

THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 4

ELEMENTARY-LEVEL SCIENCE TEST

WRITTEN TEST

JUNE 7, 2010

Student Name _____

School Name _____

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

The test has two parts. Parts I and II are in this test booklet.

Part I contains 30 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 14 open-ended questions. Write your answers to Part II in this test booklet.

You will have as much time as you need to answer the questions.

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THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12234

DIRECTIONS

There are 30 questions on Part I of this test. Each question is followed by three or four choices, labeled A–D. 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 letter as the answer you have chosen. Use a No. 2 pencil to mark the answer sheet.

Read Sample Question **S-1** below.

S-1 Frozen water is called

- A fog
- B ice
- C steam
- D vapor

The correct answer is **ice**, which is next to letter **B**. On your answer sheet, look at the box showing the row of answer circles for Sample Question **S-1**. See how the circle for letter **B** has been filled in.

Now do Sample Question **S-2**. Mark your answer on the answer sheet in the box showing the row of answer circles for Sample Question **S-2**.

S-2 Which animal has wings?

- A bird
- B frog
- C mouse
- D rabbit

The correct answer is **bird**, which is next to letter **A**. On your answer sheet, you should have filled in circle **A**.

Answer all 30 questions on Part I of this test. Fill in only one circle for each question. Be sure to erase completely any answer you want to change. You may not know the answers to some of the questions, but do the best you can on each one.

When you have finished Part I, go on to Part II. Answer all of the questions in Part II in the space for each question.

Part I

- 1 Which property of an object allows it to bend?
 - A color
 - B flexibility
 - C mass
 - D size

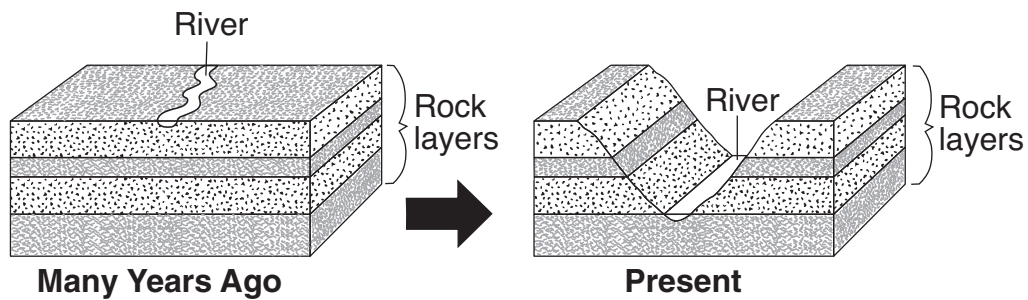
- 2 A ball is thrown up into the air. Which force causes the ball to fall to the ground?
 - A friction
 - B gravity
 - C magnetism
 - D electricity

- 3 Which form of energy is produced when a guitar string vibrates?
 - A chemical
 - B light
 - C magnetic
 - D sound

Note that question 4 has only three choices.

- 4 A toy truck rolls over a smooth surface. If the surface is covered with sand, the truck will most likely roll
 - A slower
 - B faster
 - C at the same speed

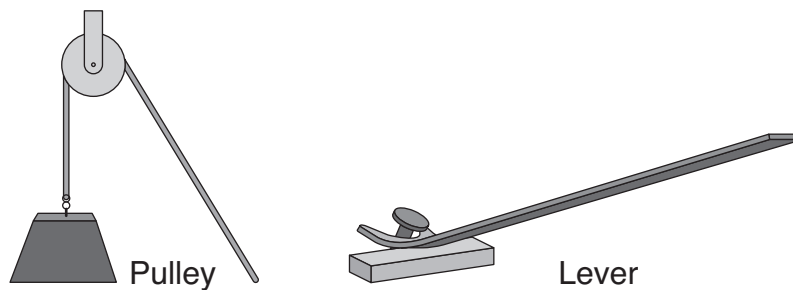
5 The diagram below shows an area of land that changed after many years.



Which process changed the shape of the rock layers over time?

