

THE UNIVERSITY OF THE STATE OF NEW YORK

# GRADE 8

## INTERMEDIATE-LEVEL SCIENCE TEST

### WRITTEN TEST

JUNE 5, 2017

Student Name \_\_\_\_\_

School Name \_\_\_\_\_

**The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.**

Print your name and the name of your school on the lines above.

The questions on this test measure your knowledge and understanding of science. The test has two parts. Both parts are contained in this test booklet.

**Part I** consists of 45 multiple-choice questions. Record your answers to these questions on the separate answer sheet. Use only a No. 2 pencil on your answer sheet.

**Part II** consists of 40 open-ended questions. Write your answers to these questions in the spaces provided in this test booklet.

You may use a calculator to answer the questions on the test if needed.

You will have two hours to answer the questions on this test.

**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.**

## Part I

### DIRECTIONS

There are 45 questions on Part I of the test. Each question is followed by four choices, numbered 1 through 4. Read each question carefully. Decide which choice is the best answer. On the separate answer sheet, mark your answer in the row of circles for each question by filling in the circle that has the same number as the answer you have chosen.

Read the sample question below.

<p style="text-align: center;"><b>Sample Question</b></p> <p>Earth gets most of its light from</p> <ul style="list-style-type: none"><li>(1) the stars</li><li>(2) the Sun</li><li>(3) the Moon</li><li>(4) other planets</li></ul>
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The correct answer is **the Sun**, which is choice number **2**. On your answer sheet, look at the box showing the row of answer circles for the sample question. Since choice number **2** is the correct answer for the sample question, the circle with the number **2** has been filled in.

Answer all of the questions in Part I in the same way. Mark only one answer for each question. If you want to change an answer, be sure to erase your first mark completely. Then mark the answer you want.

You will not need scrap paper. You may use the pages of this test booklet to work out your answers to the questions.

You may use a calculator if needed.

When you are told to start working, turn the page and begin with question 1. Work carefully and answer all of the questions in Part I.

When you have finished Part I, go right on to Part II. Answer all of the questions in Part II.

## Part I

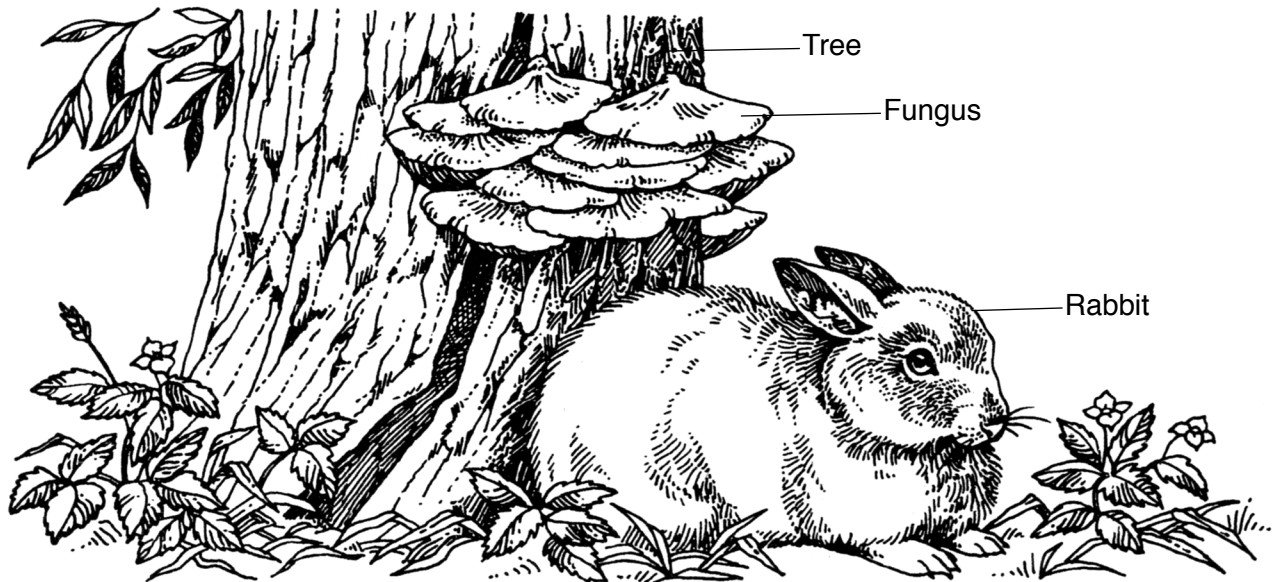
1 Which cell structure is found in plant cells, but *not* in animal cells?

- (1) cell wall
- (2) cell membrane
- (3) nucleus
- (4) cytoplasm

2 Amebas are single-celled organisms that need to obtain food in order to

- (1) release oxygen into the air
- (2) protect themselves from other living things
- (3) get the energy they need to carry out life functions
- (4) remove harmful chemicals from the environment

3 Three living organisms are labeled in the diagram below.



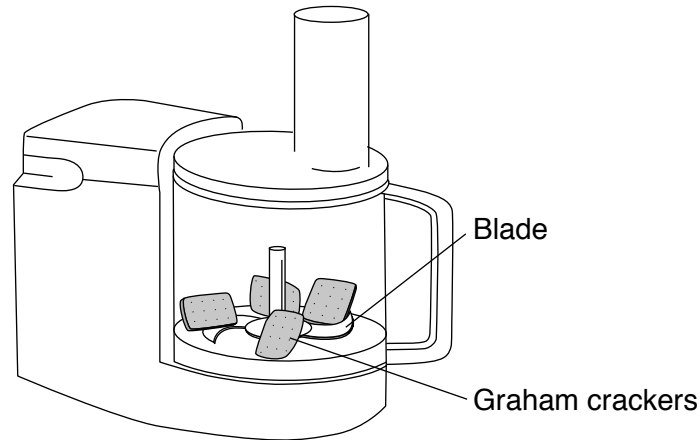
What do the rabbit, fungus, and tree have in common?

- (1) They are all producers.
- (2) They are all omnivores.
- (3) They all belong to the same kingdom.
- (4) They are all multicellular organisms.

4 Which term identifies a group of cells of the same type working together to perform a common function?

- (1) microbe
- (2) gene
- (3) tissue
- (4) hormone

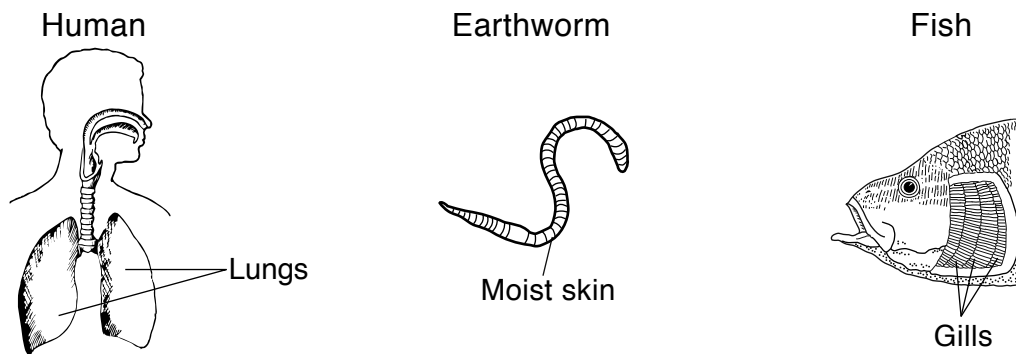
- 5 The diagram below represents graham crackers in a food processor. When the processor is turned on, the blades will break the crackers into smaller pieces.



(Not drawn to scale)

Which human digestive process is most similar to this activity?

- (1) mechanical digestion
  - (2) chemical digestion
  - (3) solid waste elimination
  - (4) liquid waste elimination
- 6 The diagrams below represent some respiratory structures in three organisms. The labeled structures in these organisms all have a similar function.



(Not drawn to scale)

What is the main function of the labeled structure(s) in each organism?

- (1) circulation of blood
  - (2) digestion of food
  - (3) production of hormones
  - (4) exchange of gases
- 7 One function of the human excretory system is
- (1) making materials that the body cells need
  - (2) removing excess heat energy from the body
  - (3) moving substances to and from body cells
  - (4) controlling the body's responses to stimuli

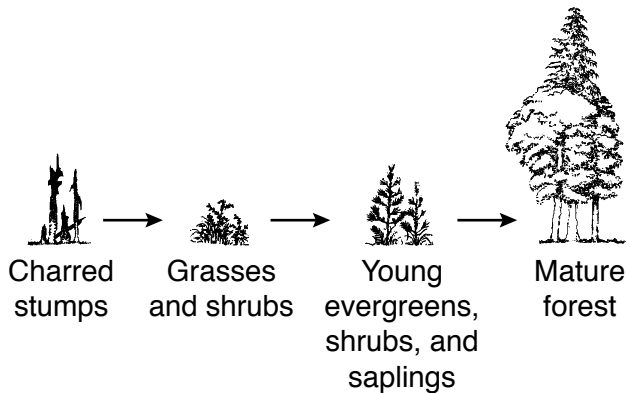
8 Which term is used to describe the sum of all the chemical processes in the human body?

