

THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 4

ELEMENTARY-LEVEL SCIENCE TEST

WRITTEN TEST

JUNE 3, 2013

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 13 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.

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

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 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.

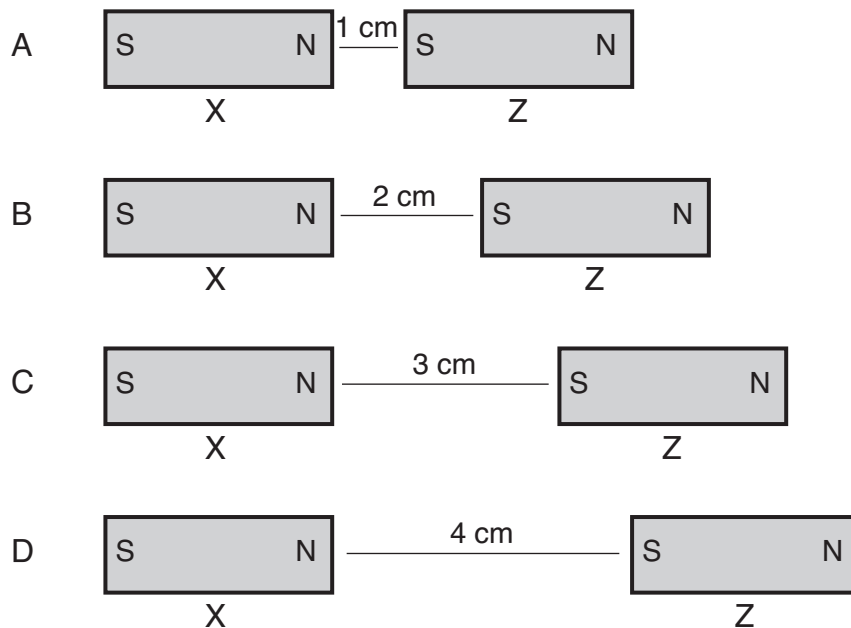
When you have finished Part I, go on to Part II. Answer all of the questions in Part II in the space for each question.

Part I

1 Which statement describes how energy can be helpful?

- A Lightning strikes a building.
- B A fire burns down a house.
- C Electricity heats an oven.
- D The wind blows down a sign.

2 The four diagrams below show two magnets, X and Z. They are different distances apart in each diagram. In which diagram will magnet Z have the strongest attraction to magnet X?



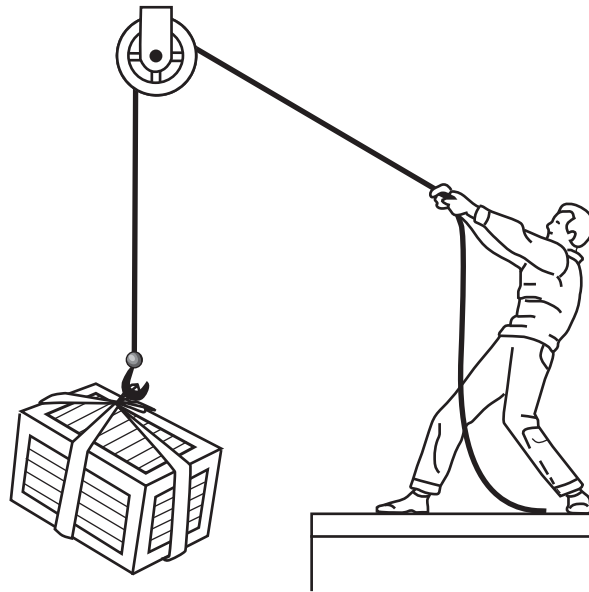
3 There is a shadow under a tree. Which form of energy must be present for the shadow to occur?

