

THE UNIVERSITY OF THE STATE OF NEW YORK

# GRADE 4

## ELEMENTARY-LEVEL SCIENCE TEST

### WRITTEN TEST

SPRING 2007

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 12 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.**

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THE STATE EDUCATION DEPARTMENT  
ALBANY, NEW YORK 12234

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## 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.

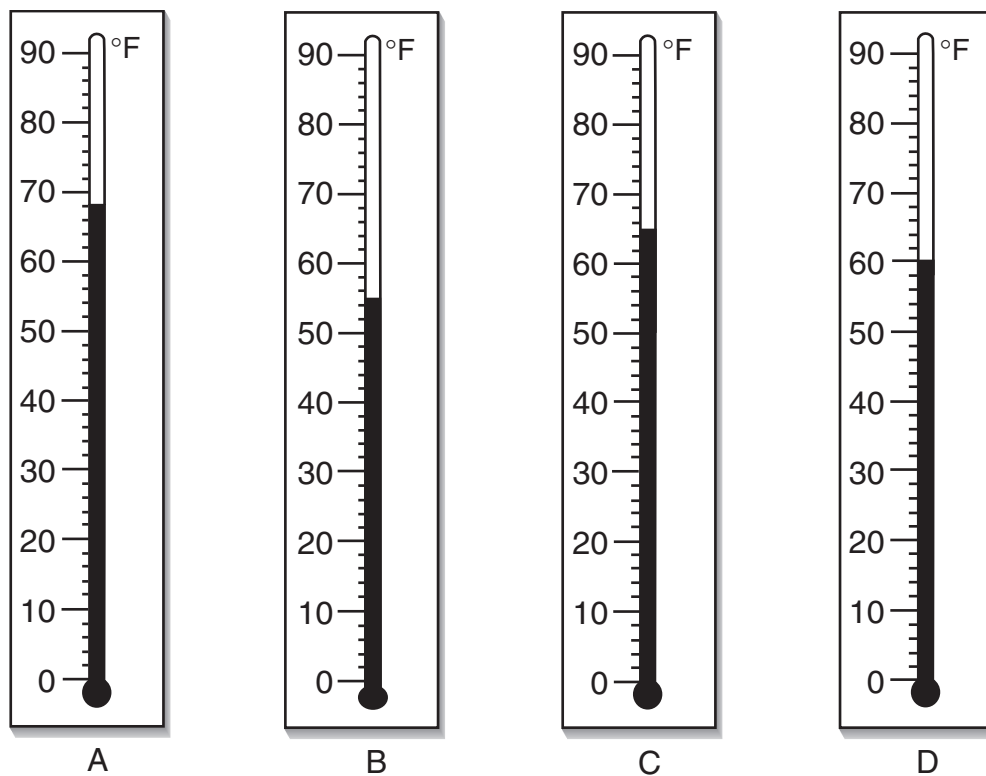
## Part I

- 1 If an object is attracted to a magnet, the object is most likely made of
  - A wood
  - B plastic
  - C cardboard
  - D metal
  
- 2 What form of energy causes an ice cube to melt?
  - A mechanical
  - B magnetic
  - C sound
  - D heat
  
- 3 Which unit of measurement can be used to describe the length of a desk?
  - A centimeters
  - B grams
  - C liters
  - D degrees Celsius
  
- 4 Which force causes a marble to sink to the bottom of a glass of water?
  - A gravity
  - B friction
  - C magnetism
  - D electricity

5 What motion causes day and night?

- A revolution of Earth
- B revolution of the Moon
- C rotation of Earth
- D rotation of the Moon

