cold front.



A person who is walking outdoors hears thunder and sees lightning from the approaching storm. Describe *one* action the person should take to stay safe.

31. Base your answers to the questions on the information below.

Models are often used to explain natural phenomena. Develop a model to show the relationship between heat energy and the motion and position of particles in a sample of matter. Use a group of 20 students in an empty room to represent the particles in a sample of matter.

How should the students be placed in the room to represent the arrangement of particles in a solid?

32. A student is trying to dissolve 20 grams of sugar in a beaker containing 250 milliliters of water at room temperature. What can the student do to make the sugar dissolve faster in the water?

- (A) decrease the temperature of the water
- (B) use larger pieces of sugar
- (C) stir rapidly
- (D) use less water

33. The diagram below shows a pencil in a glass of water.



When viewed from the side, the pencil appears to be broken. What process causes this to happen?

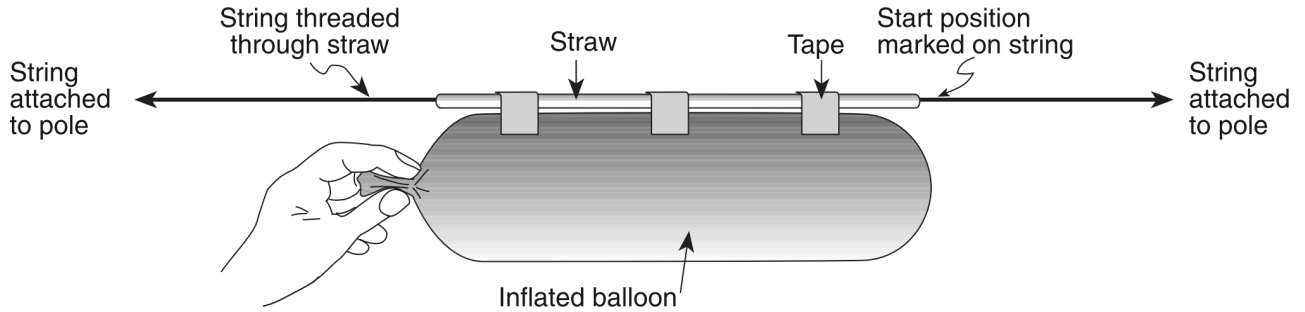
- (A) absorption
- (B) evaporation
- (C) reflection
- (D) refraction

34. Which energy resource is considered *non-renewable*?

- (A) solar energy
- (B) fossil fuels
- (C) geothermal energy
- (D) hydroelectric power

35. Base your answers to the questions on the diagram and information below.

A student made a rocket balloon using an inflated balloon, a straw, a long piece of string, two poles, and some tape. It looked similar to the diagram below.

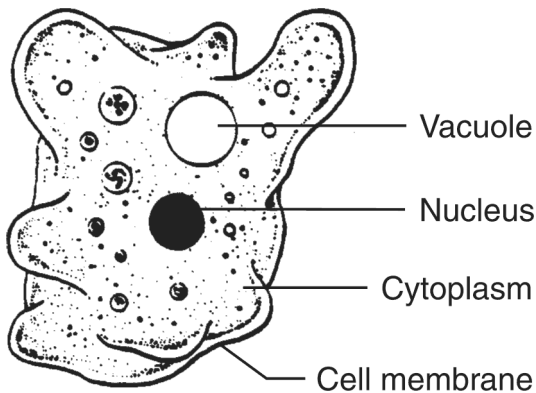


Why is marking the starting position important if the student wants to calculate the average speed of the balloon?

36. When a person breathes, the lungs absorb oxygen, which is used by cells to carry out the process of

- (A) respiration
- (B) secretion
- (C) photosynthesis
- (D) excretion

37. The diagram below shows a microscopic view of a one-celled organism. Four cell structures are labeled.



Which statement about the labeled structures is correct?