- (1) equilibrium
- (2) inheritance
- (3) metamorphosis
- (4) metabolism

9 Why is an organism that reproduces *asexually* genetically identical to its parent?

- (1) All of the offspring's genes came from the parent.
- (2) All of the offspring's genes mutated to look like the parent's genes.
- (3) The offspring inherited only half of the parent's genes.
- (4) The offspring inherited only the parent's dominant genes.

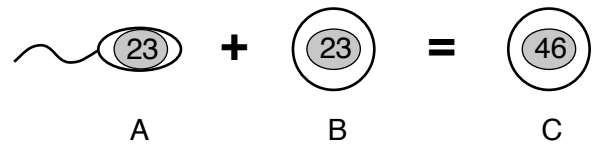
10 The sequence of diagrams below represents the plants present in the same area at different times over a 200-year period following a forest fire.



Which process is best represented by this sequence of diagrams?

- (1) selective breeding
- (2) ecological succession
- (3) habitat destruction
- (4) feeding relationships

11 The diagram below represents an event in human reproduction.



(Not drawn to scale)

The numbers in the drawing represent the number of

- (1) genes
- (2) cells
- (3) chromosomes
- (4) DNA

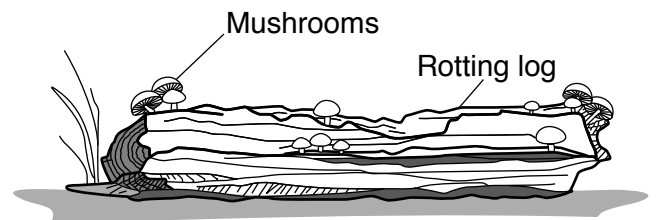
12 Abnormal cell division causes which health problem?

- (1) infection
- (2) cancer
- (3) aging
- (4) weight gain

13 Organisms are classified as producers or consumers according to the way they

- (1) obtain energy
- (2) release wastes
- (3) produce offspring
- (4) move from place to place

14 The diagram below shows mushrooms, a type of decomposer, growing on a rotting log.



Which statement best describes the relationship between the mushrooms and the log?

- (1) The log uses the mushrooms as a source of oxygen.
- (2) The log uses the mushrooms as a food source.
- (3) The mushrooms use the log as a source of oxygen.
- (4) The mushrooms use the log as a food source.

Base your answers to questions 15 and 16 on the diagram and information below and on your knowledge of science.

The diagram shows two variations of the same species of peppered moth resting on a tree. Originally, most peppered moths were light-colored and blended in with the light-colored bark of the trees in their environment. Due to pollution during the Industrial Revolution, the trees became blackened by soot. As a result, the population of light-colored moths decreased, due to predators. At the same time, the population of dark-colored moths increased, because they were less visible to predators.



(Not drawn to scale)

15 Which process is responsible for this type of adaptation over time?

- (1) natural selection
- (2) genetic engineering
- (3) metamorphosis
- (4) dynamic equilibrium

16 Which adaptation protected the dark-colored moths from predators?

- (1) breeding
- (2) camouflage
- (3) migration
- (4) hibernation

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17 What causes infectious diseases in the human population?

- (1) allergic reactions
- (2) poor dietary habits
- (3) toxic chemicals
- (4) microorganisms

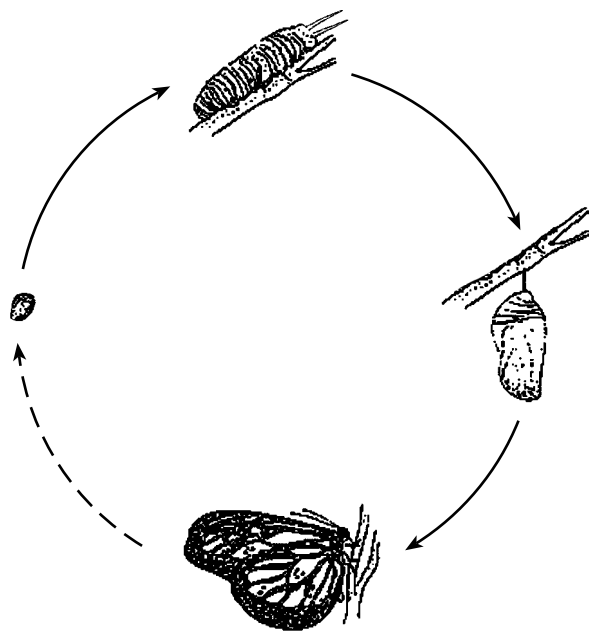
18 A Calorie is a unit used to measure

- (1) energy
- (2) vitamins
- (3) density
- (4) mass

- 19 A community is composed of
- (1) organisms of the same species in an area
  - (2) an organism's food supply in an area
  - (3) all of the different organisms living in an area
  - (4) the living and nonliving components in an area

- 20 The African savanna is a large grassland region with few trees that is hot and seasonally dry. A population of lions and a population of wild dogs living there are most likely to compete with each other for
- |           |              |
|-----------|--------------|
| (1) mates | (3) air      |
| (2) water | (4) sunlight |

- 21 The diagram below represents stages of development in a butterfly.



(Not drawn to scale)

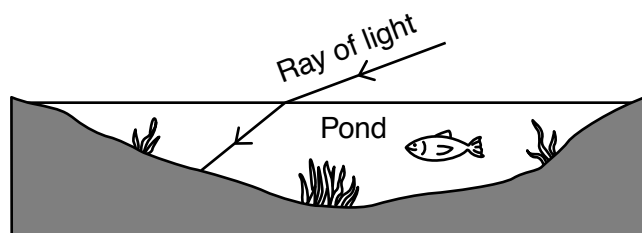
- This diagram represents the process of
- |                        |                   |
|------------------------|-------------------|
| (1) selective breeding | (3) metamorphosis |
| (2) natural selection  | (4) germination   |

- 22 The inference that Earth's interior has an outer core and an inner core is based on studies of
- (1) earthquake wave data
  - (2) glacier core samples
  - (3) recent fossil discoveries
  - (4) celestial observations

- 23 Why does the Sun generally appear to rise in the east, move across the sky, and set in the west each day?
- (1) Earth rotates on its axis.
  - (2) Earth revolves around the Sun.
  - (3) The Sun rotates on its axis.
  - (4) The Sun revolves around Earth.

- 24 Which property of a mineral is tested by scratching it on a glass plate?
- |                   |              |
|-------------------|--------------|
| (1) conductivity  | (3) density  |
| (2) melting point | (4) hardness |

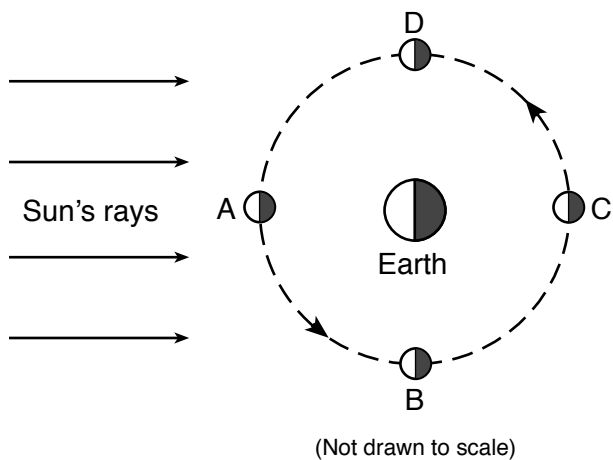
- 25 The diagram below represents the path of a ray of light as it passes from air into the water in a pond.



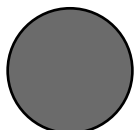
The change in the direction of the ray of light as it enters the water is called

- |                |                  |
|----------------|------------------|
| (1) absorption | (3) refraction   |
| (2) reflection | (4) transmission |

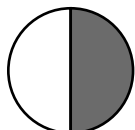
Base your answers to questions 26 and 27 on the diagram below and on your knowledge of science. The letters *A*, *B*, *C*, and *D* represent four positions of the Moon in its orbit around Earth. The nighttime sides of the Moon and Earth are shaded.



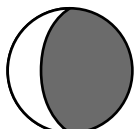
26 Which Moon phase will be seen from Earth when the Moon is at position *C*?