6 Which thermometer shows a temperature of 65°F?



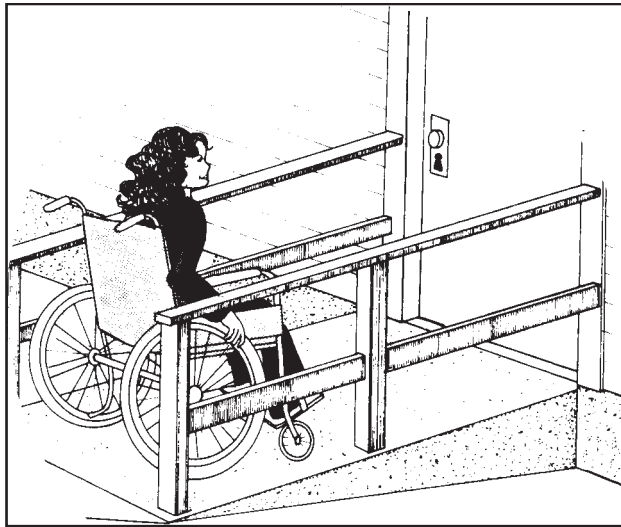
7 Which instrument should a student use to measure exactly 10 milliliters (mL) of water?

- A graduated cylinder
- B pan balance
- C ruler
- D thermometer

8 An object's hardness, taste, and texture are examples of

- A principles
- B stages
- C properties
- D processes

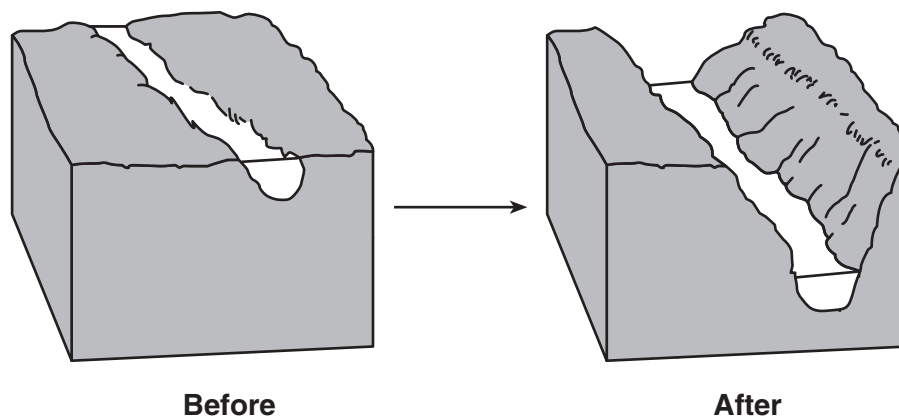
9 The diagram below shows a girl in a wheelchair using a ramp to enter a building.



The ramp she is using is an example of which simple machine?

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

- 10 The diagram below shows the land surface changes caused by a river flowing through an area for many years.



Which process caused the changes shown?

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

Base your answers to questions 11 and 12 on the diagram below and on your knowledge of science.

The diagram shows two containers, *A* and *B*. Container *A* contains 150 milliliters of water. Container *B* is empty.



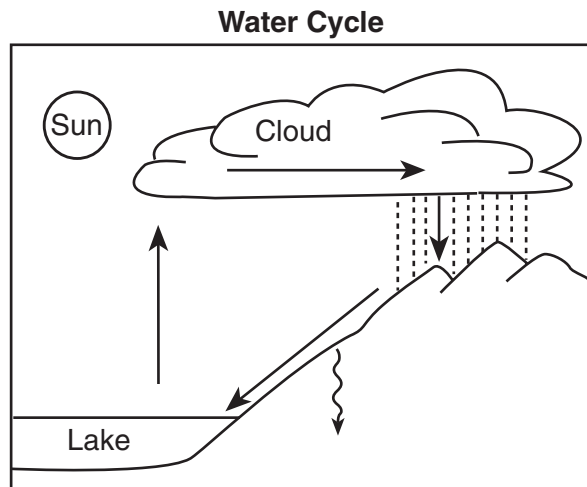
**Note that question 11 has only three choices.**

- 11** If all of the water from container *A* is poured into container *B*, what will happen to the volume of the water?
- A It will decrease.
  - B It will increase.
  - C It will remain the same.
- 12** If all the water from container *A* is poured into container *B*, which property of the water will change?
- A mass
  - B color
  - C shape
  - D state

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Base your answers to questions 13 and 14 on the diagram of the water cycle below and on your knowledge of science.