- (A) They normally can be seen without magnification.
- (B) They can survive outside the cell.
- (C) They help carry on life activities within the cell.
- (D) They cause disease within the cell.

38. Base your answers to the questions on the diagram below and on your knowledge of science. The diagram shows a model of human inheritance.

	A	A
a	Aa	Aa
a	Aa	Aa

**Key**

A = straight hairline (dominant)  
a = peaked hairline (recessive)

What is the genetic makeup of the parents?

- (A) AA and aa
- (B) Aa and Aa
- (C) AA and AA
- (D) aa and aa

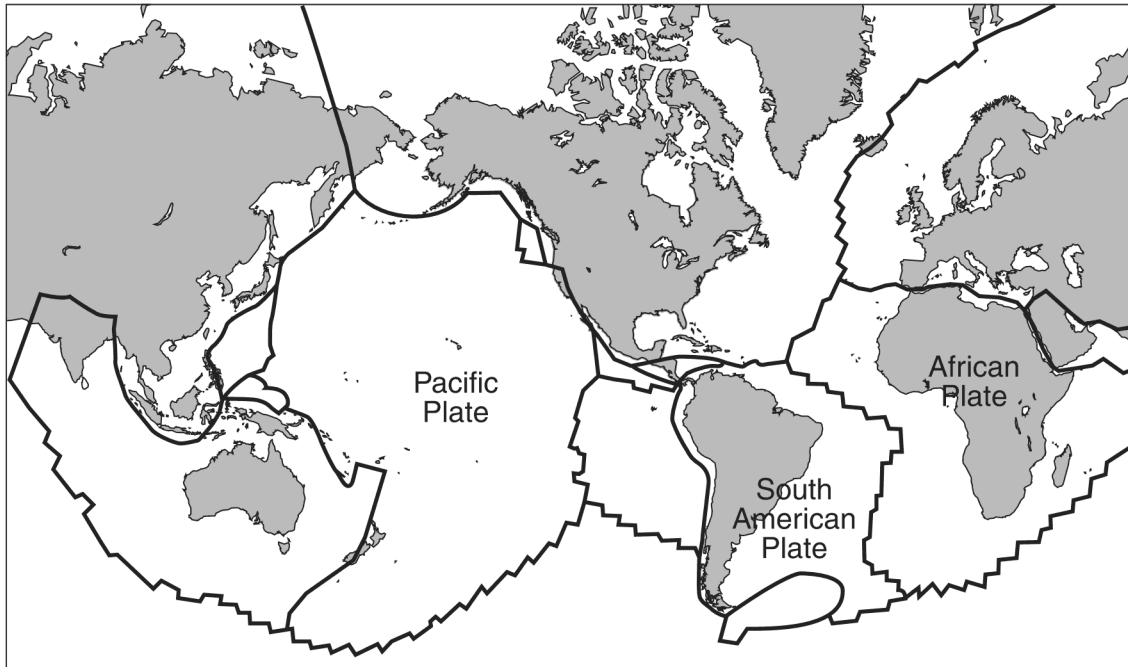
39. Why will Aa individuals have a straight hairline rather than a peaked hairline?

- (A) The peaked hairline occurs only in females.
- (B) The peaked hairline is a mutation.
- (C) The straight hairline is recessive.
- (D) The straight hairline is dominant.



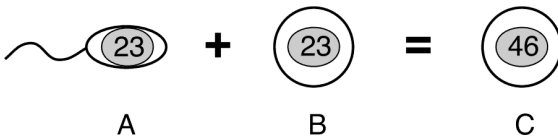
40. Base your answers to the following questions on the map below and on your knowledge of science. The map shows the seven continents and several lithospheric plates. The dark lines between the plates represent the boundaries that separate them. Three of the plates are labeled.

### Lithospheric Plates



Identify *one* geologic event or feature that frequently occurs when lithospheric plates collide (converge) or move apart from each other (diverge).