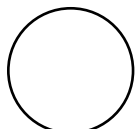
(1)



(3)



(2)



(4)

27 Approximately how many weeks will it take the Moon to move from position *B* to position *D*?

- (1) one
- (2) two

- (3) three
- (4) four

\_\_\_\_\_

28 The gravitational force between two objects is most affected by their

- (1) motion and volume
- (2) motion and distance apart
- (3) mass and volume
- (4) mass and distance apart

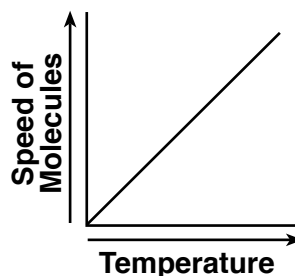
29 Earth's surface has a relatively thin, solid outer shell called the

- (1) atmosphere
- (2) lithosphere
- (3) mantle
- (4) outer core

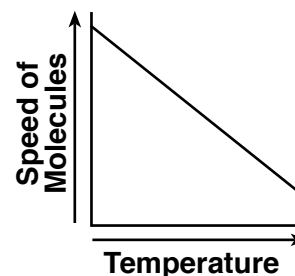
30 Which process results in the formation of water on the outside of a cold glass of iced tea on a warm day?

- (1) boiling
- (2) freezing
- (3) condensation
- (4) evaporation

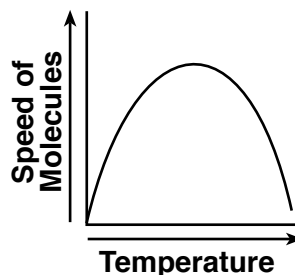
31 Which graph best shows the general relationship between the temperature of a gas and the speed of the molecules in that gas?



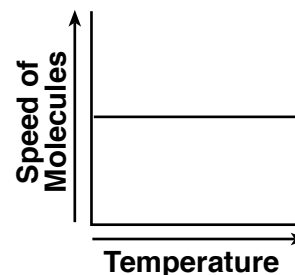
(1)



(3)



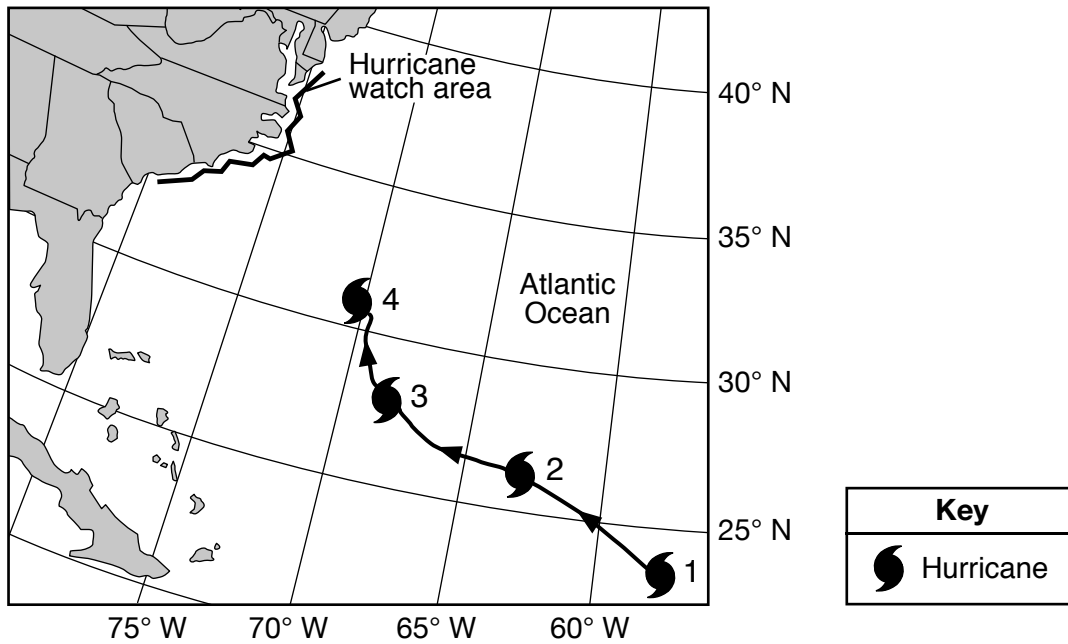
(2)



(4)



Base your answers to questions 32 and 33 on the map below and on your knowledge of science. The map shows the partial storm track of a hurricane and the hurricane watch area where it is predicted to reach land. Numbers 1 through 4 show positions of the hurricane on four different days at 12 noon.



32 Why was a hurricane watch posted for the coastal areas shown?

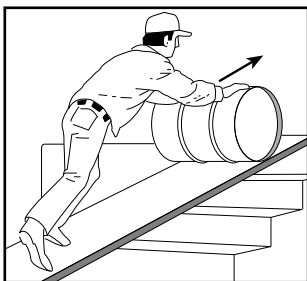
- (1) to tell people where the hurricane started
- (2) to encourage residents to travel to the watch area
- (3) to warn people of life-threatening conditions
- (4) to alert residents of climate changes

33 In which compass direction did the hurricane travel from day 1 to day 4?

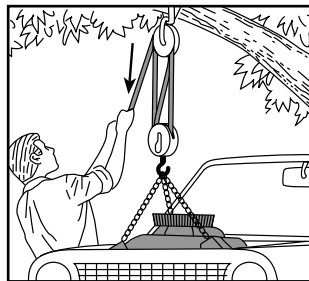
- (1) northwest
- (2) northeast
- (3) southwest
- (4) southeast

34 The diagrams below represent four simple machines. The arrows in each diagram indicate the direction of the force being applied.

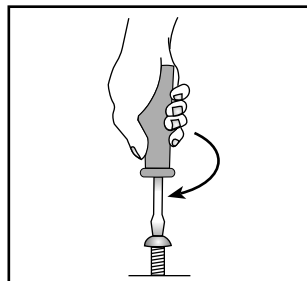
Which machine is changing the direction of the force being applied by the person?



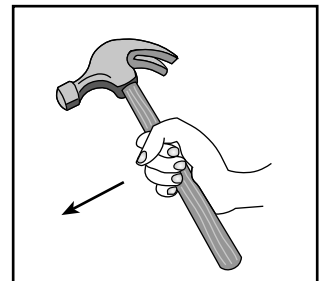
(1)



(2)

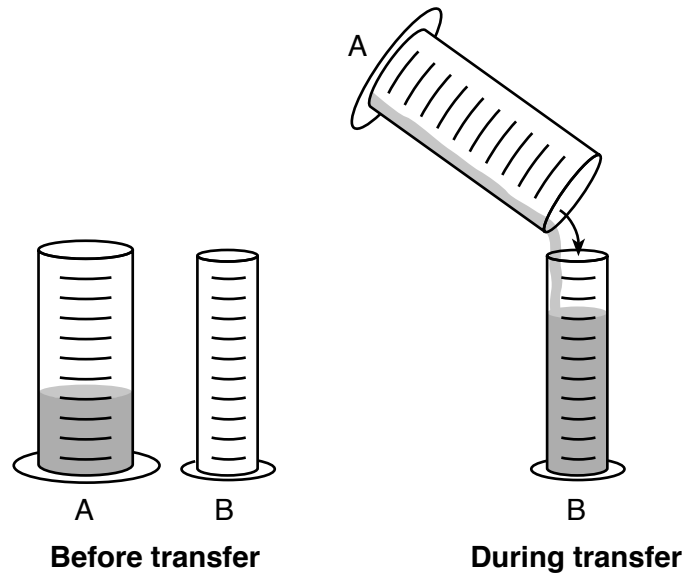


(3)



(4)

35 The diagrams below represent two cylinders. One hundred milliliters of a liquid was completely transferred from cylinder *A* to cylinder *B*.



Compared to the liquid that was in cylinder *A*, the liquid in cylinder *B* will have

- (1) less mass and more volume
- (2) less mass and the same volume
- (3) the same mass and more volume
- (4) the same mass and the same volume

Base your answers to questions 36 and 37 on the four models below that represent the arrangement of atoms in four samples of matter.