**13** Runoff is best described as water that

- A condenses into a cloud
- B flows on the ground
- C evaporates into a gas
- D moves downward into the ground

**14** What is the source of energy for the water cycle?

- A lake
- B Sun
- C cloud
- D forest

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- 15** The data table below shows the highest air temperature recorded each day from Monday through Friday.

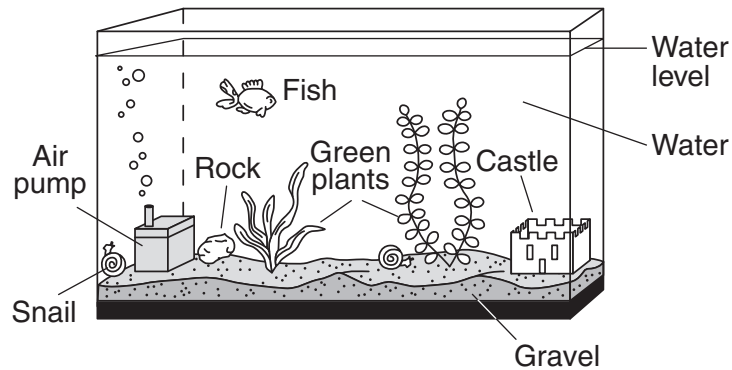
**Data Table**

<b>Day</b>	<b>Air Temperature (°F)</b>
Monday	57
Tuesday	52
Wednesday	58
Thursday	71
Friday	75

Based on the data table, which statement is correct?

- A The air temperature went up steadily from Monday through Friday.
  - B Monday and Friday were the warmest days.
  - C The air temperature went up and then down.
  - D The air temperature was higher on Friday than on Monday.
- 16** Growing thicker fur in the winter helps some animals to
- A hide from danger
  - B attract a mate
  - C find food
  - D keep warm
- 17** Apple trees can live for many years, but bean plants usually live for only a few months. This statement suggests that
- A different plants have different life spans
  - B plants depend on other plants
  - C plants produce many offspring
  - D seasonal changes help plants grow

Base your answers to questions 18 and 19 on the diagram below. The diagram shows some living and nonliving things in a fish tank.



**18** Which is a living thing shown in the diagram?

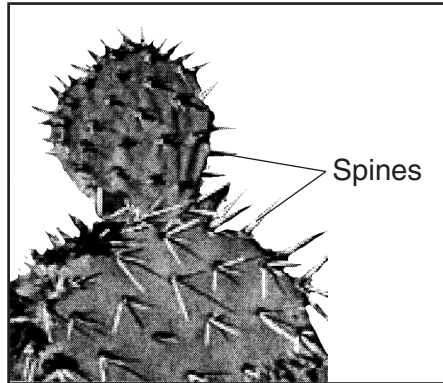
- A rock
- B fish
- C air pump
- D gravel

**19** After several weeks, a student observes that the water level in the tank is lower. What process caused this to happen?

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

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**20** What is the main function of the spines on the prickly cactus plant shown in the diagram below?



Source: [www.desertusa.com](http://www.desertusa.com) (adapted)

- A to make food
- B to provide shade
- C to attract animals
- D to protect the plant

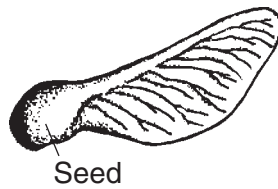
**21** Which activity is necessary for humans to maintain good health?

- A reading
- B resting
- C driving
- D talking

**22** A decrease in air temperature from 60°F to 35°F would most likely cause a person to

- A shiver
- B sweat
- C blink his eyes
- D feel sleepy

**23** The diagram below shows the seed of a maple tree.



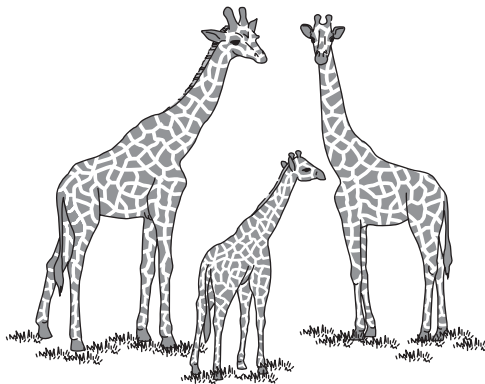
How is this seed most likely dispersed?