- A heat
- B light
- C sound
- D mechanical

4 Matter is defined as anything that takes up space and has

- A mass
- B texture
- C odor
- D color

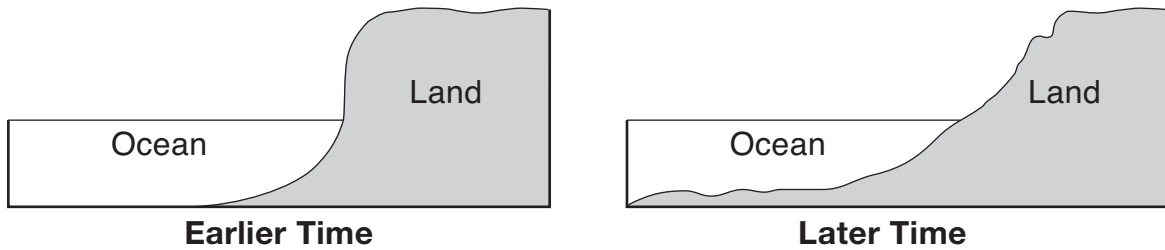
5 The diagram below shows a person using a tool to lift a box.



Which tool is being used?

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

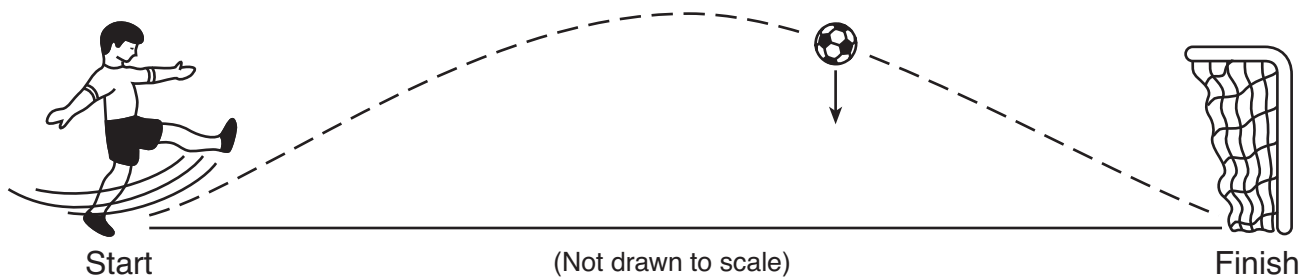
- 6** The diagrams below show side views of an area of land near the ocean. The diagrams show how this area changed over a period of time.



The changes to the land shown in the diagram were most likely caused by

- A erosion and deposition
 - B erosion and magnetism
 - C gravity and evaporation
 - D gravity and condensation
- 7** The hardness, odor, and taste of an object can all be
- A measured with a metric ruler
 - B measured with a spring scale
 - C observed with the senses
 - D observed with a hand lens
- 8** 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

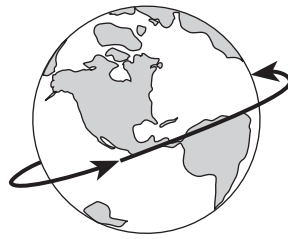
- 9 The diagram below shows the path of a soccer ball as it travels from start to finish. The arrow represents a force acting on the ball.



Which force is represented by the arrow?

- A magnetism
 - B gravity
 - C electricity
 - D friction
- 10 The appearance of the Moon as observed from Earth changes over time because of the Moon's
- A path around Earth
 - B length of daylight
 - C gravity
 - D temperature

11 The diagram below shows Earth rotating.



What is the total number of complete rotations that Earth makes in 2 weeks?

- A 1
- B 2
- C 7
- D 14

12 Which force causes a bicycle to slow down when the brakes are used?

- A friction
- B electricity
- C gravity
- D magnetism

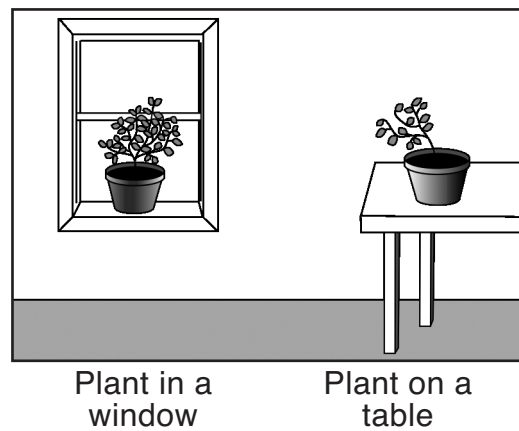
13 Which organisms break down and recycle dead plants and animals?