41. The diagram below represents an event in human reproduction.

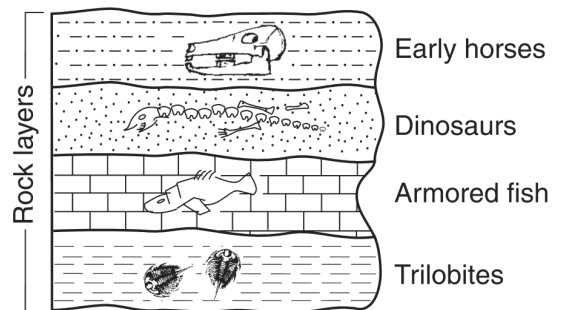


(Not drawn to scale)

The numbers in the drawing represent the number of

- (A) genes                      (B) cells  
(C) chromosomes              (D) DNA

42. The cross section below shows fossils and the rock layers in which they are found. Crustal movement has *not* displaced the rock layers.



(Not drawn to scale)

Which fossil is considered the oldest in the cross section shown?

- (A) armored fish              (B) dinosaurs  
(C) early horses                (D) trilobites

43. The fur on an arctic polar bear appears white all year. The color of the fur is an example of
- (A) an adaptation helping an organism to survive
  - (B) an organism exchanging materials with its environment
  - (C) an organism responding to internal stimuli
  - (D) metabolism regulating an organism's activities

44. Which disease is a result of abnormal cell division?
- (A) AIDS
  - (B) cancer
  - (C) chicken pox
  - (D) common cold

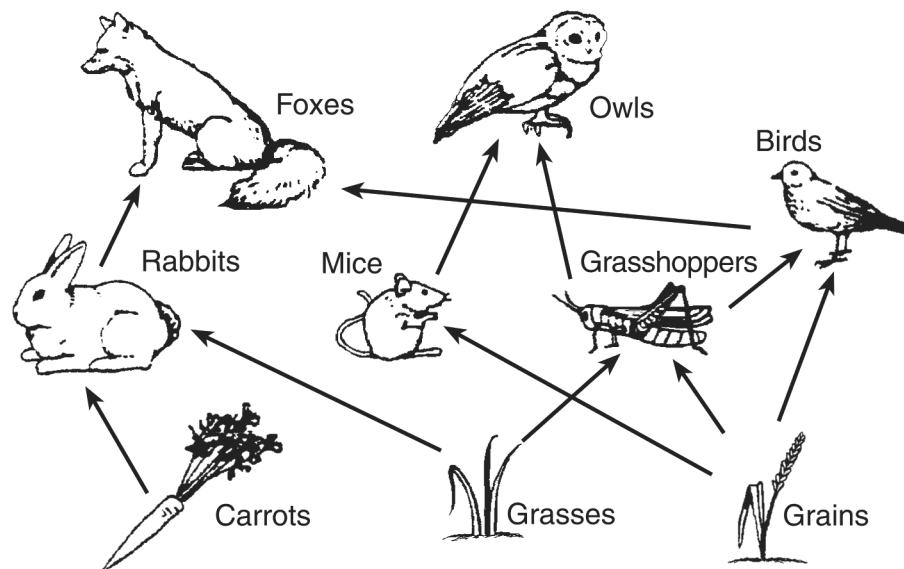
45. Base your answers to the questions on the information and on your knowledge of science.

Maintaining a constant body temperature, no matter what the temperature of its surroundings, is a condition that needs to be balanced in many organisms. This ability is important to the organism's survival. These organisms have many different body structures and behaviors that help maintain a constant body temperature.

Whales have a thick layer of blubber (fat) under their skin. How does this blubber help the whales to maintain a constant body temperature?