- A It is carried by the wind.
- B It floats in moving water.
- C It passes through an animal's digestive system.
- D It sticks to an animal's fur.

**24** Some birds fly south before winter each year. This is an example of

- A migration
- B hibernation
- C germination
- D evaporation

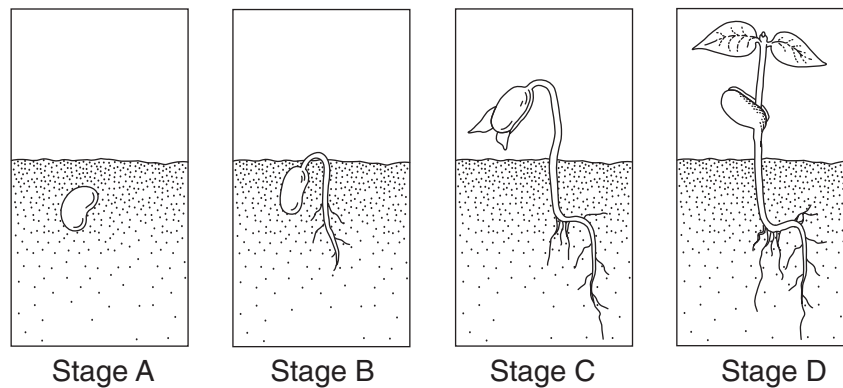
**25** The diagram below shows a baby giraffe with its parents.



The long neck on the baby giraffe is

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

**26** The diagram below shows the stages of development of a plant.



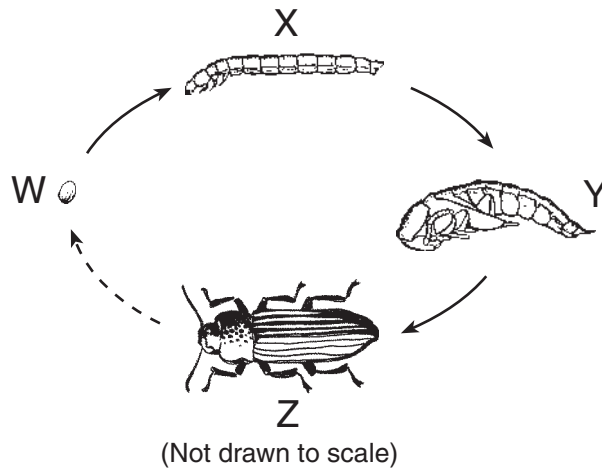
At which stage has germination begun?

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

**27** Living things depend on energy from

- A the Sun
- B the Moon
- C soil
- D water

28 The diagram below shows the life cycle of a mealworm. The stages in its life cycle are labeled W, X, Y, and Z.



Which stage is shown at Y?

- A adult
- B egg
- C larva
- D pupa

29 Which adaptation often helps an animal attract a mate?

- A hibernation
- B camouflage
- C coloration
- D migration

30 A decomposer is an organism that

- A preys on other animals
- B eats only plants
- C recycles nutrients
- D uses sunlight to make food

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**GO RIGHT ON TO PART II ⇒**

