

THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 4

ELEMENTARY-LEVEL SCIENCE TEST

WRITTEN TEST

JUNE 3, 2019

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 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 15 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 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 read 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

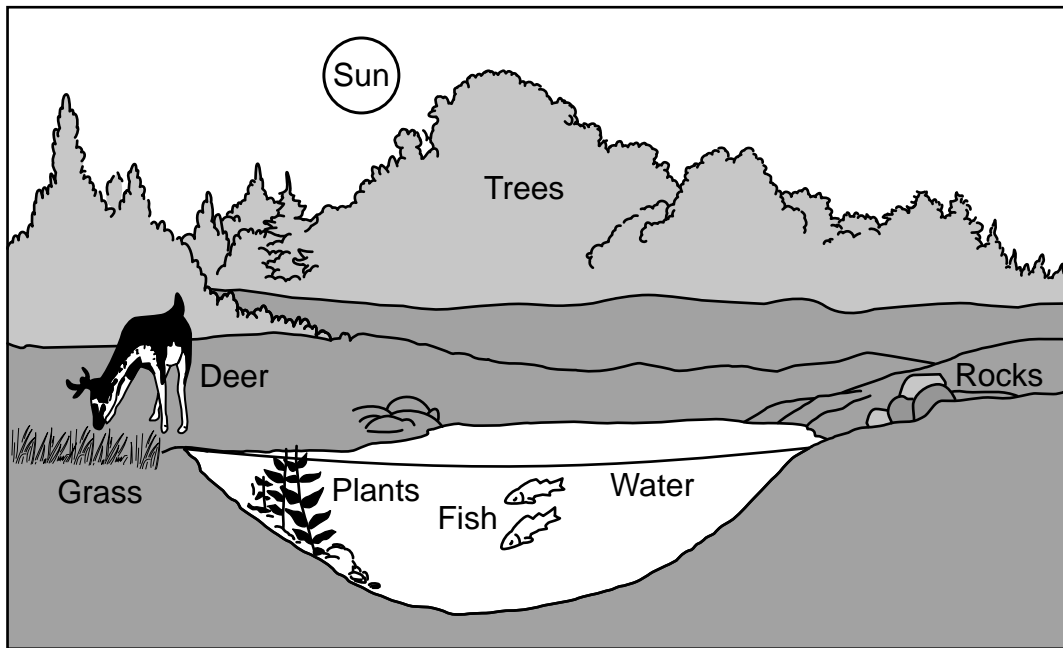
The correct answer is **bird**, which is next to letter **A**. On your answer sheet, you should have filled in circle **A**.

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 The diagram below shows a pond near a forest.



(Not drawn to scale)

Which two objects labeled in the diagram are *nonliving*?

- A fish and plants
- B grass and deer
- C rocks and water
- D trees and Sun

2 Which process causes a giraffe to become taller?

- A reproduction
- B growth
- C decomposition
- D movement

3 A basic need of both plants and animals is

- A soil
- B light
- C shelter
- D water

4 An example of an inherited trait is

- A riding a bicycle
- B having a broken arm
- C having brown eyes
- D living in New York State

5 The diagram below shows a mature parent plant.



Which young plant is most likely the offspring of this mature parent plant?



A



B



C



D

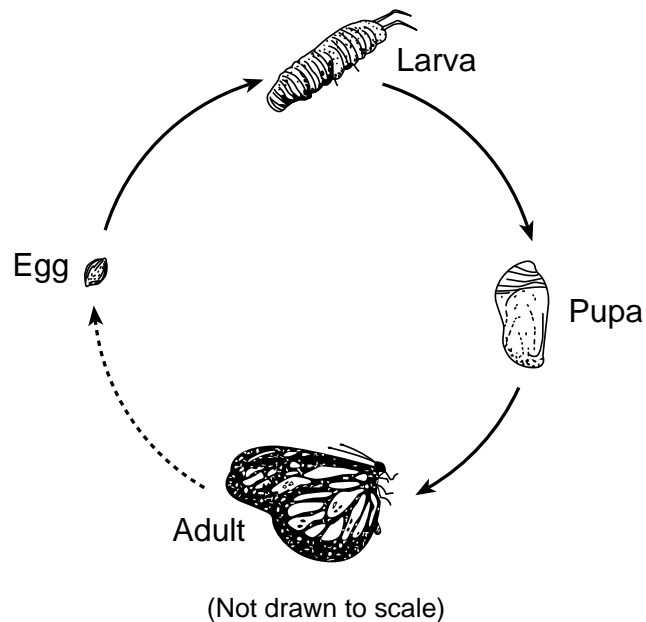
6 Which plant structure makes seeds?