Model	Arrangement of Atoms
A	
B	
C	
D	

**Key**

○ = an atom of element X

● = an atom of element Y

36 Which model best represents the arrangement of atoms in a solid?

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

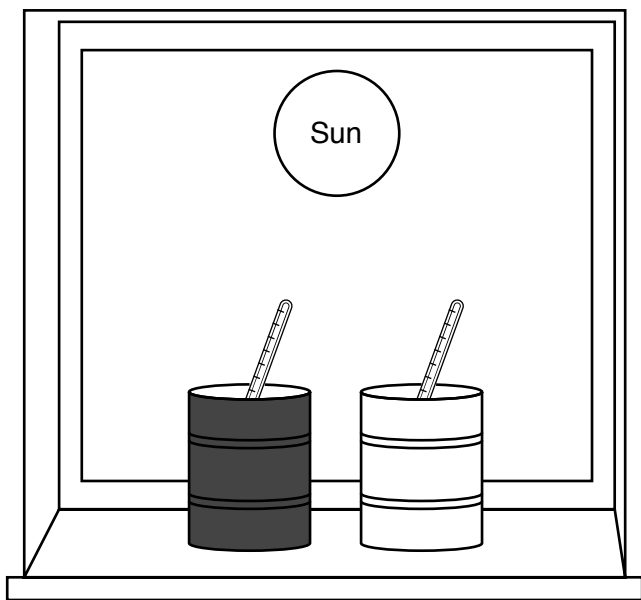
37 Which model best represents the arrangement of atoms in a compound?

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

38 Warm air rising in the atmosphere is an example of heat being transferred by

- (1) absorption
- (2) conduction
- (3) convection
- (4) radiation

39 The diagram below represents two cans of water at the same temperature. One can is painted black and the other can is painted white. The cans are placed on a sunny windowsill, and a thermometer is placed in each can to measure the water temperature.



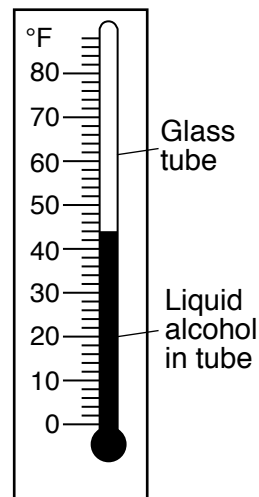
After four hours in the sunlight, the temperatures of the water in the cans will most likely be

- (1) the same as when the cans were placed there
- (2) higher, with the same temperature in both cans
- (3) higher in the white can than in the black can
- (4) higher in the black can than in the white can

40 As a candle burns, the chemical energy stored in the wax is transformed into

- (1) heat and light
- (2) heat and magnetism
- (3) electricity and light
- (4) electricity and magnetism

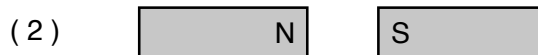
41 The diagram below represents a thermometer.



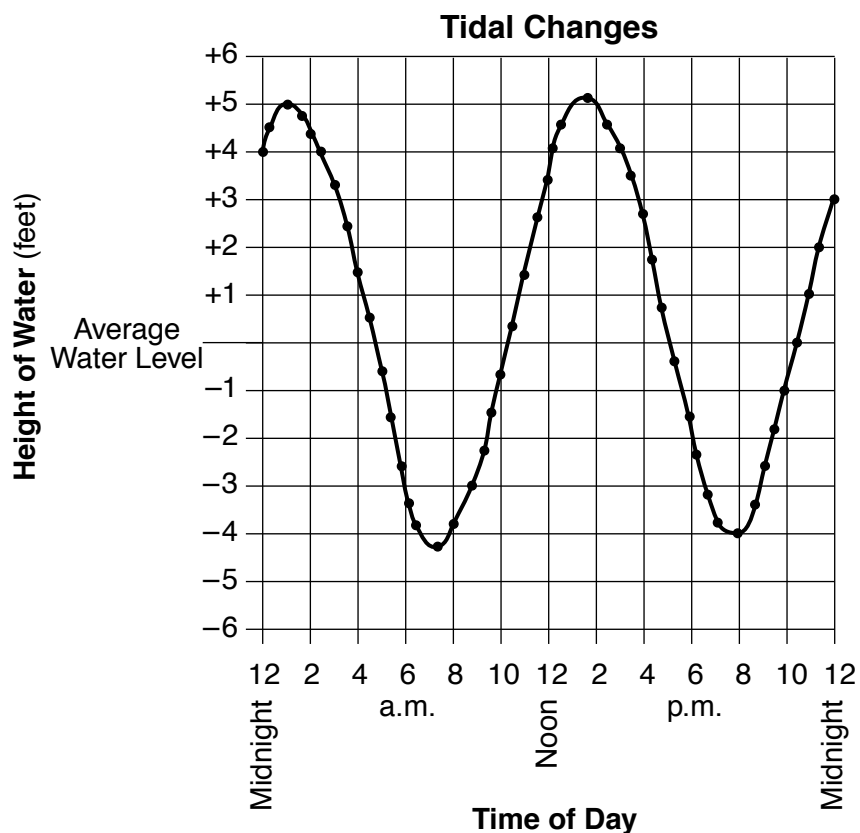
Which principle best explains how this thermometer works?

- (1) A liquid changes to a gas when heated.
- (2) A gas changes to a liquid when heated.
- (3) A liquid expands when heated and contracts when cooled.
- (4) A liquid contracts when heated and expands when cooled.

42 The diagrams below represent the same two magnets placed in four different positions. The North (N) and South (S) poles are labeled. At which position will the force of attraction between these two magnets be greatest?



43 The graph below shows tidal changes at an ocean beach over a 24-hour time period.



What is the approximate time interval between the two high tides?

- (1) 6 hours
- (2) 9 hours
- (3) 13 hours
- (4) 24 hours

44 The label below shows the nutrition facts for a certain food.

<b>Nutrition Facts</b>	
Serving Size 1/2 cup (30g)	
Servings Per Container about 9	
Amount Per Serving	
<b>Calories</b> 130	Calories from Fat 30
% Daily Value*	
<b>Total Fat</b> 3g	5%
Saturated Fat 0.5g	3%
<b>Cholesterol</b> 0mg	0%
<b>Sodium</b> 300mg	13%
<b>Total Carbohydrate</b> 21g	7%
Dietary Fiber 1g	4%
Sugars 1g	
<b>Protein</b> 4g	

How many servings of this food would a person need to eat to get approximately 8% of the recommended daily value of dietary fiber?

- (1) 25
- (2) 2
- (3) 30
- (4) 4

- 45 The data table below shows the yield of vegetables in a school's garden for three years. The yield is the number of pounds of vegetables harvested. The same number of each type of vegetable was planted every year.

**Data Table**

Type of Vegetable	Yield per Year (pounds)		
	2011	2012	2013
acorn squash	139	143	52
beet	93	122	81
butternut squash	147	103	30
onion	143	134	83
spinach	102	137	0

Which statement is an inference?

- (1) The onion yield was greater than the beet yield in 2013.
  - (2) The butternut squash yield increased from 2011 to 2012.
  - (3) The spinach yield was 102 pounds in 2011 and 137 pounds in 2012.
  - (4) The acorn squash yield decreased from 2012 to 2013 due to lower temperatures.
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## Part II

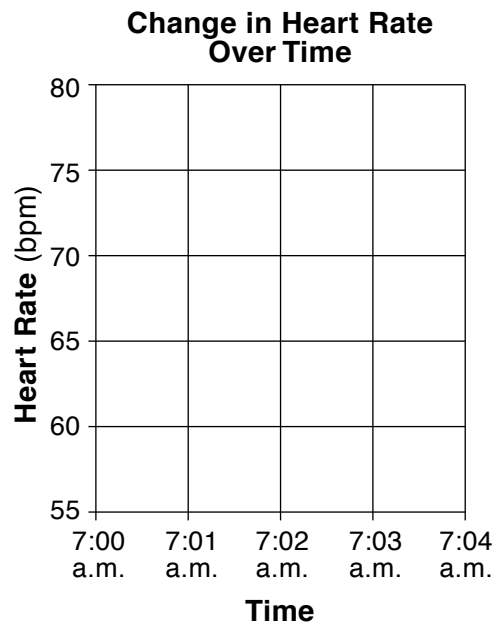
*Directions* (46–85): Record your answers in the spaces provided below each question.

- 46 The data table below shows a person's heart rate measured in beats per minute (bpm) at five different times in the beginning of a day.