- A predators
- B prey
- C decomposers
- D producers

14 Which activity is a good health habit?

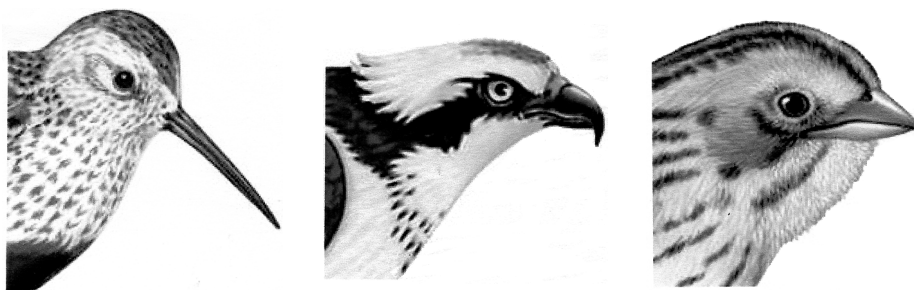
- A drinking alcohol
- B exercising regularly
- C sleeping only 5 hours daily
- D smoking cigarettes

- 15** Two plants of the same species and size were planted in identical pots of soil. One pot was placed in a window and the other was placed on a table. Both plants were given the same amount of water and nutrients. The diagram below shows the two plants after 1 month.



The plant in the window grew bigger because it received more

- A light
 - B air
 - C water
 - D nutrients
- 16** The diagram below shows the beaks of three different birds. Birds use their beaks to obtain food.



(Not drawn to scale)

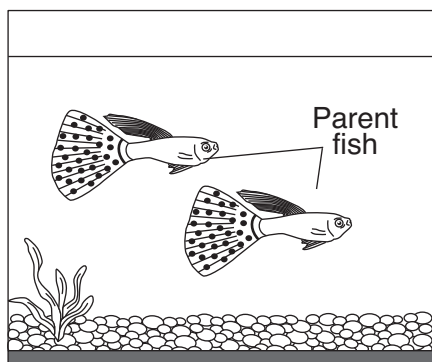
The differences in the birds' beaks are examples of

- A migrations
- B hibernations
- C physical adaptations
- D seasonal changes

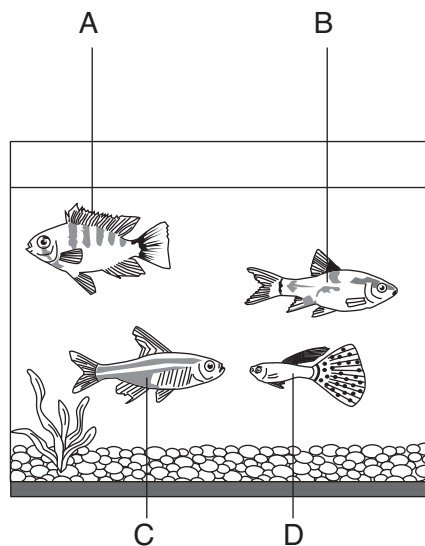
17 One example of a living thing is

- A air
- B water
- C a rock
- D a worm

18 Two tanks with fish are shown below. Parent fish are in tank 1. The fish in tank 2 are labeled A, B, C, and D.



Tank 1



Tank 2

Which fish in tank 2 is most likely the offspring of the two parent fish in tank 1?

- A A
- B B
- C C
- D D

19 Animals get the energy they need for growth and repair by

- A eating food
- B absorbing sunlight
- C eliminating waste
- D drinking water

- 20** A dog growls when a predator gets close. Growling is an example of which animal behavior?
- A migration
 - B hibernation
 - C communication
 - D germination
- 21** 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
- 22** Which two processes occur during the life spans of all animals?
- A hibernation and migration
 - B growth and development
 - C changing color and shedding fur
 - D building nests and communication
- 23** Which term is an example of a life process?
- A coloration
 - B camouflage
 - C migration
 - D reproduction
- 24** In late fall, a rabbit's fur grows thicker. This adaptation occurs to
- A keep the rabbit's body warm
 - B keep the rabbit safe from predators
 - C help the rabbit find a mate
 - D help the rabbit find green plants

- 25** The photograph below shows burdock seeds. The seeds are inside a structure with thin, sharp hooks.