## Part II

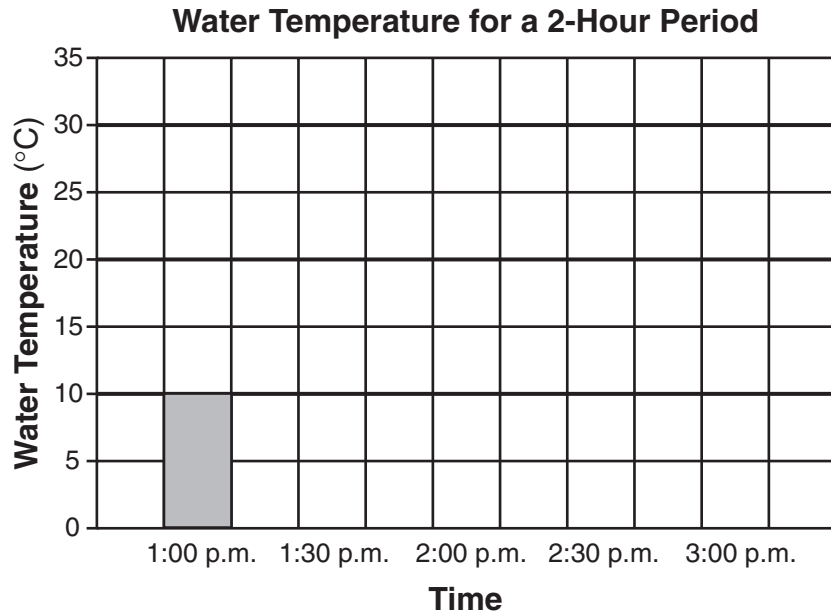
*Directions* (31–42): Record your answers in the spaces provided below each question.

- 31** A student filled a cup with water and placed it in front of a window on a sunny day. She measured the temperature of the water every 30 minutes for 2 hours. The data she collected are shown below.

**Data Table**

Time	Water Temperature
1:00 p.m.	10°C
1:30 p.m.	20°C
2:00 p.m.	26°C
2:30 p.m.	28°C
3:00 p.m.	30°C

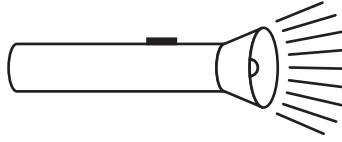
Complete the bar graph below to show the student's data. The bar for 1:00 p.m. is shown as an example. [2]



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Base your answers to questions 32 and 33 on the diagram of a flashlight below and on your knowledge of science.



**32** When the flashlight is turned on, electrical energy is changed to which type of energy? [1]

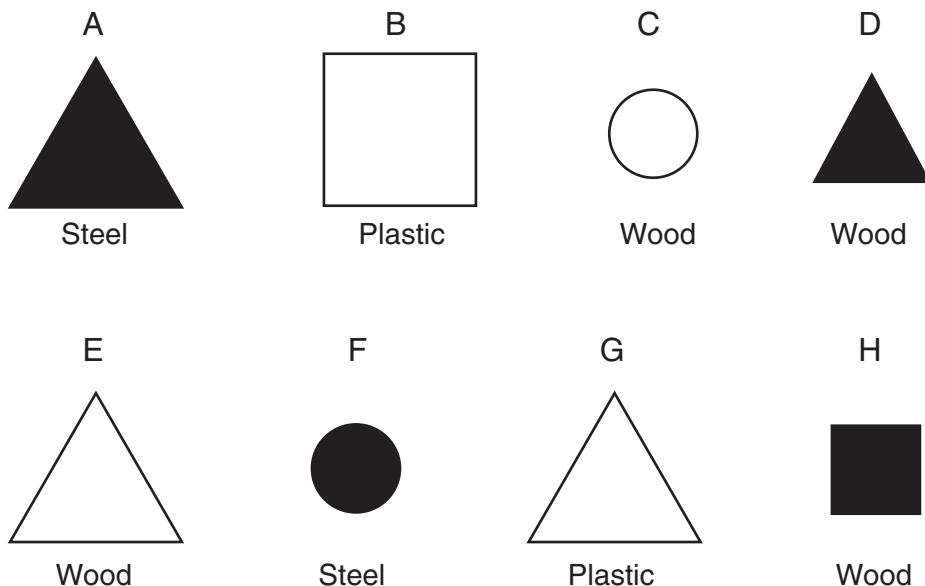
\_\_\_\_\_ energy

**33** Explain **one** reason why the flashlight might **not** light. [1]

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Base your answers to questions 34 and 35 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.