**Change in Heart Rate Over Time**

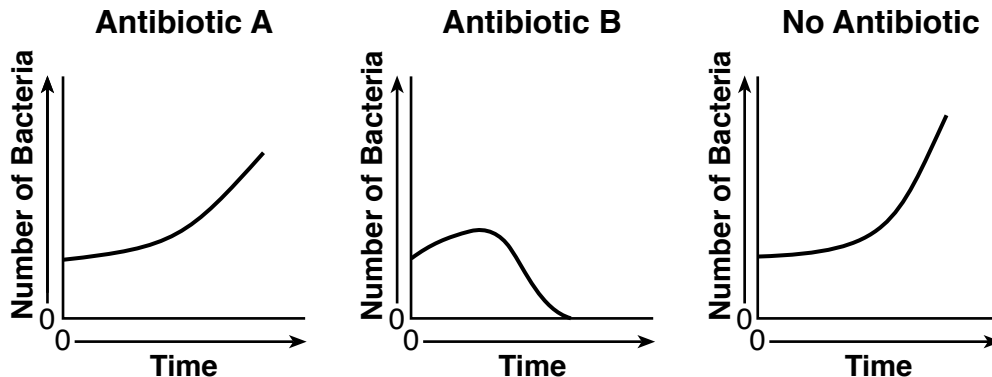
Time	Heart Rate (bpm)	Activity
7:00 a.m.	60	sleeping
7:01 a.m.	62	waking up
7:02 a.m.	65	sitting up in bed
7:03 a.m.	68	getting out of bed
7:04 a.m.	75	walking around bedroom

On the grid below, use an **X** to plot the heart rate for each time shown in the data table. Connect the **Xs** with a line. [1]



Base your answers to questions 47 and 48 on the information and graphs below and on your knowledge of science.

An antibiotic is a drug prescribed to people who are sick due to a bacterial infection. *Streptococcus* bacteria may cause a throat infection in humans. An experiment was designed to test the effects of two different antibiotics, *A* and *B*, on samples of *Streptococcus* bacteria. The graphs below show the results of this experiment.



47 Describe how the graph for antibiotic *B* shows that it was the most successful in controlling the number of bacteria. [1]

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48 Explain why *no* antibiotic was added to one of the bacteria samples. [1]

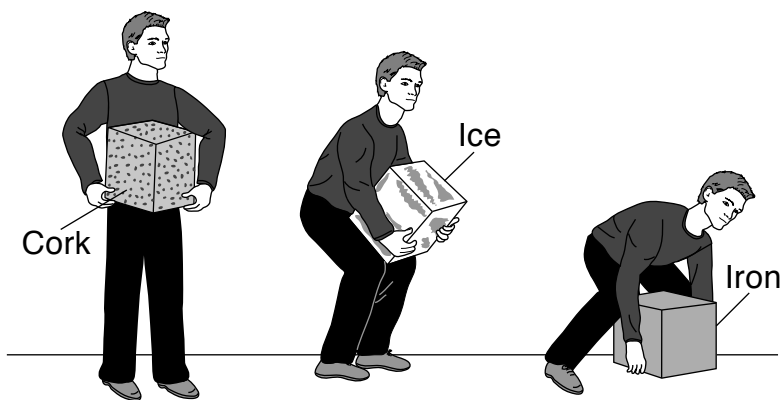
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Base your answers to questions 49 and 50 on the diagram below and on your knowledge of science. The diagram represents how easily a student is able to lift blocks of equal volumes that are made of different materials.



49 Describe *one* way that the student can determine the exact volume of one of the three blocks. [1]

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50 Identify the property of the iron block that makes it more difficult to lift than the cork block. [1]

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Base your answers to questions 51 and 52 on the information below and on your knowledge of science.

A student dissolved a 40-gram block of a salt in 100 grams of warm water at 45°C. The solution was allowed to cool down to 24°C. The student noticed that some of the salt came out of the solution and settled to the bottom of the beaker. It is later determined that 12 grams of the salt came out of the solution.

51 How many grams of the salt were dissolved in the solution at 24°C? [1]

\_\_\_\_\_ g

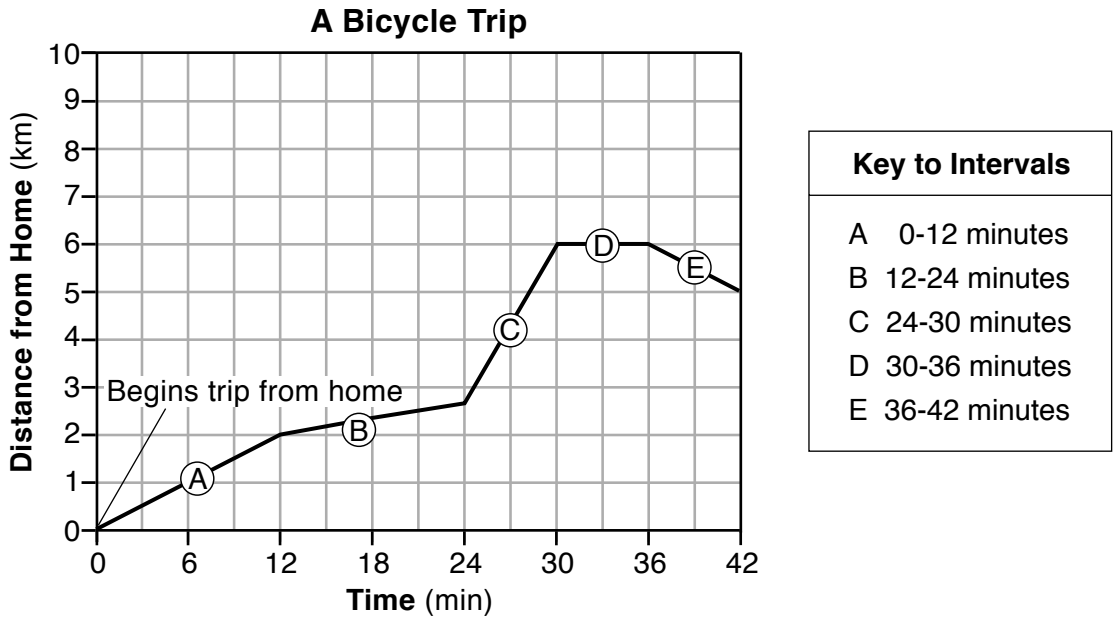
52 State the general relationship between the temperature of the water and the amount of the salt that will dissolve in the water. [1]

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Base your answers to questions 53 and 54 on the graph below and on your knowledge of science. The graph shows the position (distance from home) of a bicycle rider on a 42-minute trip. Letters A through E are time intervals during the trip. The key defines the length of each interval.



53 Use the equation below to calculate the bicycle rider’s average speed in kilometers per minute for the first 30 minutes of the trip. [1]

$$\frac{\text{distance (km)}}{\text{time (min)}} = \text{average speed}$$

\_\_\_\_\_ km/min

54 Describe how the graph shows that the rider stopped during time interval D. [1]

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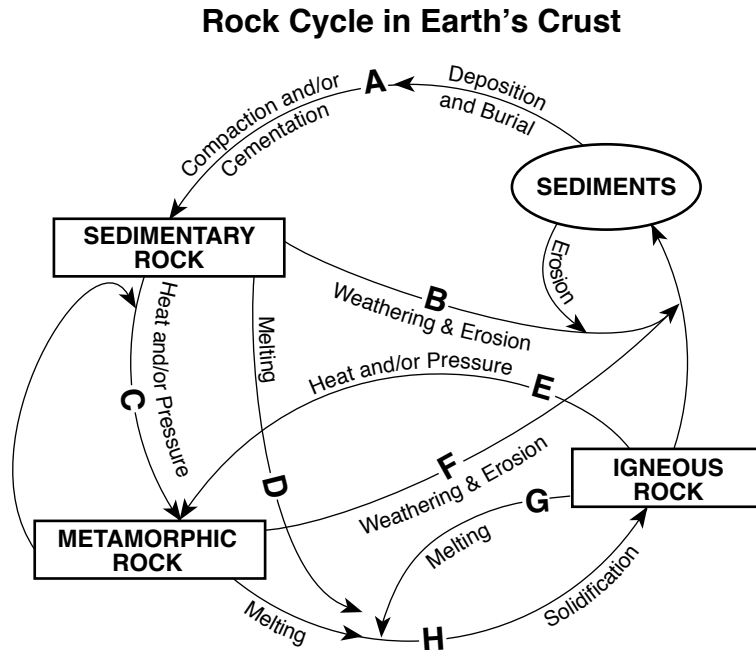


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Base your answers to questions 55 and 56 on the model of the rock cycle below and on your knowledge of science. The model represents the processes involved in the formation of different types of rocks. Some of these processes are labeled A through H.



55 Complete the table below by writing the letter of the process from the rock cycle diagram that is being described by each statement in the table. [1]

Rock Cycle Statement	Letter of Process from Rock Cycle Diagram
Pieces of igneous rock are compressed and glued together to form a sedimentary rock.	
Metamorphic rock becomes liquid and crystallizes to form igneous rock.	
Sedimentary rock is broken down into sediments and transported by a stream.	

56 Based on the rock cycle diagram, identify *one* process involved in the formation of metamorphic rock. [1]

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Base your answers to questions 57 through 59 on the information below and on your knowledge of science.

