

THE UNIVERSITY OF THE STATE OF NEW YORK

# GRADE 4

## ELEMENTARY-LEVEL SCIENCE TEST

### WRITTEN TEST

SPRING 2008

**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 11 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.**

Copyright 2008

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

NO PART OF THIS TEST MAY BE REPRODUCED AND/OR TRANSMITTED BY ANY MEANS WITHOUT WRITTEN PERMISSION.

## 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

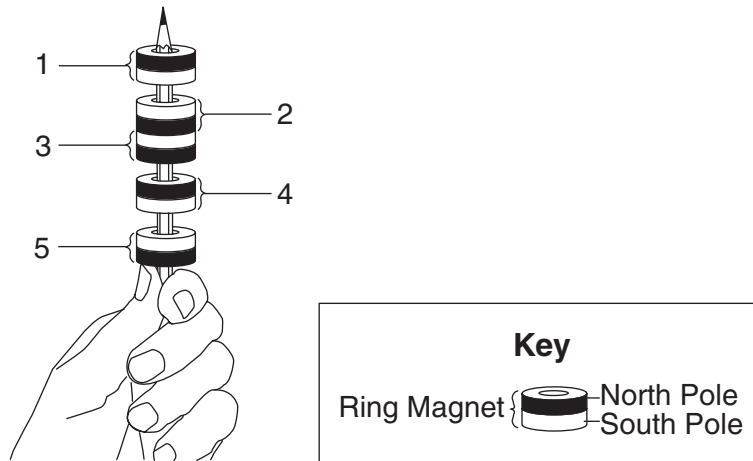
The correct answer is **bird**, which is next to letter **A**. On your answer sheet, you should have filled in circle **A**.

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 A student put five ring magnets on a pencil. The magnets are labeled 1, 2, 3, 4, and 5.



Which two magnets are attracting each other?

- A 1 and 2
  - B 2 and 3
  - C 3 and 4
  - D 4 and 5
- 2 Which property of an object is identified using the sense of smell?
- A color
  - B odor
  - C temperature
  - D weight
- 3 Which type of energy is needed to cut a piece of wood into smaller pieces with a saw?
- A light
  - B heat
  - C sound
  - D mechanical

4 Which material is the best conductor of electricity?

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

5 What force causes objects to be pulled toward Earth?

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

**Note that question 6 has only three choices.**

6 When a rock is placed in a graduated cylinder containing water, the height of the water will

- A decrease
- B increase
- C remain the same

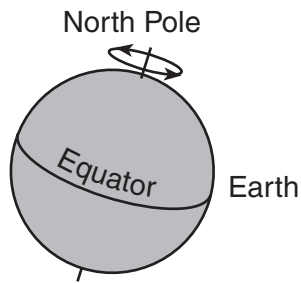
7 Which energy transformation occurs when a person hits a drum with a drumstick?

- A electrical to light
- B sound to electrical
- C light to mechanical
- D mechanical to sound

8 A magnet and a metal paper clip have the strongest magnetic attraction when the distance between them is

- A 4 centimeters
- B 8 centimeters
- C 12 centimeters
- D 16 centimeters

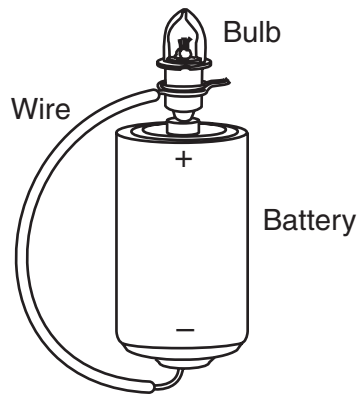
9 The diagram below shows a view of Earth.



The arrows represent Earth's

- A gravity
  - B weather
  - C revolution
  - D rotation
- 10 A student rubs her hands together on a cold winter day. The heat that warms her hands is produced by
- A friction
  - B gravity
  - C light
  - D magnetism
- 11 Which property of a rubber band will stay the same when it is stretched?
- A shape
  - B length
  - C mass
  - D width
- 12 Precipitation is most likely to occur when the sky
- A is clear and sunny
  - B is partly sunny
  - C has thick, dark clouds
  - D has white, puffy clouds

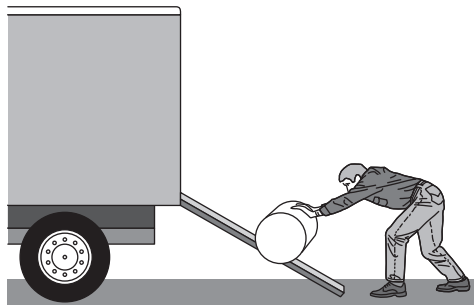
13 The diagram below shows a bulb and a wire attached to a battery.