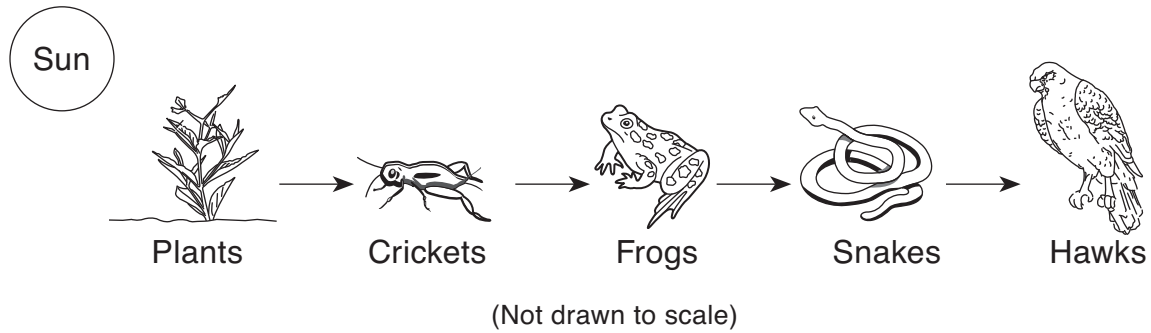
These seeds will most likely be dispersed when they

- A are eaten by animals
- B attach to an animal's fur
- C germinate in the soil
- D develop in the water

Note that question 26 has only three choices.

- 26** A large amount of oil was spilled in a lake environment. Within a few weeks, the number of plants and animals living in the area where the oil was spilled will most likely
- A decrease
 - B increase
 - C remain the same

Base your answers to questions 27 and 28 on the food chain below and on your knowledge of science



27 If the number of frogs suddenly increases, which population will most likely *decrease* first?

- A hawks
- B snakes
- C crickets
- D plants

28 What is the main source of energy for all the organisms in this food chain?

- A Sun
- B plants
- C frogs
- D hawks

29 Which items would be most useful at home during a power failure?

- A flashlights and extra batteries
- B hats and sunscreen
- C raincoats and umbrellas
- D insect spray and jackets

30 The data table below shows some average monthly air temperatures for a city in New York State. The average air temperature for the month of April is *not* shown.

Data Table

Month	Average Air Temperature (°F)
January	21
February	24
March	34
April	???
May	58
June	67

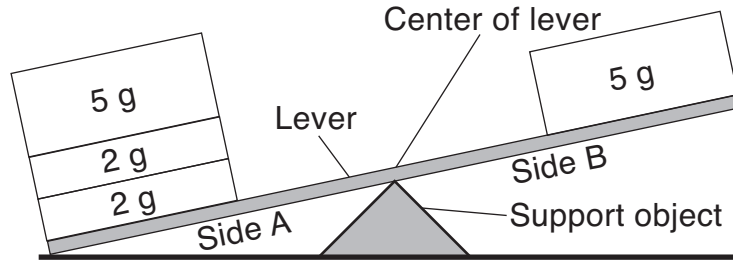
Based on the data, what would the average air temperature probably have been in April?

- A 28°F
- B 34°F
- C 46°F
- D 60°F

Part II

Directions (31–43): Record your answers in the space provided below each question.

Base your answers to questions 31 and 32 on the diagram below and on your knowledge of science. The diagram shows four blocks placed on sides A and B of a lever. The mass of each block is shown.



31 Explain why side A of the lever is lower than side B. [1]

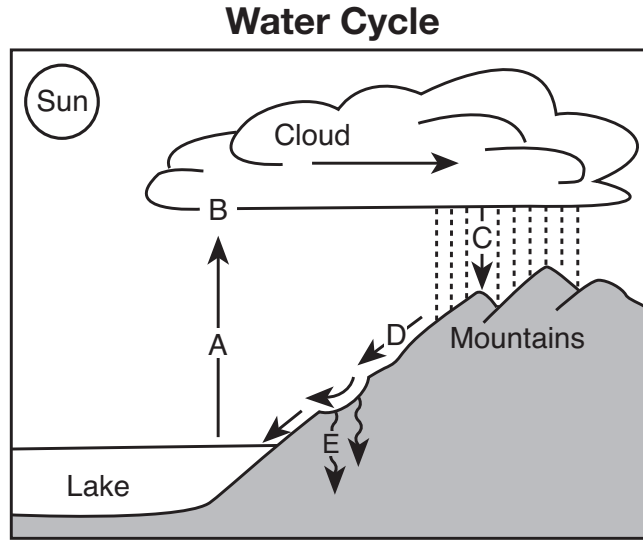
32 Explain how the four blocks can be rearranged on the lever so that it will be balanced. [1]