**34** 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. [1]

<b>Triangles</b>

<b>Not Triangles</b>

**35** Identify the property used to sort all of the blocks into the two groups shown below. [1]

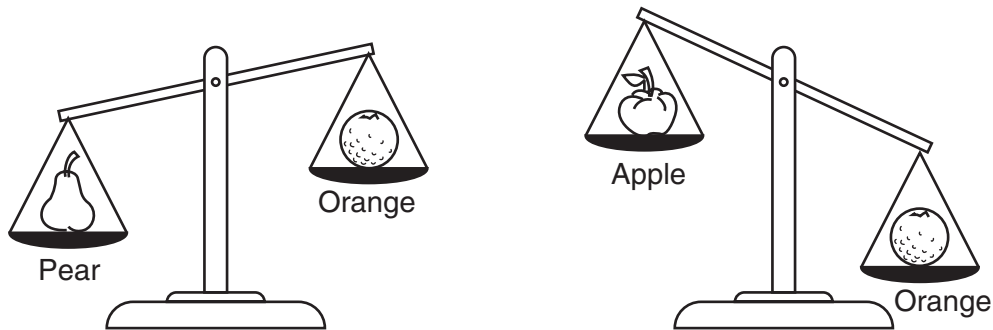
<b>Group 1</b>
A D F H

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

Property: \_\_\_\_\_

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**36** A student uses a pan balance to compare the masses of an orange, an apple, and a pear. Using the same orange, the student compared its mass to the mass of the pear and then to the mass of the apple. The results are shown in the diagrams below.



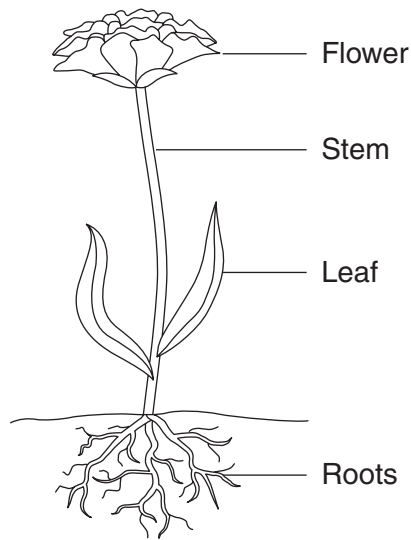
In the spaces below, list the three fruits in order from the **least** mass to the **greatest** mass. [1]

1	2	3
least mass		greatest mass

**37** Complete the chart below by identifying the state of matter of each substance. [1]

Substance	State of Matter
water vapor	
water	
ice cube	

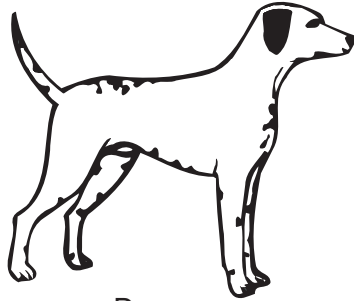
38 The diagram below shows four plant structures.



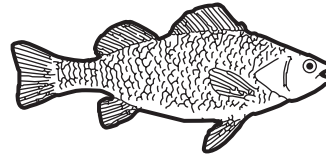
Complete the chart below by identifying the plant structure that performs each function. The plant structure in the first row is shown as an example. [2]

Function	Plant Structure
supports the plant	stem
takes in water and nutrients	
makes the food for the plant	
produces fruit and seeds	

39 The diagrams below show a dog and a fish.



Dog



Fish

Identify **two** body structures the fish has that the dog does **not** have. [2]

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

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

40 Many owls live in a forest. Each year, more of the trees in the forest are cut down. Describe **one** way this change in the environment might affect these owls. [1]

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41 Explain why camouflage helps an animal survive in a forest environment. [1]

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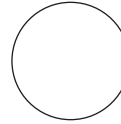
42 The diagrams below are part of a food chain. Place a number from 1 to 4 on the line below each diagram to show the order in which energy flows through this food chain. [1]



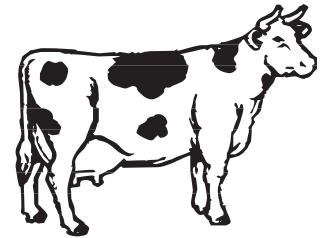
Corn



Student drinking milk



Sun



Cow

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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**For Teacher Use Only**  
**Part II Credit**

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