Why would this bulb be lit?

- A The battery is out of energy.
- B The bulb is out of energy.
- C The circuit is opened.
- D The circuit is closed.

14 The diagram below shows a person rolling a barrel into the back of a truck.



What simple machine is the person using to help roll the barrel?

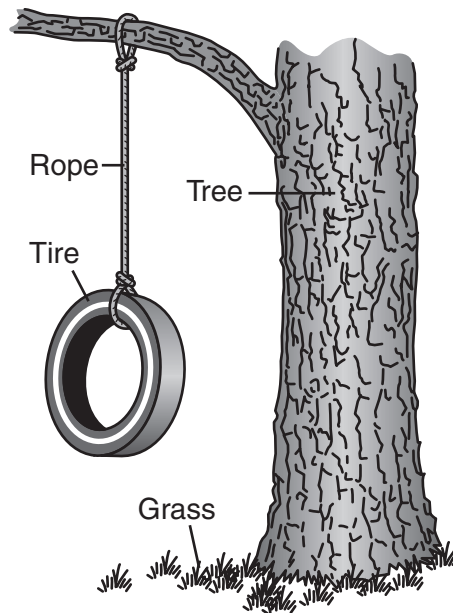
- A balance
- B pulley
- C lever
- D inclined plane

**Note that question 15 has only three choices.**

**15** In which state of matter does water have a definite shape and volume?

- A gas
- B liquid
- C solid

**16** The diagram below shows several objects.



Which objects in the picture are *nonliving*?

- A tree and rope
- B tire and rope
- C grass and tire
- D grass and tree

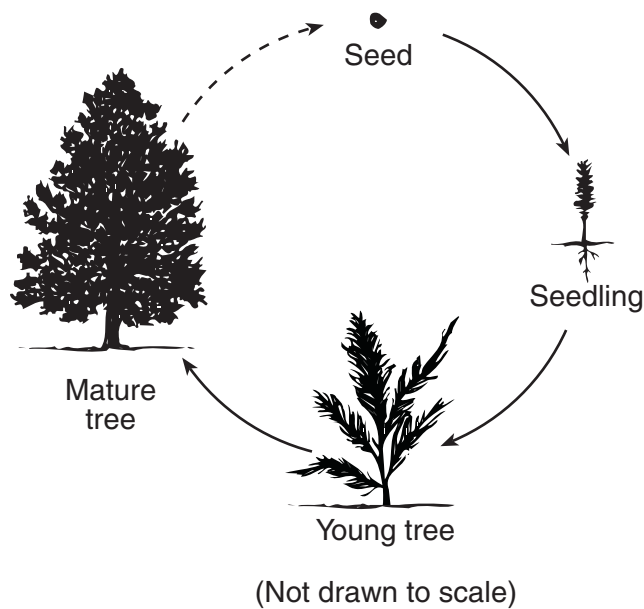
**17** In order to survive, all animals need

- A heat, water, and soil
- B sunlight, soil, and heat
- C sunlight, air, and food
- D food, water, and air

18 Which part of a plant takes in water and nutrients from the soil?

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

19 The diagram below shows the growth of a tree.



This diagram represents a

- A food chain
- B food supply
- C life span
- D life cycle

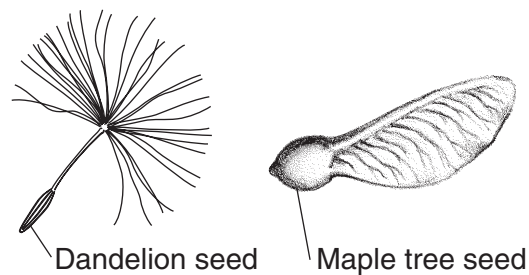
20 Which physical change would most likely help an animal survive during the winter?

- A tail gets longer
- B fur gets thicker
- C feathers are shed
- D whiskers get shorter

**21** The leaves of a tree change color in the fall. This is an example of a tree

- A completing its life cycle
- B preparing for migration
- C responding to its environment
- D beginning hibernation

**22** Two seeds are shown in the diagram below.



(Not drawn to scale)

How are these seeds most likely dispersed?