- A stem
- B flower
- C roots
- D leaf

7 Whales have thick blubber to help keep them warm in cold ocean waters and protect them from injury. The blubber of a whale is

- A an adaptation to its environment
- B a characteristic used to attract a mate
- C a body structure common to all organisms
- D a waste product that needs to be eliminated

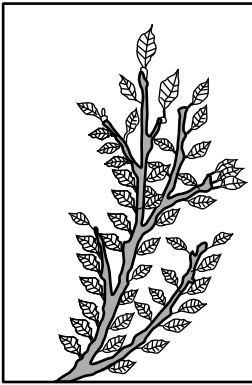
8 The diagram below shows the development of a butterfly.



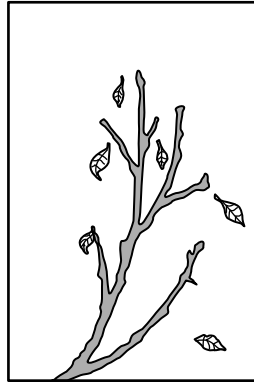
This sequence of changes is called

- A hibernation
- B migration
- C a life span
- D a life cycle

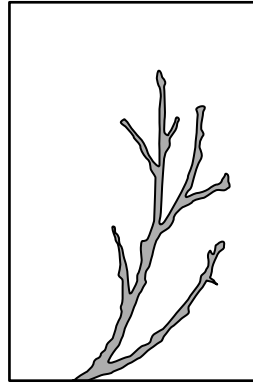
- 9 The diagrams below show the same branch from a tree in New York State during each of the four seasons.



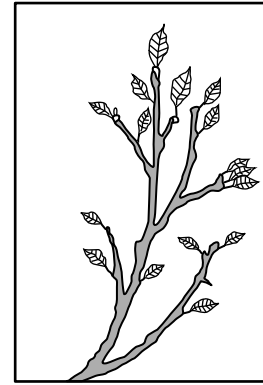
A



B



C



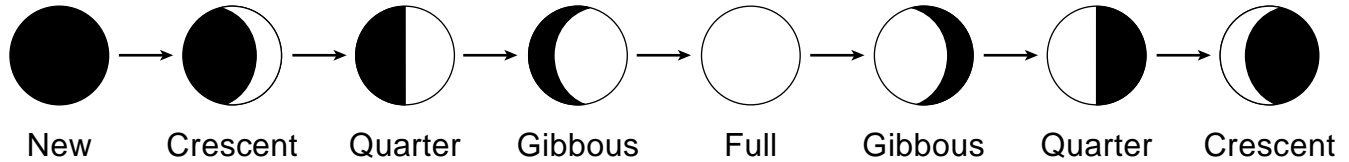
D

If students took a field trip during January, which diagram would most likely represent what the branches on most trees would look like in New York State?

- A A
 - B B
 - C C
 - D D
- 10 As the length of daylight shortens and the temperatures cool, geese and some other birds fly south from New York State. This behavioral change is known as
- A communicating
 - B hunting
 - C migration
 - D hibernation
- 11 In which example is the organism defending itself?
- A A fox smells food.
 - B An owl sees a mouse.
 - C A bee lands on a colorful flower.
 - D A skunk produces an odor.

- 12** Animals that eat other animals for food are classified as
- A decomposers
 - B predators
 - C producers
 - D prey
- 13** Warmer temperatures can cause a deer to rub against trees to remove clumps of heavy fur. This behavior is helping the deer to
- A reproduce
 - B feel cooler
 - C store fat
 - D camouflage itself
- 14** Which sequence shows the order of energy flow in a food chain?
- A Sun → rabbit → grass → owl
 - B grass → rabbit → owl → Sun
 - C Sun → grass → rabbit → owl
 - D owl → rabbit → grass → Sun
- 15** When a beaver senses a predator approaching, it slaps its tail on the surface of the water. This action is an example of an animal using a body part to
- A find food
 - B attract a mate
 - C build a shelter
 - D communicate information
- 16** How long does it take for Earth to complete one path around the Sun?
- A one day
 - B one week
 - C one month
 - D one year

- 17 The diagram below shows the changing appearance of an object in space as viewed by an observer in New York State.