- A condensation
- B evaporation
- C erosion
- D magnetism

6 The pulley and lever shown below use mechanical energy to move an object.

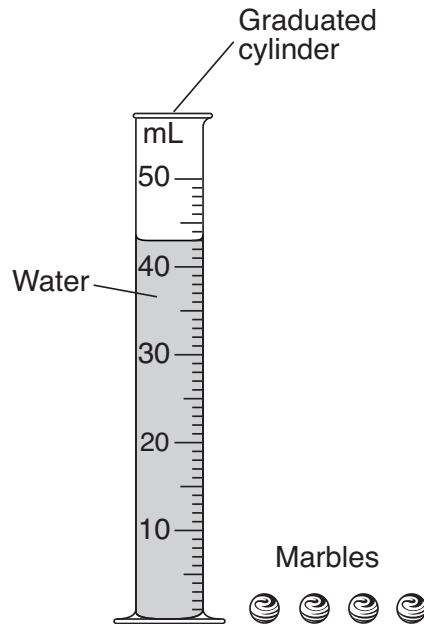


The pulley and lever are examples of

- A circuits
- B magnets
- C measurement tools
- D simple machines

- 7** A student rubs his hands together to warm them. His hands get warm due to
- A friction
 - B gravity
 - C magnetism
 - D sound
- 8** The Sun is classified as
- A an organism
 - B a decomposer
 - C a star
 - D a planet
- 9** About how long does it take for Earth to make one revolution around the Sun?
- A one day
 - B one week
 - C one month
 - D one year
- 10** When a lightbulb is lit, electrical energy is changed into light energy and
- A chemical energy
 - B magnetic energy
 - C heat energy
 - D mechanical energy
- 11** Which tool would be most useful for observing the details of an insect's wings?
- A thermometer
 - B balance
 - C hand lens
 - D graduated cylinder

Base your answers to questions 12 and 13 on the diagram below and on your knowledge of science. The diagram shows four identical marbles and a graduated cylinder containing 43 mL of water.



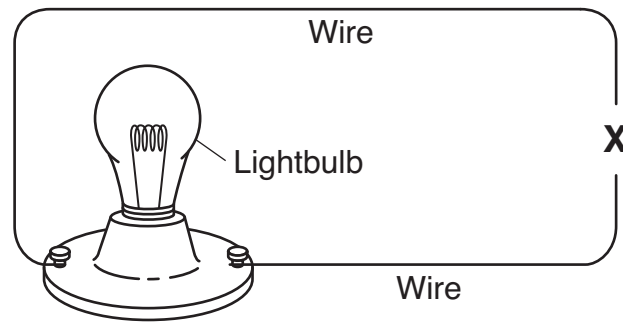
12 A student puts two marbles in the cylinder and the water level rises from 43 mL to 45 mL. The student then puts the other two marbles in the graduated cylinder. What will the water level be when all four marbles are in the graduated cylinder?

- A 43 mL
- B 45 mL
- C 47 mL
- D 49 mL

13 Which property of the marbles causes the water level to rise when they are put in the graduated cylinder?

- A color
- B shape
- C texture
- D volume

14 An incomplete electric circuit is shown below. The lightbulb is *not* lit.



Which object placed at X would complete the circuit and light the bulb?

- A magnet
- B battery
- C metal nail
- D second lightbulb

Note that question 15 has only three choices.

15 As the distance between a magnet and a metal paper clip increases, the force of attraction between them

- A decreases
- B increases
- C remains the same

16 Which behavior will best help a student stay healthy?

- A watching television five hours a day
- B sleeping three hours each night
- C eating fruits and vegetables each day
- D exercising once a month

17 Which two life processes occur in both plants and humans?

- A growing and reproducing
- B germinating and making food
- C growing and making food
- D germinating and reproducing

- 18** A student places soil in a plastic container to make a home for some worms. The student cuts holes in the top of the container because the worms need
- A space to move
 - B air to breathe
 - C sunlight to grow
 - D sound to communicate