- A by wind
- B in water
- C on an animal's fur
- D eaten by animals

**23** One role of a producer in a food chain is to provide

- A water for plants
- B sunlight for plants
- C nutrients for animals
- D shelter for animals

**24** Which sequence shows the life cycle of some insects?

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

- 25** What is the major source of energy for food chains?
- A water
  - B air
  - C sunlight
  - D grass
- 26** Which statement is an example of how humans have changed the natural environment?
- A Wind and rain destroy wheat plants.
  - B The Sun's energy helps a wheat plant grow.
  - C A forest is cleared to make space to plant wheat.
  - D A wheat plant's seeds are scattered by the wind.
- 27** Some birds fly south in the fall and return in the spring. This is an example of
- A migration
  - B camouflage
  - C hibernation
  - D growth
- 28** Which statement is an example of an inherited trait in a living thing?
- A A child learns to ride a bicycle.
  - B A cat has a kitten with a broken leg.
  - C A white dog has a puppy with white fur.
  - D A person has a scar from a burn.

29 The chart below shows three properties of five objects.

**Properties of Five Objects**

Object	Properties		
	Color	Texture	Shape
1	red	smooth	round
2	yellow	rough	oval
3	green	rough	round
4	red	smooth	oval
5	blue	rough	rectangle

What color is the round object that has a rough surface?

- A blue
- B green
- C red
- D yellow

**30** A group of students wants to record the change in temperature of a container of water every 2 minutes for a period of 10 minutes. Which table will best organize these data?

Time (min)	Temperature (°C)
0	
1	
2	
3	
4	
5	

A

Time (min)	Temperature (°C)
0	
2	
2	
2	
2	
2	

C

Time (min)	Temperature (°C)
0	
2	
4	
6	
8	
10	

B

Time (min)	Temperature (°C)
0	
10	
20	
30	
40	
50	

D

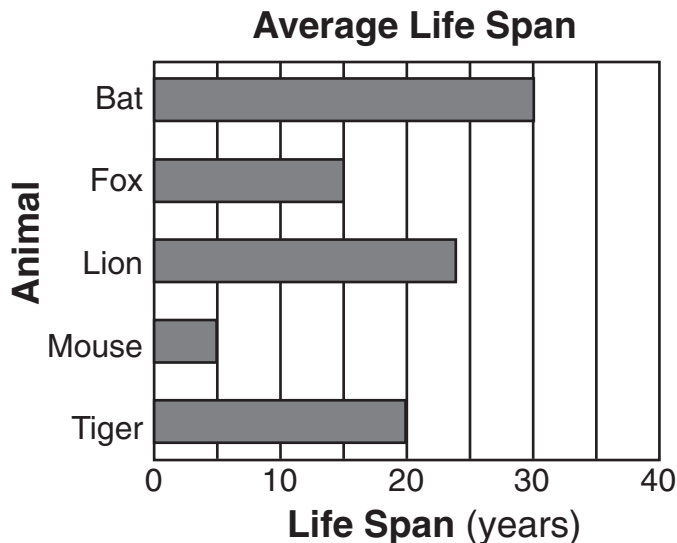
\*\*\*\*\*

**GO RIGHT ON TO PART II ⇒**

## Part II

*Directions* (31–41): Record your answers in the space provided below each question.

Base your answers to questions 31 and 32 on the bar graph below and on your knowledge of science. The bar graph shows the average life span of five different animals.

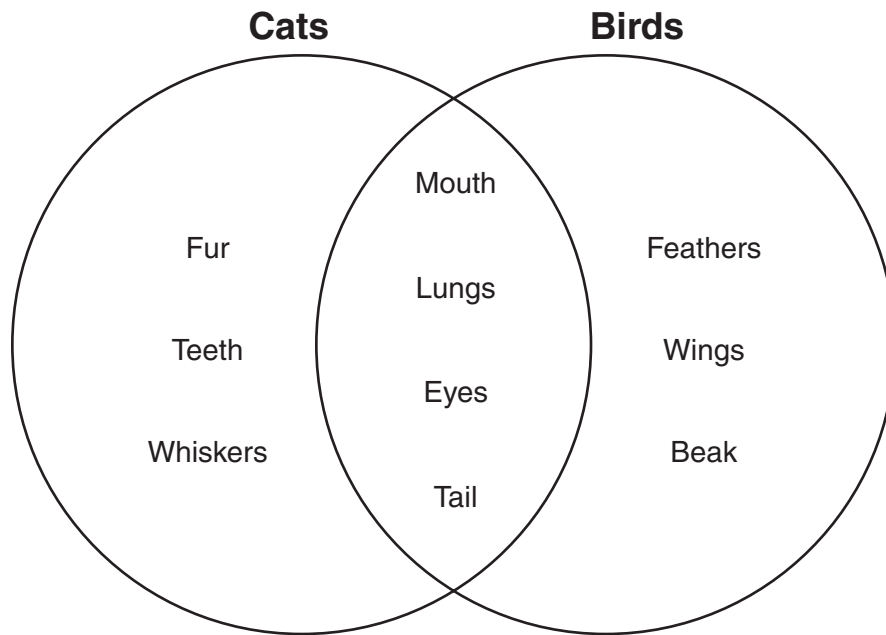


**31** Which animal has the *shortest* life span? [1] \_\_\_\_\_

**32** How much longer is the life span of a bat than the life span of a fox? [1]  
\_\_\_\_\_ years

\*\*\*\*\*

Base your answers to questions 33 and 34 on the Venn diagram below. The diagram compares some physical structures of cats and birds.