33 Describe **two negative** effects that a tornado can have on animals living in the area. [2]

(1) _____

(2) _____

34 The diagram below shows the processes in the water cycle, labeled A through E.



Select the letter from the diagram that shows each process in the water cycle and place the letters in the chart below. The letter for groundwater moving into the ground is shown. [1]

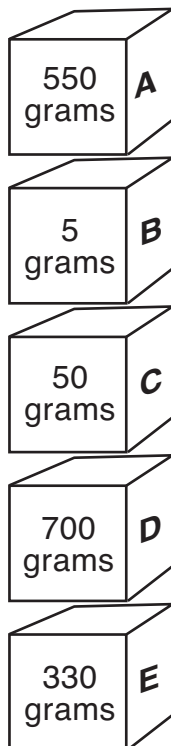
Process	Letter from Diagram
groundwater moves into the ground	E
condensation	
evaporation	
runoff	
precipitation	

- 35 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. [1]

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	

- 36 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. [1]

_____ and _____

Base your answers to questions 37 and 38 on the data table below and on your knowledge of science. The table shows the air temperatures recorded for a week in September, 2004 in Albany, New York, at 12 p.m. and 8 p.m.

Data Table

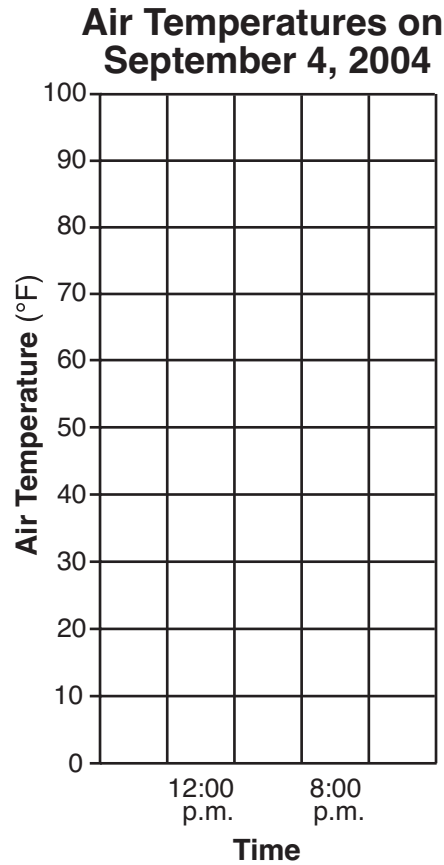
Date	Air Temperature (°F)	
	12 p.m.	8 p.m.
September 1	73	58
September 2	82	59
September 3	72	63
September 4	80	60
September 5	76	56
September 6	76	52
September 7	77	56

37 What date and time had the *lowest* recorded air temperature? [1]

Date: _____, **2004**

Time: _____ **p.m.**

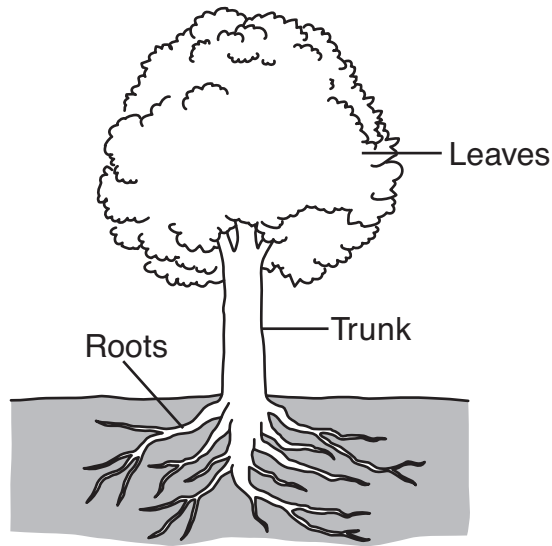
38 Use the grid below to make a bar graph of the air temperatures on September 4, 2004. [1]