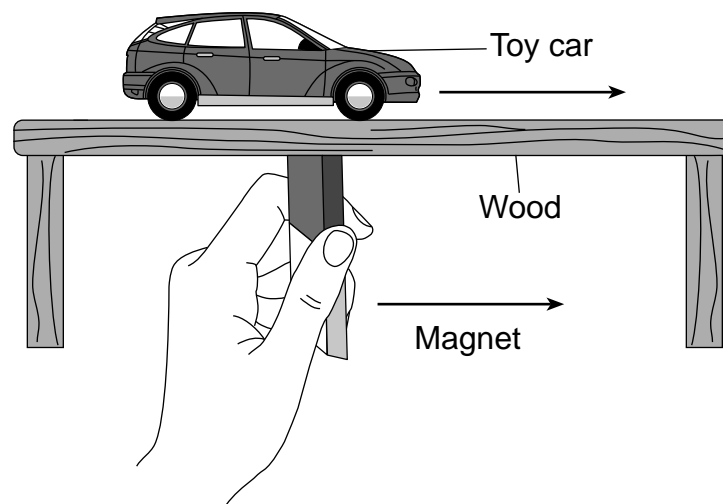
The diagram shows the changing appearance of

- A the Moon as it revolves around Earth
 - B Earth as it revolves around the Moon
 - C the Sun as it revolves around Earth
 - D Earth as it revolves around the Sun
- 18 Which process causes a wet towel to become dry?
- A condensation
 - B evaporation
 - C precipitation
 - D deposition
- 19 Hard, light-colored, and smooth are observations that describe a
- A glass marble
 - B rain cloud
 - C cat's fur
 - D cotton ball
- 20 A student drops a button and a nickel, and they both fall to the floor. What causes both of these items to fall to the floor?
- A magnetism
 - B electricity
 - C sound
 - D gravity

21 Which tool would be used to find the weight of a balloon that is filled with water?

- A graduated cylinder
- B metric ruler
- C spring scale
- D thermometer

22 The diagram below shows a student using a magnet to move a toy car across a table made of wood.



(Not drawn to scale)

In order for the car to be moved by the magnet, the car must contain which material?

- A glass
- B metal
- C plastic
- D wood

23 Ice is solid water that has

- A a definite shape and a definite volume
- B a definite shape, but no definite volume
- C no definite shape and no definite volume
- D no definite shape, but a definite volume

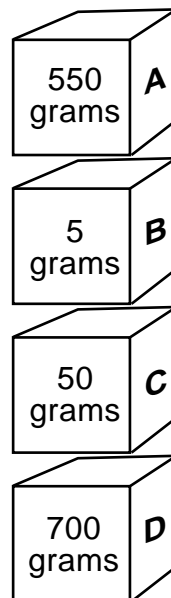
24 Which color of shirt would absorb the most sunlight?

- A white
- B yellow
- C pink
- D black

25 Which statement best describes how energy can be *harmful*?

- A A fire burns down a house.
- B Electricity heats an oven.
- C A lamp lights a house.
- D An alarm clock wakes up a sleeping person.

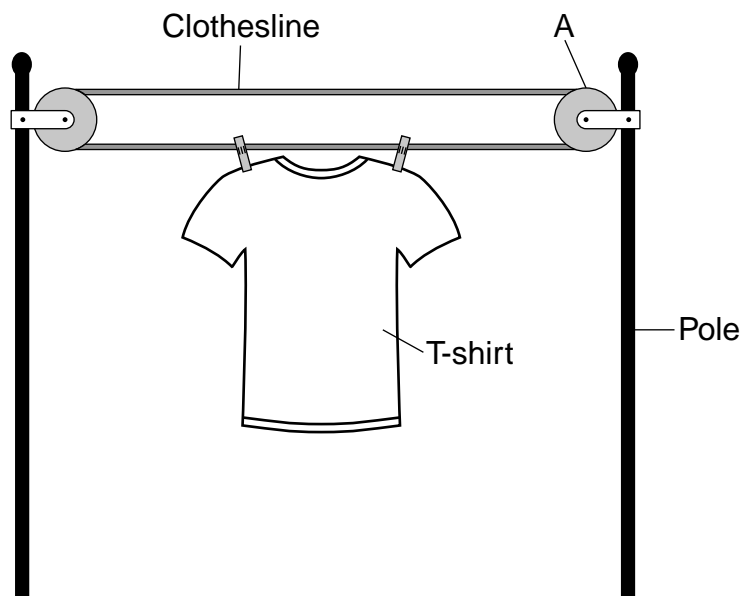
26 The diagram below shows four boxes labeled *A*, *B*, *C*, and *D*. The mass of each box is shown.