46. Humans sweat when they are in the hot sun. How does sweating help humans to maintain a constant body temperature?

47. The diagram below shows a food web for a community.

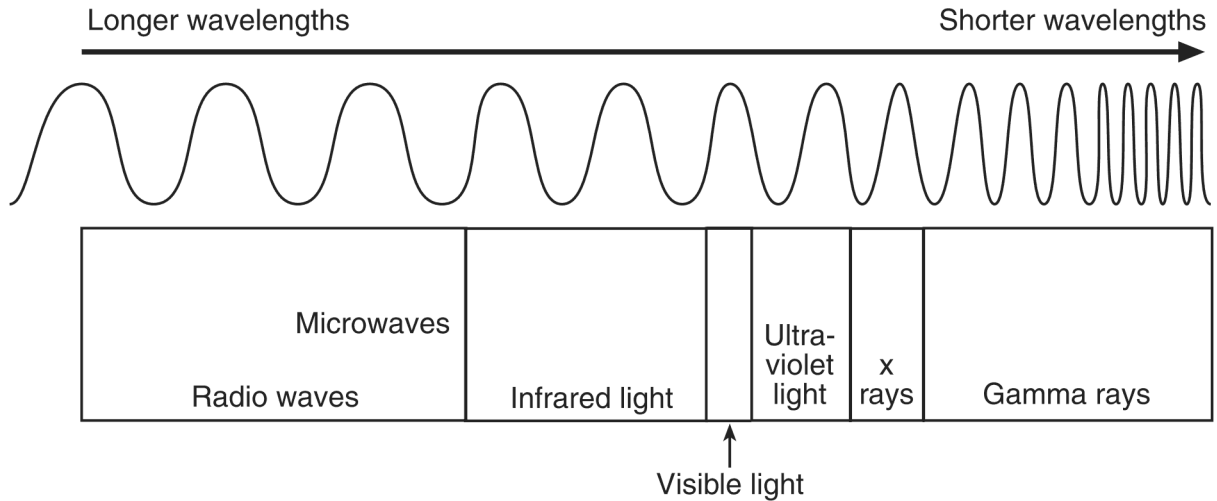


(Not drawn to scale)

Which organisms in the diagram are carnivores?

- (A) rabbits and birds
- (B) carrots and grasses
- (C) grasshoppers and mice
- (D) foxes and owls

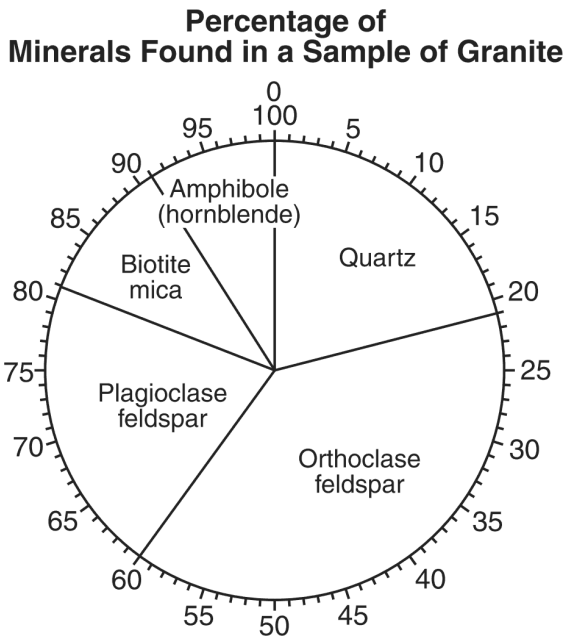
48. The diagram below shows the relative wavelengths for several types of electromagnetic energy.



Which type of electromagnetic energy has a shorter wavelength than ultraviolet waves?