**33** Identify **two** physical structures that birds and cats have in common. [1]

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

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

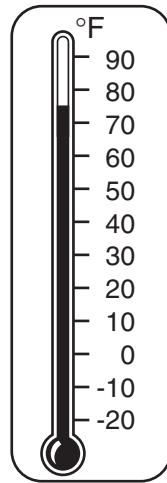
**34** Identify **two** physical structures that birds have but cats do **not** have. [1]

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

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

\*\*\*\*\*

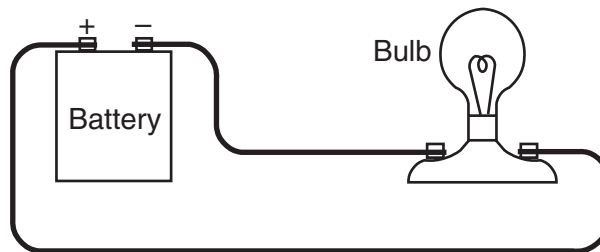
**35** The diagram below shows a Fahrenheit thermometer in a classroom.



What is the air temperature shown on the thermometer? [1]

\_\_\_\_\_ °F

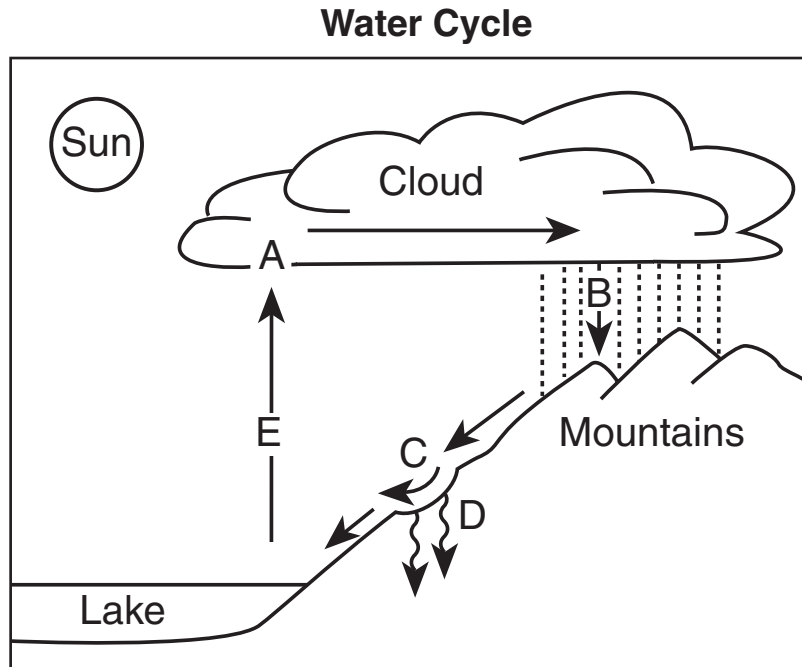
**36** The diagram below shows an electric circuit.



Chemical energy from the battery is changed into electrical energy. This electrical energy is then changed to which type of energy? [1]