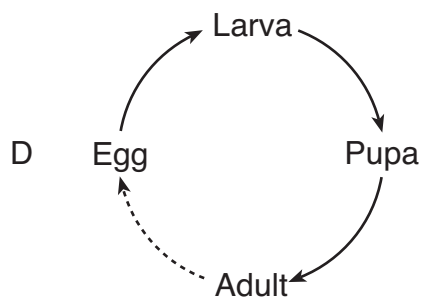
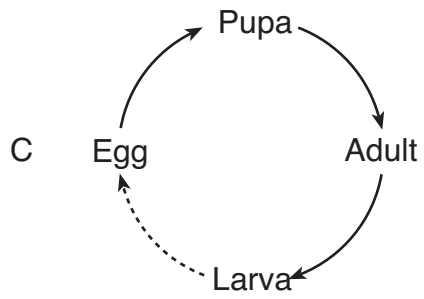
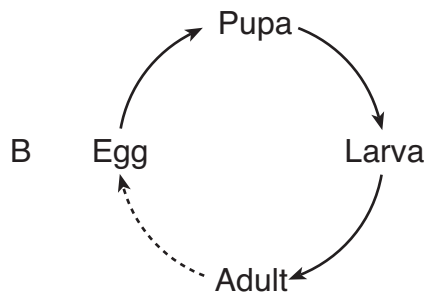
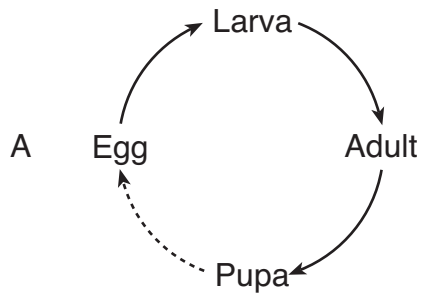
Note that question 19 has only three choices.

- 19** As children grow, their body height usually
- A decreases
 - B increases
 - C remains the same
- 20** Which human response is most likely to occur because the air temperature is 90°F?
- A blinking
 - B salivating
 - C shivering
 - D sweating
- 21** Plants are producers because they
- A make their own food
 - B can grow in soil
 - C need water to grow
 - D take in nutrients
- 22** Why do some animals hibernate in the winter?
- A to find food for their young
 - B to adapt to environmental changes
 - C to attract a mate
 - D to avoid predators

Note that question 23 has only three choices.

- 23** A male puppy inherits traits from
- A both parents
 - B its mother, only
 - C its father, only
- 24** Which two environmental changes usually cause certain animals to migrate?
- A change of season and fewer predators
 - B change of season and less food
 - C loss of habitat and fewer predators
 - D loss of habitat and more food
- 25** The function of a plant's roots is to take in
- A light and water
 - B light and air
 - C nutrients and water
 - D nutrients and soil
- 26** The energy that is stored in food originally comes from
- A air
 - B soil
 - C sunlight
 - D water
- 27** When two animals live in the same area and depend on the same organism for food, they are
- A competing
 - B decomposing
 - C germinating
 - D hibernating

28 Which diagram shows the order of the stages in the butterfly's life cycle?



- 29** A boy and his sister both play piano. Playing piano is an example of
- A a physical change
 - B an inherited trait
 - C a life function
 - D a learned behavior

30 A student performed this experiment:

Four different types of seeds were planted in identical pots filled with the same kind and amount of soil. The pots were placed in a warm, sunny place and were given the same amount of water each day for a month.

Which question about these seeds could be answered at the end of the month?

- A Which seeds grew well in the dark?
- B Which seeds produced the tallest plants?
- C Which seeds survived in cold temperatures?
- D Which seeds needed the least amount of water?