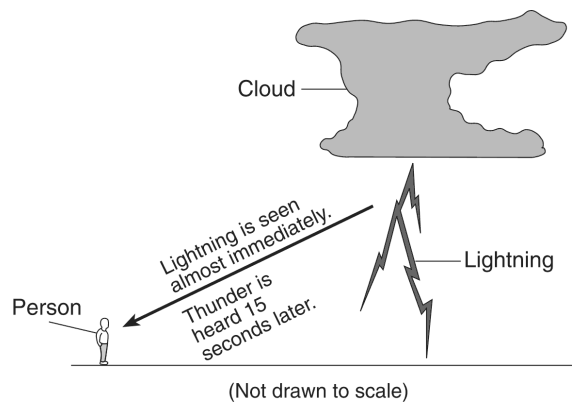
- (A) visible light      (B) microwaves      (C) x rays      (D) infrared light

49. The graph below shows the percentage of five minerals found in a sample of the igneous rock granite.



Determine the percentage of orthoclase feldspar in this sample of granite.

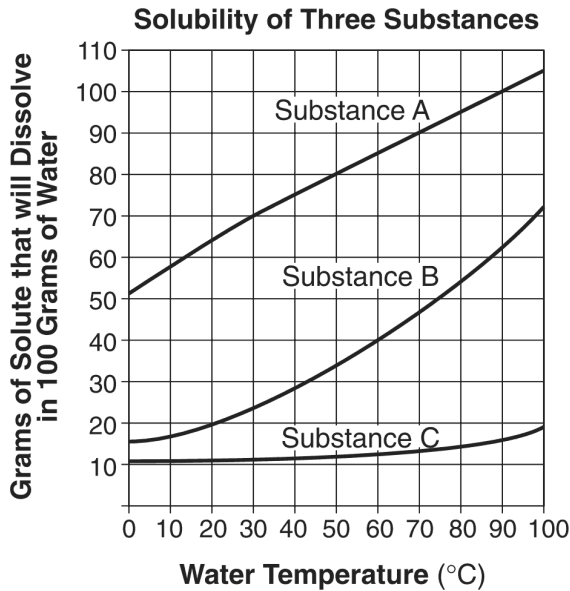
50. Base your answers to the questions on the diagram below and on your knowledge of science. The diagram represents a person who heard thunder 15 seconds after seeing lightning.



If it takes 5 seconds for the sound of thunder to travel 1 mile, how many miles was the person from the lightning bolt?

51. Describe *one* action a person should take to stay safe from the approaching thunderstorm.

52. Base your answers to the questions on the graph below, which shows the solubility (amount that will dissolve in 100 grams of water) of three substances at various water temperatures.



As the water temperature is increased from 30°C to 70°C, how many more grams of substance A will dissolve in 100 grams of water?

- (A) 20 g (B) 40 g (C) 50 g (D) 90 g

53. Base your answers to the questions on the information below and on your knowledge of science.

Genes control the inheritance of traits. Some genes are dominant and some are recessive. Some are neither dominant nor recessive, such as the genes that control flower color in a certain species of plant. In this species, a plant with red flowers inherits two genes for red ( $RR$ ), a plant with white flowers inherits two genes for white ( $WW$ ), and a plant with pink flowers inherits one gene for red and one gene for white ( $RW$ ).

The Punnet square below shows the results of a cross between a plant with red flowers and a plant with white flowers.

	$R$	$R$
$W$	$RW$	$RW$
$W$	$RW$	$RW$

Key	
$RR$	= red
$WW$	= white
$RW$	= pink

Based on the results, record the percentages of each color offspring from this cross in the table below.

Percentage of red plants	%
Percentage of white plants	%
Percentage of pink plants	%

54. Base your answers to the questions on the data table below and on your knowledge of science. The data table lists the amount of energy input, amount of heat produced by friction, and amount of energy output for each of four machines, A, B, C, and D. Both energy and heat are measured in units called joules. The heat produced by friction for machine D has been left blank.

**Data Table**

Machine	Energy Input (joules)	Heat Produced By Friction (joules)	Energy Output (joules)
A	100	30	70
B	100	10	90
C	100	25	75
D	100		60

How much heat was produced by friction in machine D?