Which box is **under** the box with a mass of 50 grams?

- A box *A*
- B box *B*
- C box *C*
- D box *D*

- 27** It is harder to push a box up a ramp with a rough surface than up one with a smooth surface because the rough surface provides more
- A motion
 - B friction
 - C gravity
 - D magnetism
- 28** A boy can see his face when he looks into a mirror. Which physical property of the mirror makes this happen?
- A reflectiveness
 - B temperature
 - C flexibility
 - D volume
- 29** The diagram below shows a T-shirt hanging on a clothesline. Letter A represents a simple machine.



Which type of simple machine is represented by letter A?

- A lever
- B balance
- C pulley
- D inclined plane

30 A student is writing a report about a famous scientist and author, and records the following information.

1. Rachel Carson was born in 1907.
2. She went to school in Pennsylvania.
3. She is the author of the most important book about the environment ever written.
4. Rachel Carson was 11 years old when her first story appeared in a magazine.

Which piece of information is an opinion?

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

Part II

Directions (31–45): Record your answers in the space provided below each question.

- 31** A student predicted that all objects with a mass greater than 9 grams (g) will sink in water. After finding the masses of four objects, the student placed each object in a pan of water to determine if it would sink or float. The results of the experiment are shown in the data table below.

Data Table

Object	Mass (g)	Sank or Floated in Water
small rock	10 g	sank
wooden block	16 g	floated
iron nail	2 g	sank
plastic ball	1 g	floated

Based on the results shown in the data table, the student's original prediction that all objects with a mass greater than 9 g would sink was incorrect.

Describe the evidence from the data table that proves that the prediction was *incorrect*. [1]

Evidence: _____

32 Students in a class take turns measuring the mass of the classroom pet bird. Each student fills out a record card for the bird's mass in grams (g). These record cards are shown below.

Date: 9/29
Mass of bird: 20 g

Date: 9/15
Mass of bird: 15 g

Date: 9/22
Mass of bird: 15 g

Date: 9/8
Mass of bird: 10 g

Organize the data from the record cards to show how the mass of the bird changed over time, and enter them in the table below. The data in the first column are shown. [1]

Date	9/8			
Mass of bird (g)	10			

Base your answers to questions 33 and 34 on the data table below and on your knowledge of science. The data table shows some average monthly air temperatures, in degrees Fahrenheit (°F), at the Albany Airport for three years.

Some Average Monthly Air Temperatures at Albany Airport for Three Years (°F)

Month	2006	2007	2008
January	32	28	28
March	36	32	34
May	58	61	56
July	75	71	74
September	61	65	64
November	45	38	40

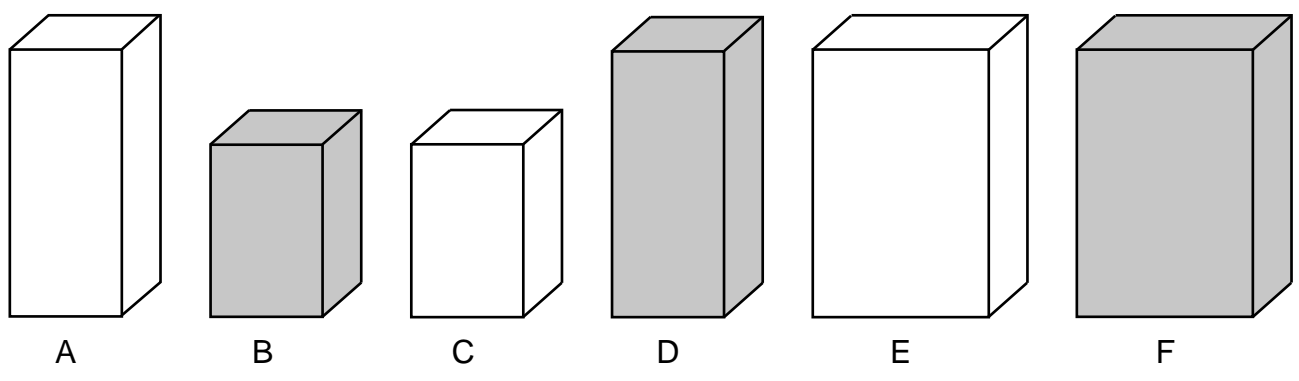
33 Identify the month with the highest average monthly air temperature for the three years. [1]