GO RIGHT ON TO PART II ⇒

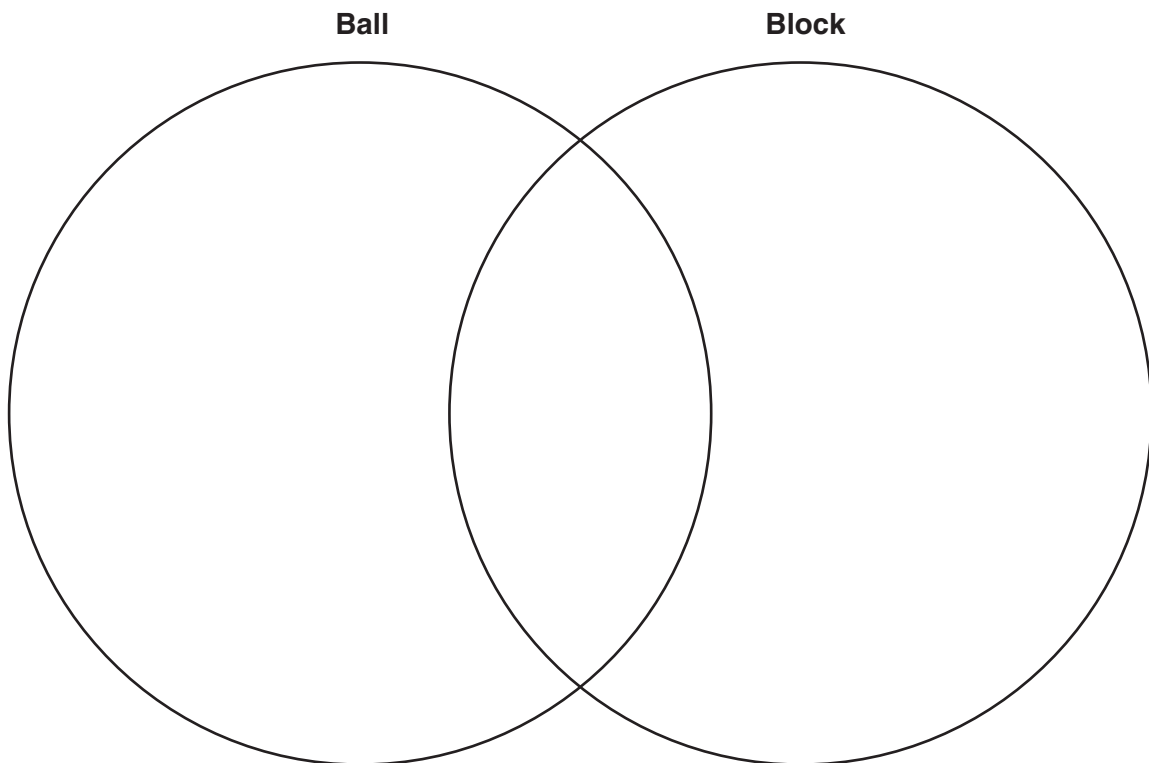
Part II

Directions (31–44): Record your answers in the space provided below each question.

31 Some properties of a ball and a block are listed below.

Ball	Block
rubber	red
red	300 g
sphere	rough
300 g	cube
smooth	wood

Complete the Venn diagram below to compare and contrast the ball and block. Use all of the properties listed above. [1]



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

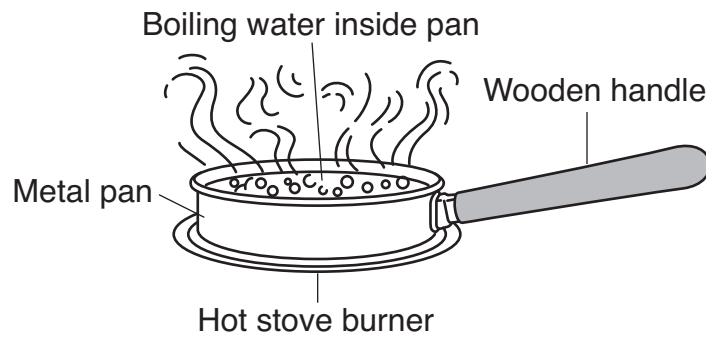
Average Monthly Air Temperature for Albany, New York

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

During which **two** months shown would snow most likely stay on the ground without melting? [1]

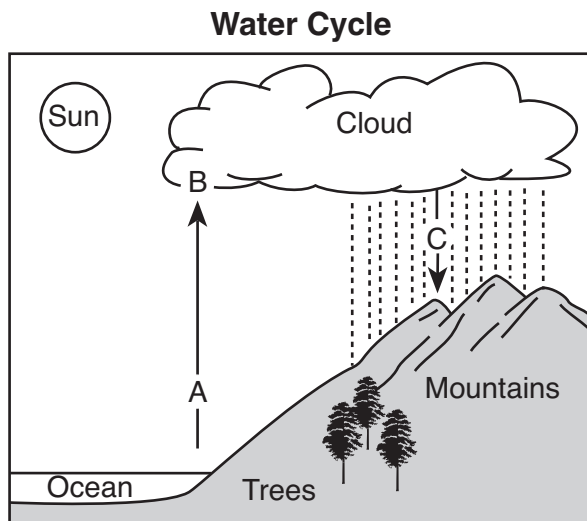
_____ and _____

33 The diagram below shows water boiling in a metal pan that is sitting on a hot stove burner.



Explain why the handle of the pan is made of wood. [1]