\_\_\_\_\_ energy

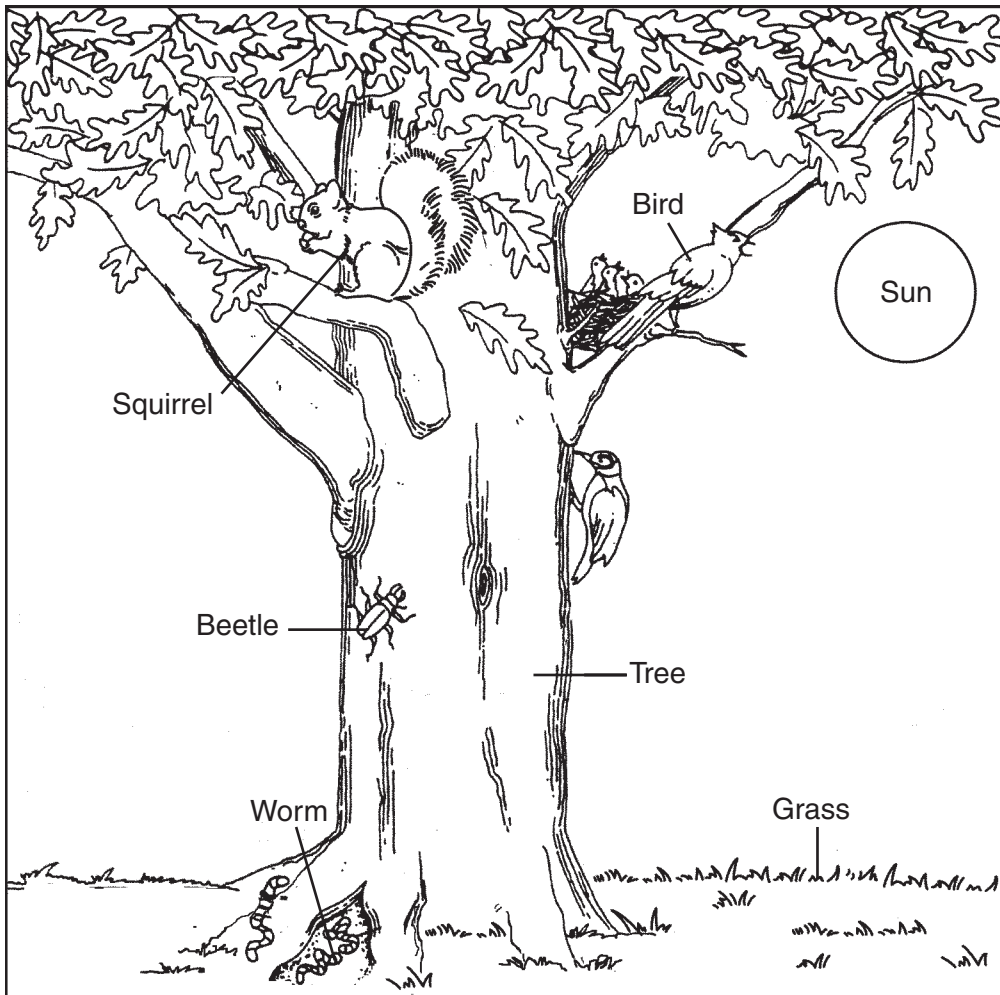
**37** A diagram of the water cycle is shown below. The letters *A* through *E* represent five different processes taking place.



In the chart below, write the letter shown in the diagram that matches each process. [2]

Process	Letter from Diagram
condensation	
evaporation	
groundwater	
precipitation	
runoff	

38 The diagram below shows some organisms living together.



(Not drawn to scale)

Adapted from: *Project Learning Tree: Environmental Education Activity Guide pre K-8*, American Forest Foundation, Fifth Edition, 1997

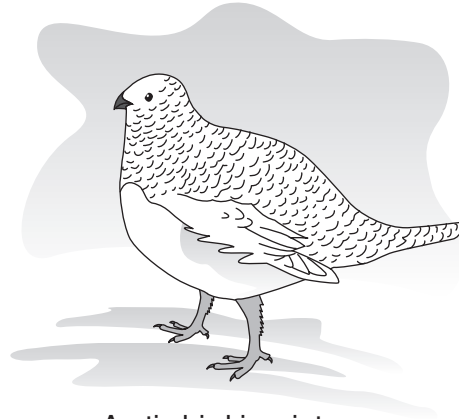
Using an organism from the diagram, fill in the blank to complete the food chain below. [1]

Sun → \_\_\_\_\_ → Beetles → Birds

**39** The diagrams below show an arctic bird in summer and the same bird in winter.



Arctic bird in summer



Arctic bird in winter

Identify **two** different characteristics of the arctic bird that change from summer to winter. [2]

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

\_\_\_\_\_

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

\_\_\_\_\_

**40** A scientist studied a population of deer in an area. One year later, half of the deer population had moved to another area. Identify **two** factors that might have caused the deer to move. [2]

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

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

41 Identify **two** changes in the environment that cause some animals to hibernate during the winter. [2]

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

\_\_\_\_\_

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

\_\_\_\_\_

\*\*\*\*\*







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

<b>Question</b>	<b>Maximum Credit</b>	<b>Credit Allowed</b>
<b>31</b>	<b>1</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>2</b>	
<b>38</b>	<b>1</b>	
<b>39</b>	<b>2</b>	
<b>40</b>	<b>2</b>	
<b>41</b>	<b>2</b>	
<b>Total</b>	<b>15</b>	