39 Some objects transform one form of energy to another form of energy. The chart below lists three objects that transform energy. Complete the chart by filling in each blank with a correct form of energy. The energy transformation for the first object is shown. [2]

Object	Energy Transformation
solar-powered calculator	changes light energy to electrical energy
battery	changes chemical energy to _____ energy
drum	changes mechanical energy to _____ energy

40 The diagram below shows three major structures of a tree.

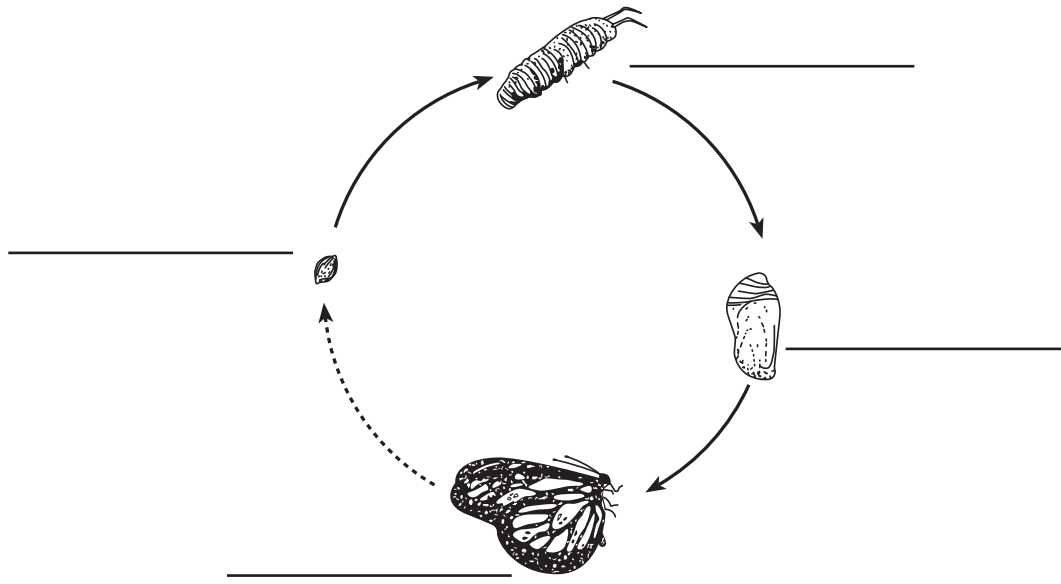


Select **one** structure labeled in the diagram and explain how it helps the tree to grow and survive. [1]

Structure: _____

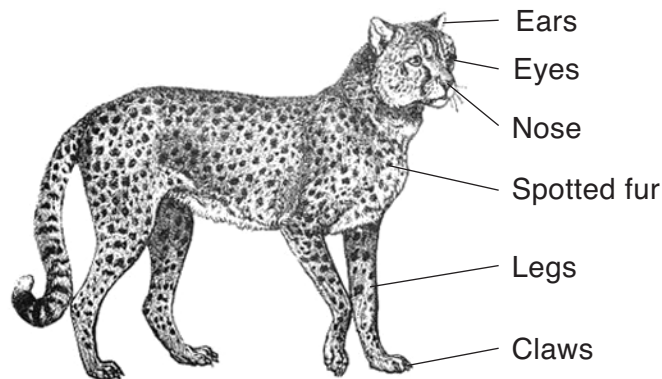
Explanation: _____

41 The diagram below shows the four stages in the life cycle of a butterfly. Identify the stages using these words: larva, adult, egg, pupa. [1]



(Not drawn to scale)

42 The diagram below shows an adult cheetah. Several external body structures are labeled.



Select **one** external body structure of the cheetah labeled in the diagram. Explain how that body structure helps the cheetah to survive in its environment. [1]

Body structure: _____

Explanation: _____

43 Trains, cars, and airplanes help humans travel quickly. What is **one** *negative* effect that the use of these types of transportation has on the environment? [1]

GRADE 4 ELEMENTARY-LEVEL SCIENCE

For Teacher Use Only Part II Credit

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