Base your answers to questions 34 through 36 on the water cycle diagram below and on your knowledge of science. Letters *A*, *B*, and *C* represent three processes in the water cycle.



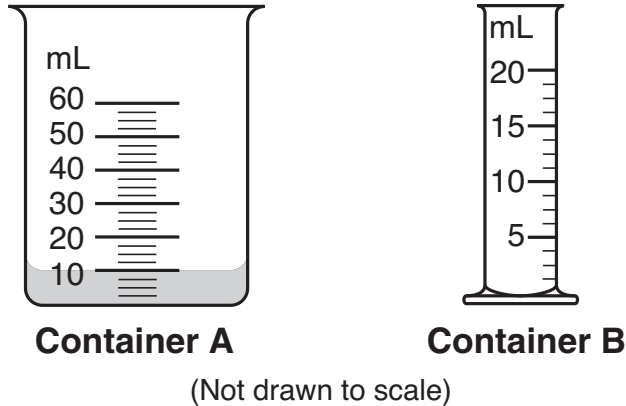
34 Identify process *A*. [1] _____

35 Identify process *B*. [1] _____

36 Identify **two** forms of precipitation that return water to Earth's surface in process *C*. [1]

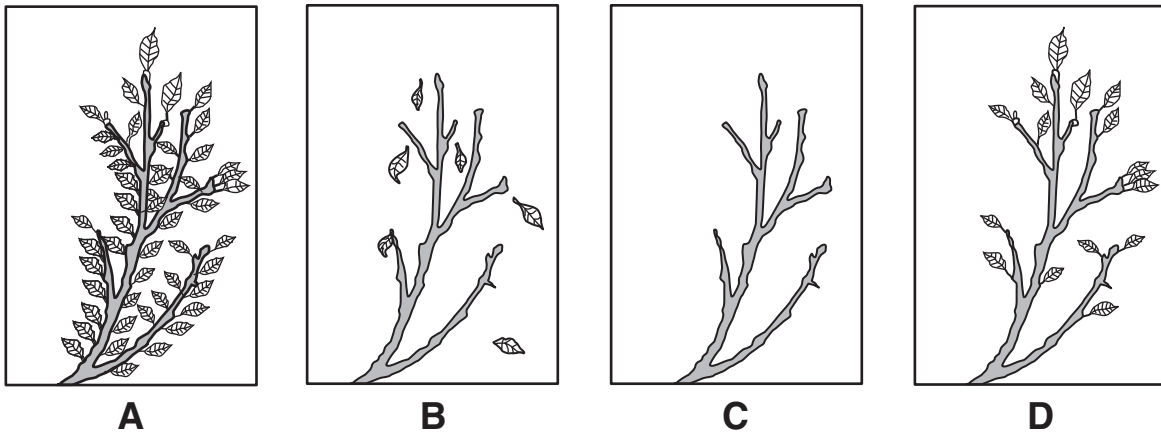
_____ and _____

37 The diagram below shows two measuring containers, *A* and *B*.



Container *A* contains 10 milliliters (mL) of a liquid. All of the liquid from container *A* is poured into container *B*. Shade container *B* in the diagram above to show the volume of the water in container *B* after it was poured from container *A*. [1]