34 Estimate the most likely average air temperature for April 2008. [1]

_____ °F

35 Give **one** reason why eating a balanced diet is important for good health in humans. [1]

36 The diagram below shows six boxes, labeled *A* through *F*.

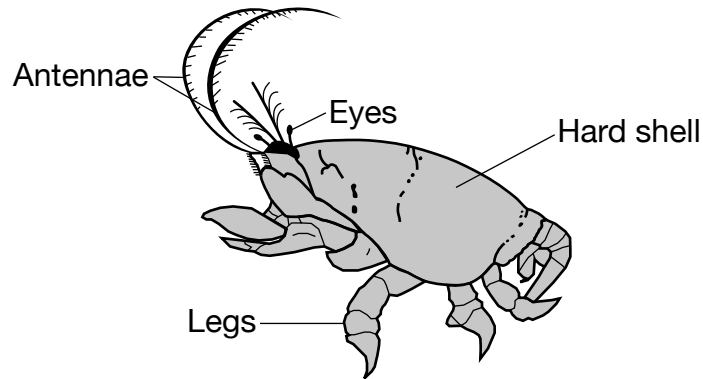


Sort the boxes into two groups according to their height (how tall they are) by placing the letter of each box in the correct column of the chart below. [1]

Short	Tall

Base your answers to questions 37 and 38 on the information and diagram below, and on your knowledge of science.

The common sand crab lives within the breaking waves of sandy beaches. To feed, it quickly burrows backwards into the sand with its powerful legs, and leaves only its feather-like antennae sticking out to remove small food particles from the water of the waves.



(Not drawn to scale)

37 Explain how the antennae could help the sand crab survive in its environment. [1]

38 The shell of the sand crab is light brown in color. Describe how this could help the sand crab to survive in this environment. [1]

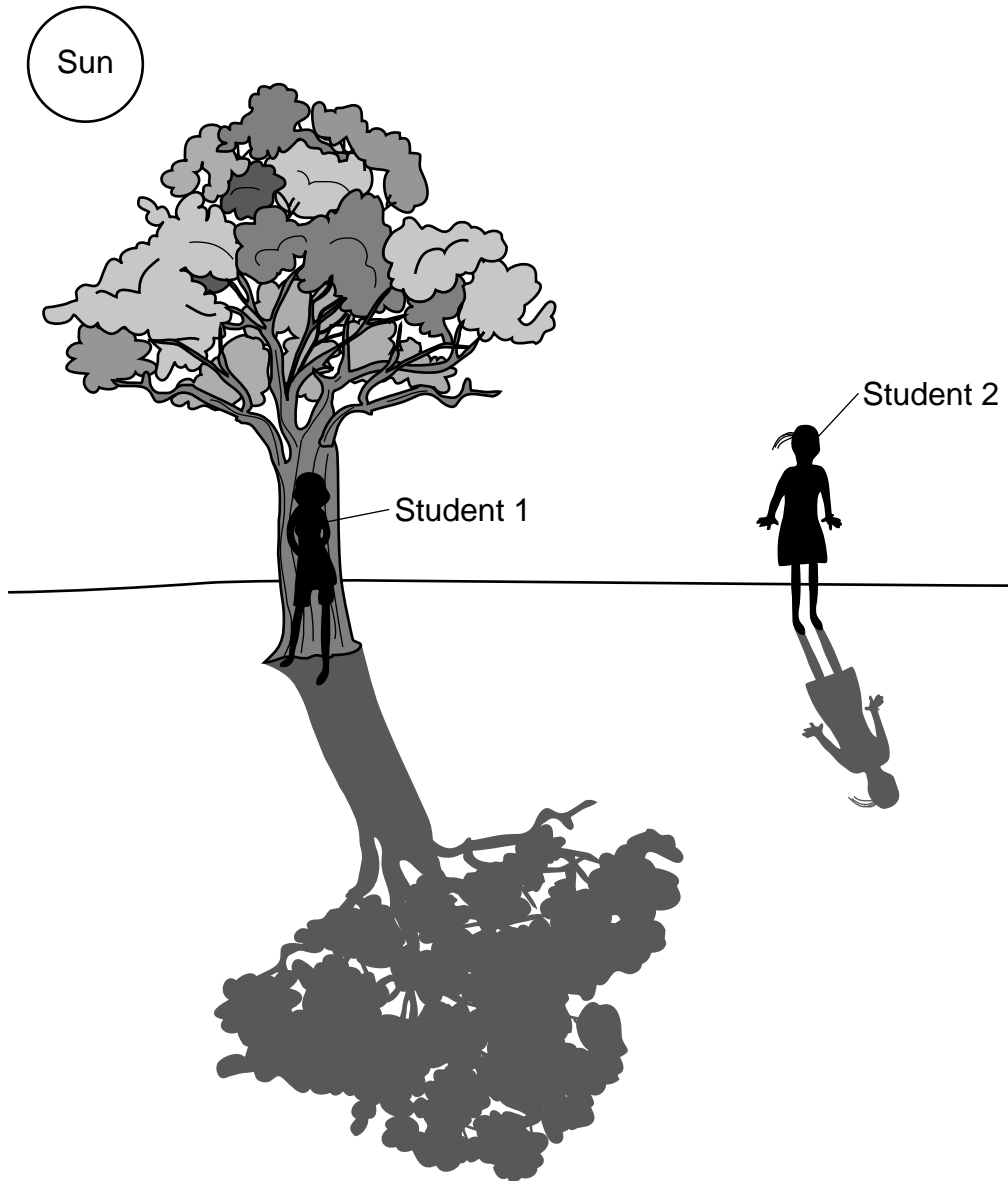
39 The diagram below shows some birds with their nest.