A student placed three identical plant seedlings in soil in three identical containers and gave each seedling a different amount of water each day. The student measured the height of each seedling every day for four days. The results are shown in the data table below.

**Data Table**

Seedling	Amount of Water Given Daily (milliliters)	Height of Seedling (centimeters)			
		Day 1	Day 2	Day 3	Day 4
1	5	2.0	2.3	2.5	2.8
2	10	2.0	2.5	3.0	3.5
3	20	2.0	3.0	4.0	5.0

57 Identify the dependent (responding) variable in this experiment. [1]

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58 Describe the general relationship between the amount of water each seedling received and its height on day 4. [1]

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59 The plant seedlings and containers were identical. Identify *one* additional factor that should be held constant in this experiment. [1]

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Base your answers to questions 60 through 62 on the information below and on your knowledge of science.

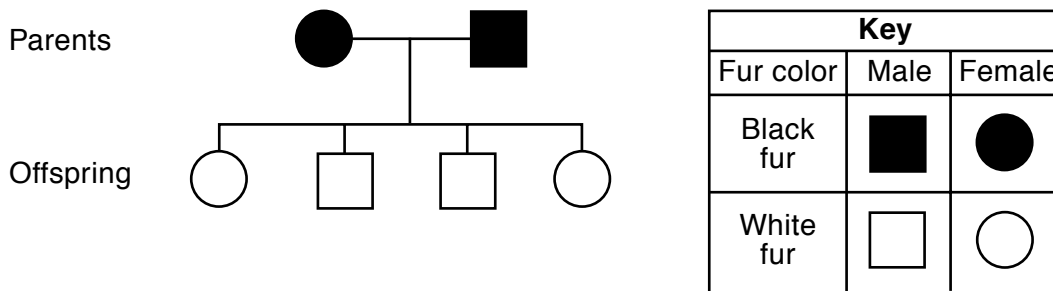
In mice, the gene for black fur, *B*, is dominant over the gene for white fur, *b*. The Punnett square below shows the probability of the results of a cross between two mice,  $BB \times Bb$ .

	<i>B</i>	<i>B</i>
<i>B</i>	<i>BB</i>	<i>BB</i>
<i>b</i>	<i>Bb</i>	<i>Bb</i>

Key
<i>B</i> = black <i>b</i> = white

60 The pedigree chart for the  $BB \times Bb$  cross is shown below. The shading for the parents is shown.

Complete the pedigree chart to show fur color of the offspring by either shading or not shading each circle and square. [1]



61 How many generations of mice are shown in the pedigree chart? [1]

\_\_\_\_\_ generations

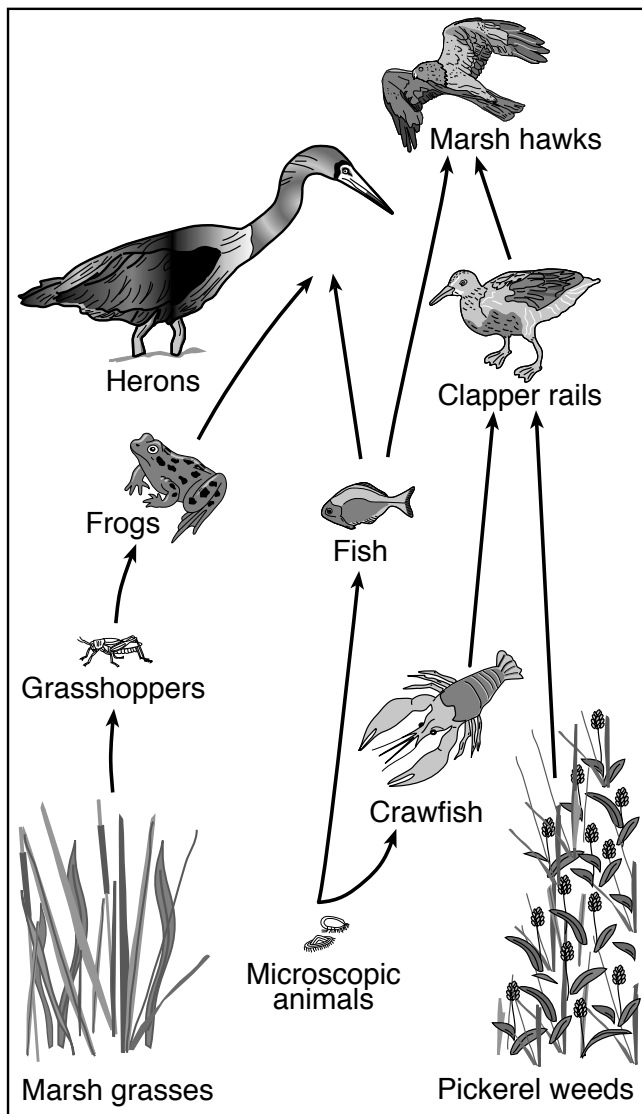
62 Which information about the offspring does the pedigree chart provide that is *not* provided by the Punnett square above? [1]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Base your answers to questions 63 through 64 on the diagram of the partial food web below and on your knowledge of science.



(Not drawn to scale)

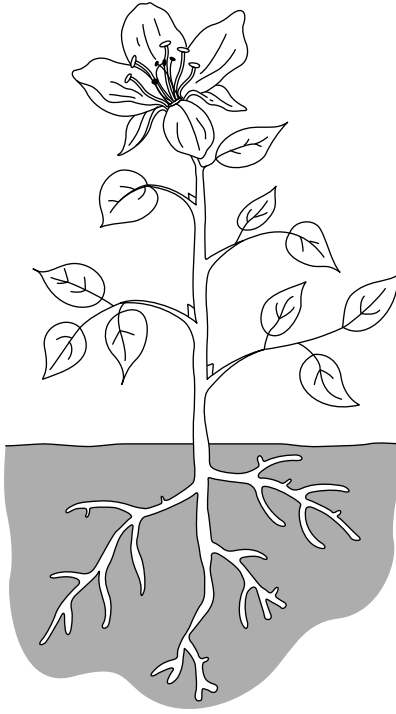
63 Identify the *two* organisms in this food web that belong to the plant kingdom. [1]

\_\_\_\_\_ and \_\_\_\_\_

64 Explain *one* reason why the population of marsh grasses might *increase* if the population of herons *decreased*. [1]

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Base your answers to questions 65 through 67 on the diagram below and on your knowledge of science. The diagram represents a plant growing in soil.



65 Describe *one* function of the plant's stem. [1]

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66 People sometimes use certain chemicals to kill unwanted plants. These chemicals seep into the ground and damage the roots. Explain why damage to the roots could kill the plant. [1]

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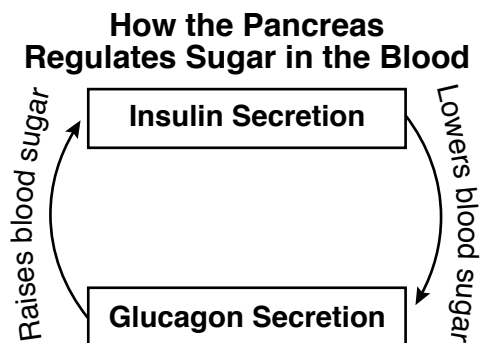
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67 Identify the process carried out by the plant that produces a sugar (glucose). [1]

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68 The pancreas is a human body organ. One of its functions is to secrete the hormones insulin and glucagon. The diagram below represents how these two hormones work together to regulate the amount of sugar in a person's blood.



Describe the function of the hormone insulin. [1]

---

Base your answers to questions 69 and 70 on the data table below and on your knowledge of science. A student recorded the number of Calories that he consumed and calculated the number of Calories that he burned each day. The data collected for five days are shown below.

**Data Table**

Day	Calories Consumed	Calories Burned
1	2500	1800
2	2200	1700
3	2100	1700
4	2600	1500
5	1900	1600

69 The student noticed that he had a slight weight gain at the end of the five days. Using data from the table, give *one* reason why his weight increased. [1]

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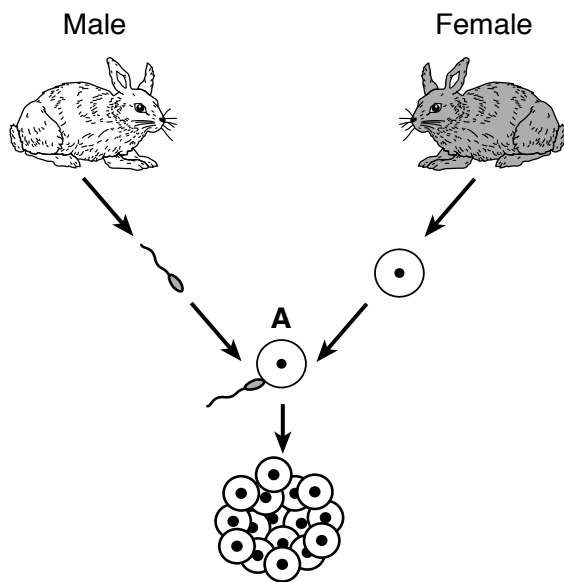
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70 Describe *one* lifestyle change the student could make to keep his weight stable. [1]

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Base your answers to questions 71 and 72 on the diagram below and on your knowledge of science. The diagram represents the sexual reproduction and development of rabbits. One process is labeled A.