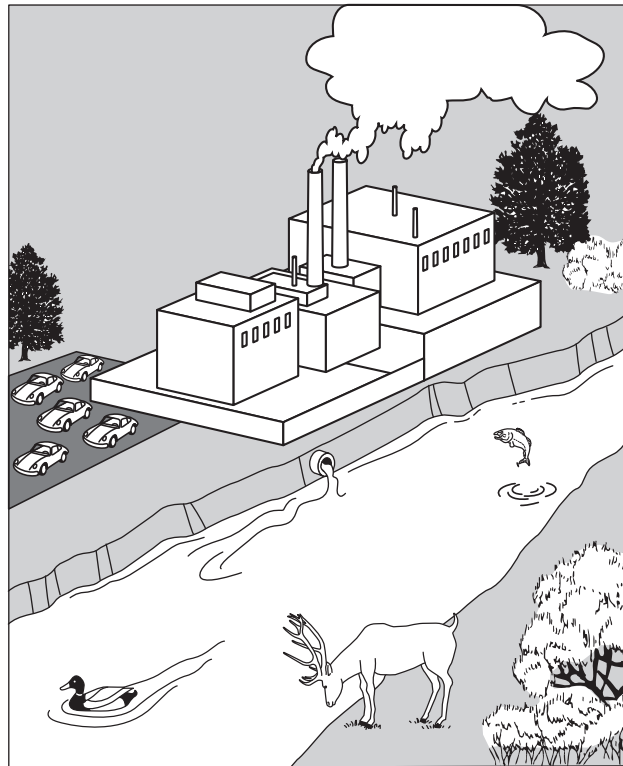
38 Diagrams *A*, *B*, *C*, and *D* below show the same tree branch during each of the four seasons in New York State.



Identify the seasons shown in *B* and *C*. [1]

B: _____ *C*: _____

39 The diagram below shows a factory located along a river.



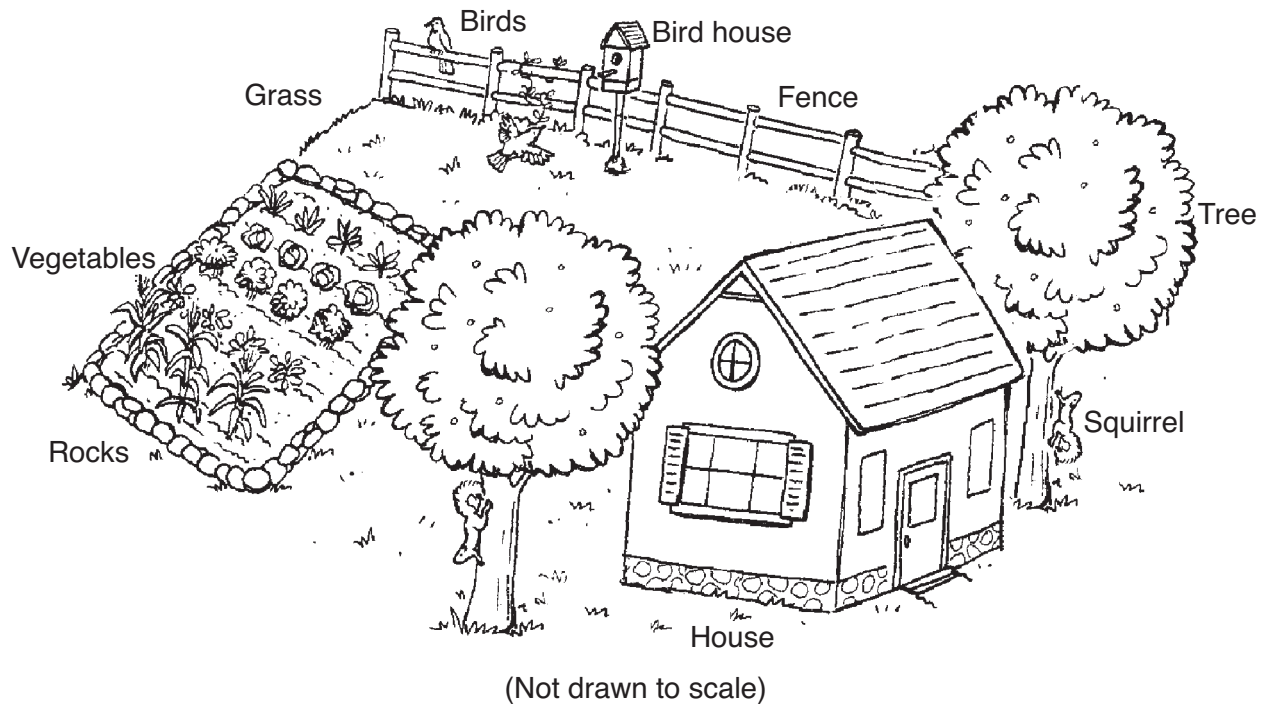
(Not drawn to scale)