Each spring, many birds spend time looking for the best places to build their nests. Describe **one** reason why this is an important task for the birds. [1]

40 In large cities, people are beginning to plant vegetable gardens on the roofs of their apartment buildings. Explain how these gardens may be helpful to the people living in these areas. [1]

Base your answers to questions 41 and 42 on the diagram below and on your knowledge of science. The diagram shows two students outside on a sunny day. Student 1 notices that she can **not** see her shadow. Student 2 notices that she can see her shadow.

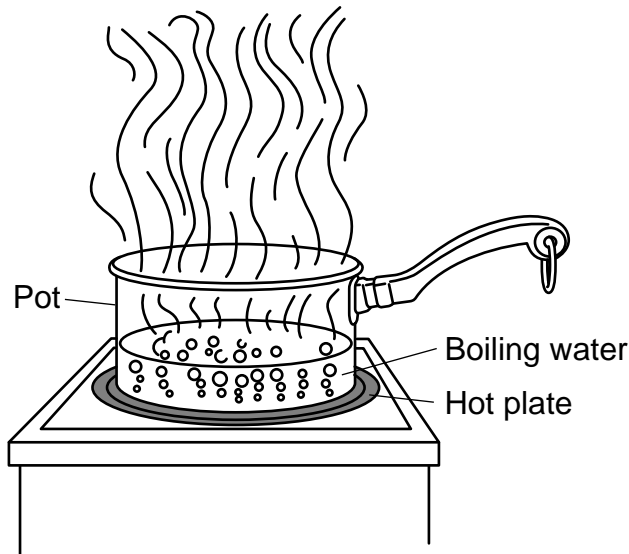


(Not drawn to scale)

41 Explain why student 1 can **not** see her shadow, even though student 2 can see her shadow. [1]

42 Describe **one** way student 2's body might respond if she continued to stay in this sunny location. [1]

Base your answers to questions 43 and 44 on the information below and on your knowledge of science. The diagram shows a pot of boiling water on a hot plate.

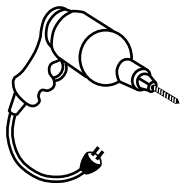


43 Identify the type of energy that is directly causing the water to boil. [1]

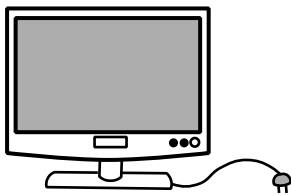
_____ **energy**

44 The handle on the pot is **not** made out of metal. Identify **one** material that the handle could be made out of so that it could be safe to touch. [1]

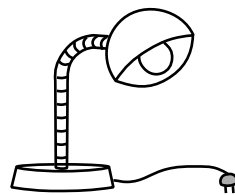
45 The diagrams below show three objects that use the same type of energy: a drill, a television, and a lamp.



Drill



Television



Lamp

(Not drawn to scale)

Identify the main form of energy used by all three objects. [1]

_____ **energy**

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	1	
40	1	
41	1	
42	1	
43	1	
44	1	
45	1	
Total	15	