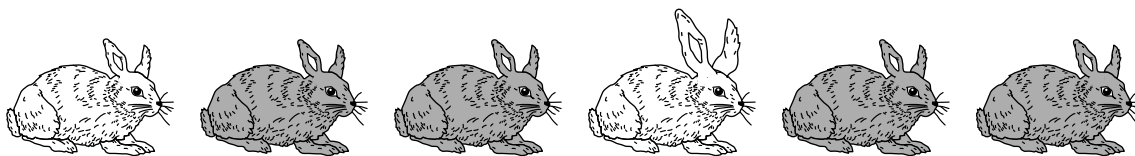


(Not drawn to scale)

71 Identify the sexual reproductive process represented at A. [1]

---

72 Some of the offspring from these rabbits are represented in the diagram below. One of them has longer ears than the others.



Neither parent has the gene that causes longer ears. Identify *one* process that might cause the appearance of this new trait in the offspring. [1]

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Base your answers to questions 73 and 74 on the chart below and on your knowledge of science. The chart lists the year of and some reasons for the extinction of three species.

<b>Extinct Species</b>	<b>Year of Extinction</b>	<b>One Reason for Extinction</b>
Darwin's rice rat	1930	introduction of brown and black European rats to the area
Palestinian painted frog	1950	marsh habitat was drained
black-spotted damselfish	1984	increase in ocean water temperatures

73 Describe *one* reason why the introduction of brown and black European rats may have led to the extinction of Darwin's rice rat. [1]

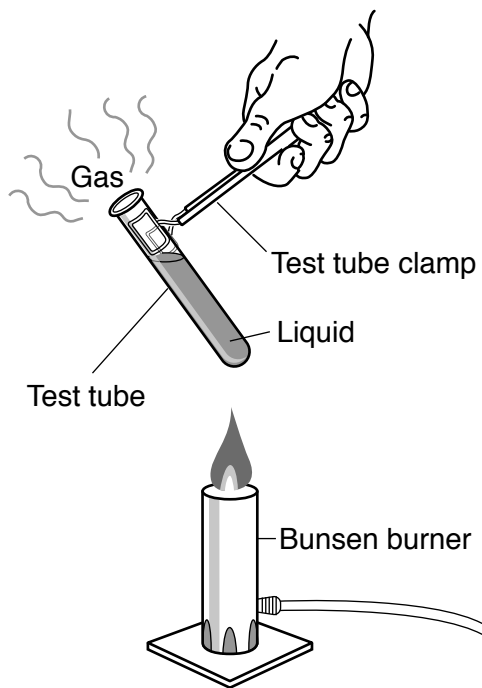
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74 Identify *one* piece of evidence that scientists use to prove that these three organisms once existed on Earth. [1]

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Base your answers to questions 75 and 76 on the diagram below and on your knowledge of science. The diagram represents an experiment during which a liquid is heated in a test tube until it turns into a gas.



(Not drawn to scale)

75 Describe *one* safety procedure that students should follow during this experiment. [1]

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76 Explain why the liquid evaporating to a gas is an example of a physical change, rather than a chemical change. [1]

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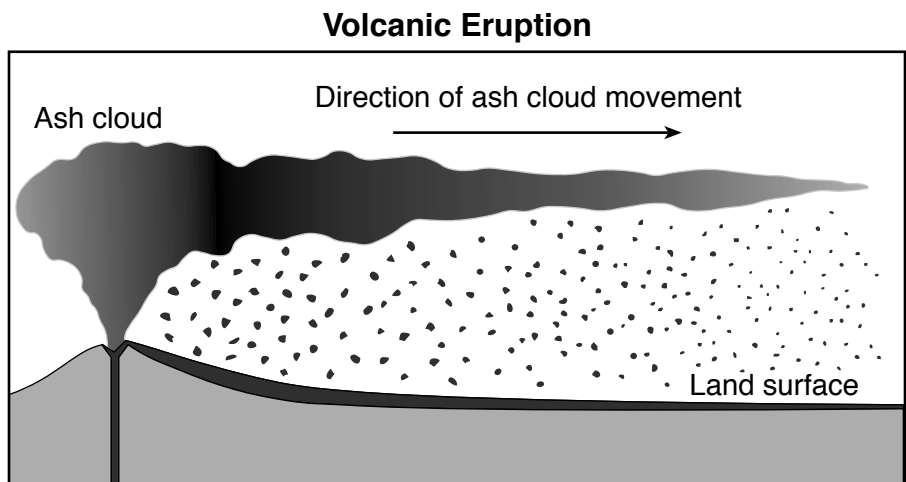
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Base your answers to questions 77 and 78 on the information and diagram below and on your knowledge of science.

### Volcanic Eruption

In 1783, a volcano in Iceland erupted with enormous force, pouring out large amounts of lava and volcanic ash. After the eruption, a cloud of suspended ash particles shadowed western Europe for months, resulting in unusually cold weather that summer.

The diagram below represents a side view of a volcanic eruption similar to the one that occurred in 1783. The arrow on the diagram represents the direction that the ash cloud spread after the volcanic eruption occurred.



77 Identify *one* factor that caused the ash cloud to spread in the direction indicated by the arrow in the diagram. [1]

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78 Explain how the ash cloud caused the unusually cold summer in western Europe in 1783. [1]

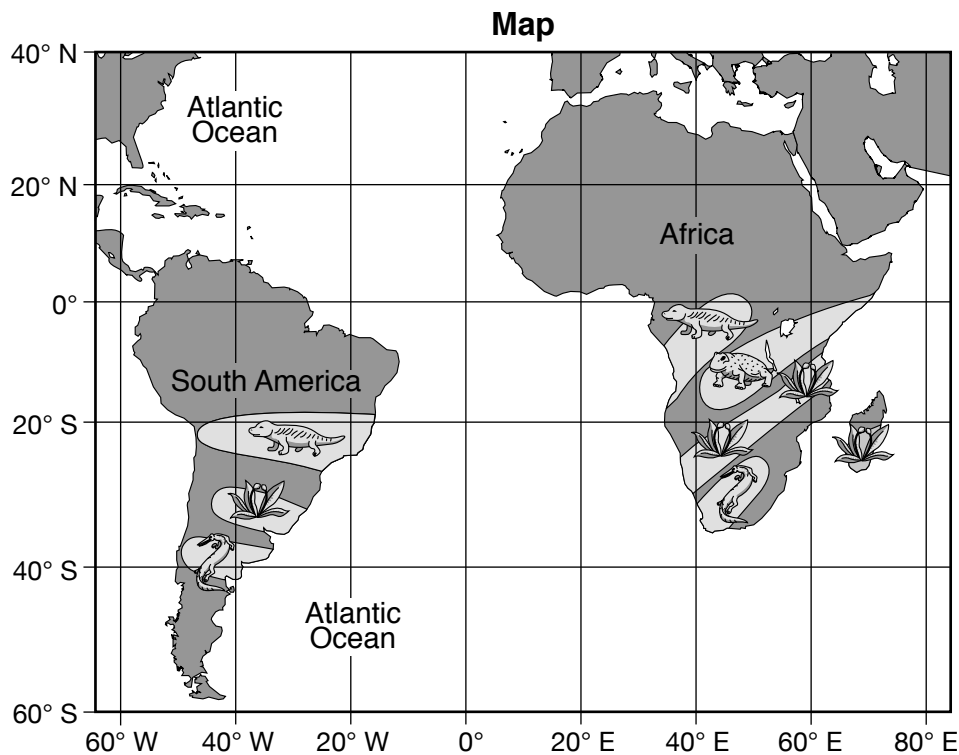
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Base your answers to questions 79 and 80 on the map below and on your knowledge of science. The map shows four fossils found in South America and Africa. Lighter-shaded areas and symbols on the continents represent regions where these four fossils are found. The key shows the name and symbol representing each fossil on the map.