Describe **two negative** effects the factory might have on the organisms living in the area. [2]

(1) _____

(2) _____

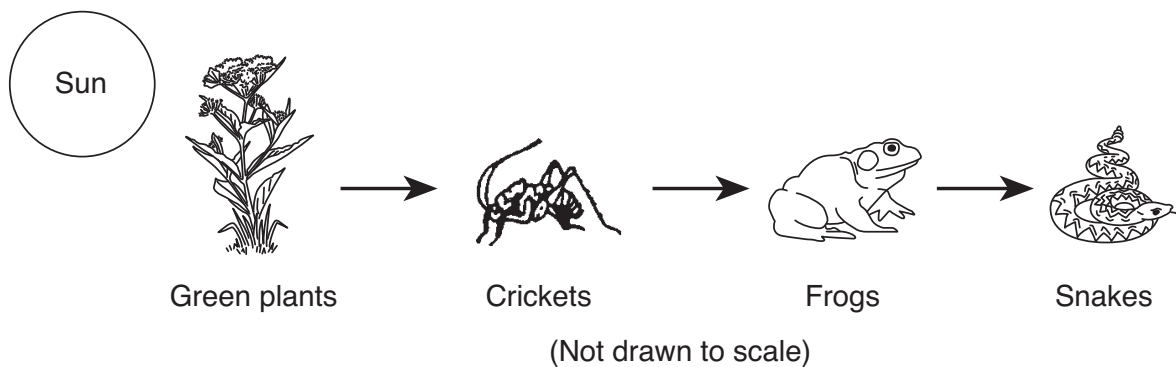
40 The diagram below shows a house and a yard.



Identify **two nonliving** things labeled in the diagram. [1]

_____ and _____

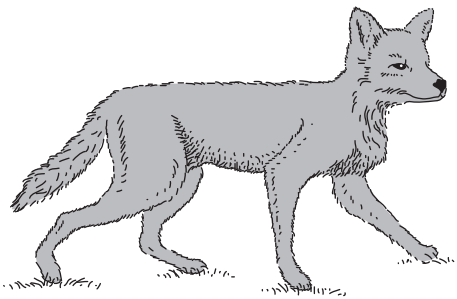
Base your answers to questions 41 and 42 on the diagram of a food chain below.



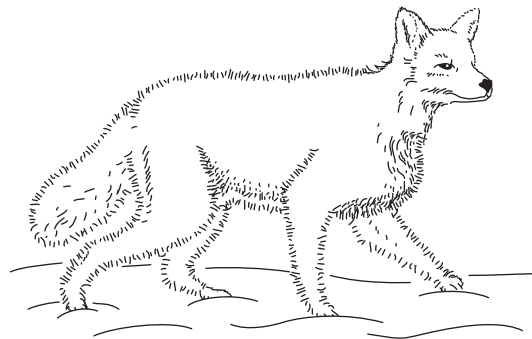
41 Identify a predator in this food chain. [1]

42 Explain why the population of frogs might *decrease* if the number of snakes increases. [1]

Base your answers to questions 43 and 44 on the diagram below and on your knowledge of science. The diagram shows the same fox in summer and winter.



Fox in Summer



Fox in Winter

43 The fox has dark fur in the summer, which turns white for the winter. Explain how this adaptation helps the fox to survive in winter. [1]

44 Identify **another** seasonal adaptation, other than fur color, that helps the fox to survive in winter. [1]

GRADE 4 ELEMENTARY-LEVEL SCIENCE

For Teacher Use Only Part II Credit

Question	Maximum Credit	Credit Allowed
31	1	
32	1	
33	1	
34	1	
35	1	
36	1	
37	1	
38	1	
39	2	
40	1	
41	1	
42	1	
43	1	
44	1	
Total	15	