**Key**

<b>Fossil Symbol</b>				
<b>Fossil Name</b>	<i>Cynognathus</i>	<i>Glossopteris</i>	<i>Lystrosaurus</i>	<i>Mesosaurus</i>

79 Identify the fossil that would most likely be found at 20° S, 40° W. [1]

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80 Describe how the fossil locations on the map provide evidence that the continents of South America and Africa were once connected. [1]

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81 A portion of the Periodic Table of the Elements is shown below.

**Portion of the Periodic Table of the Elements**

**KEY**

12	— approximate atomic mass
C	— symbol
Carbon	— name
6	— atomic number

**Groups**

		13	14	15	16	17	18
		11	12	14	16	19	20
		B	C	N	O	F	Ne
		Boron	Carbon	Nitrogen	Oxygen	Fluorine	Neon
		5	6	7	8	9	10
		27	28	31	32	35	40
		Al	Si	P	S	Cl	Ar
		Aluminum	Silicon	Phosphorus	Sulfur	Chlorine	Argon
		13	14	15	16	17	18
11	12						
64	65	70	73	75	79	80	84
Cu	Zn	Ga	Ge	As	Se	Br	Kr
Copper	Zinc	Gallium	Germanium	Arsenic	Selenium	Bromine	Krypton
29	30	31	32	33	34	35	36
108	112	115	119	122	128	127	131
Ag	Cd	In	Sn	Sb	Te	I	Xe
Silver	Cadmium	Indium	Tin	Antimony	Tellurium	Iodine	Xenon
47	48	49	50	51	52	53	54

A student constructed the following chart to classify the elements Cl, C, Ag, Zn, He, and P.

Element Classification	Element Symbol	
metals	Zn	Ag
nonmetals	P	C
noble gases	Cl	He

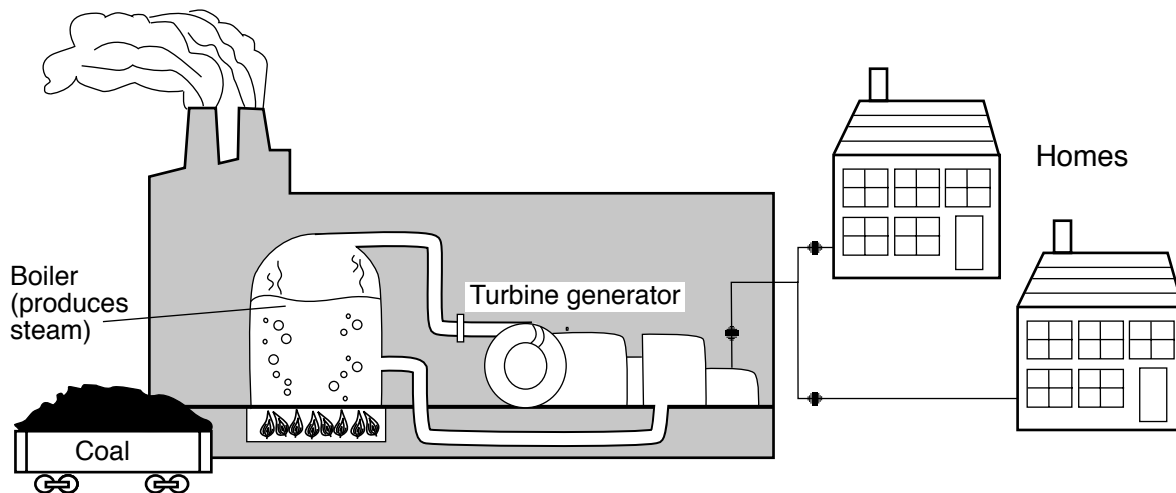
Identify the element that the student classified *incorrectly* in this chart. Explain your answer. [1]

Element: \_\_\_\_\_

Explanation: \_\_\_\_\_

\_\_\_\_\_

Base your answers to questions 82 and 83 on the diagram below and on your knowledge of science. The diagram represents the steps necessary to provide electricity to area homes. In a power facility, coal is burned to produce heat energy to boil water. The steam produced is used to power the generator, which produces electricity.



(Not drawn to scale)

82 Describe *one negative* effect that the burning of coal to produce electricity has on the environment. [1]

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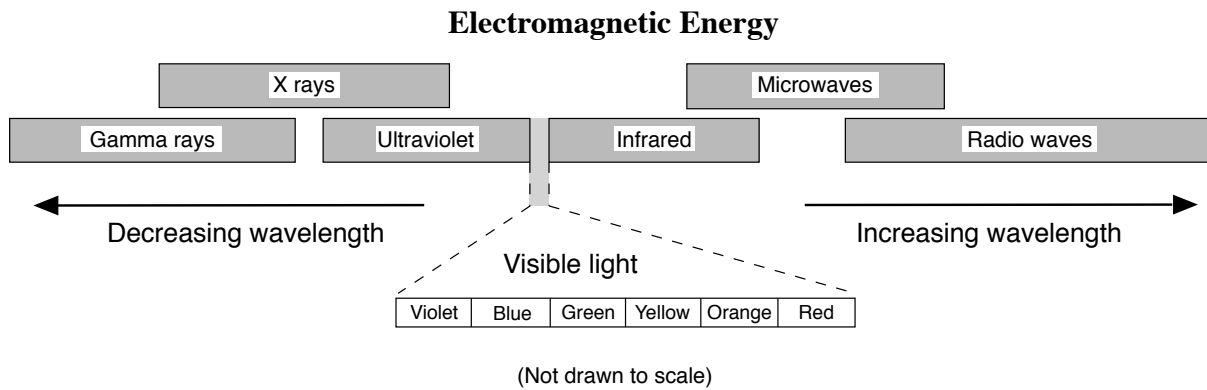
83 Describe *one* action that area homeowners could take to *reduce* the amount of coal needed by the power facility. [1]

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84 The model below represents the relative wavelengths of different forms of electromagnetic energy.

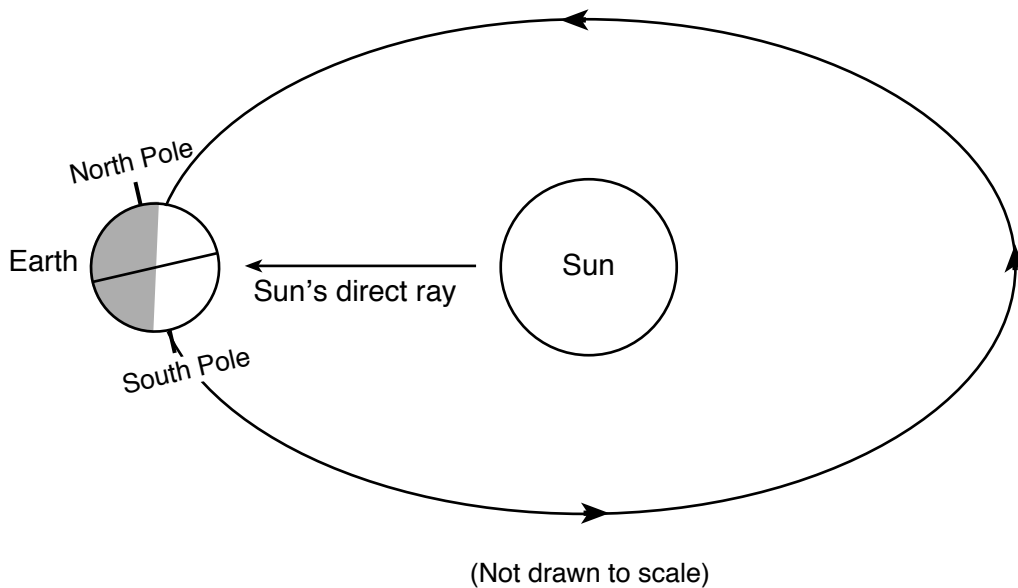


List *two* forms of electromagnetic energy that have shorter wavelengths than visible light. [1]

(1) \_\_\_\_\_

(2) \_\_\_\_\_

85 The diagram below represents Earth in one position in its orbit around the Sun.



Describe *one* piece of evidence shown in the diagram that indicates the winter season is occurring in the Northern Hemisphere. [1]

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# GRADE 8 INTERMEDIATE-LEVEL SCIENCE

## For Teacher Use Only Part II Credits

Question	Maximum Credit	Credit Allowed
46	1	
47	1	
48	1	
49	1	
50	1	
51	1	
52	1	
53	1	
54	1	
55	1	
56	1	
57	1	
58	1	
59	1	
60	1	
61	1	
62	1	
63	1	
64	1	
65	1	
66	1	
67	1	
68	1	
69	1	
70	1	
71	1	
72	1	
73	1	
74	1	
75	1	
76	1	
77	1	
78	1	
79	1	
80	1	
81	1	
82	1	
83	1	
84	1	
85	1	
<b>Total</b>	<b>40</b>	