

THE UNIVERSITY OF THE STATE OF NEW YORK

# GRADE 4

## ELEMENTARY-LEVEL SCIENCE TEST

### WRITTEN TEST

JUNE 1, 2015

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 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.

**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

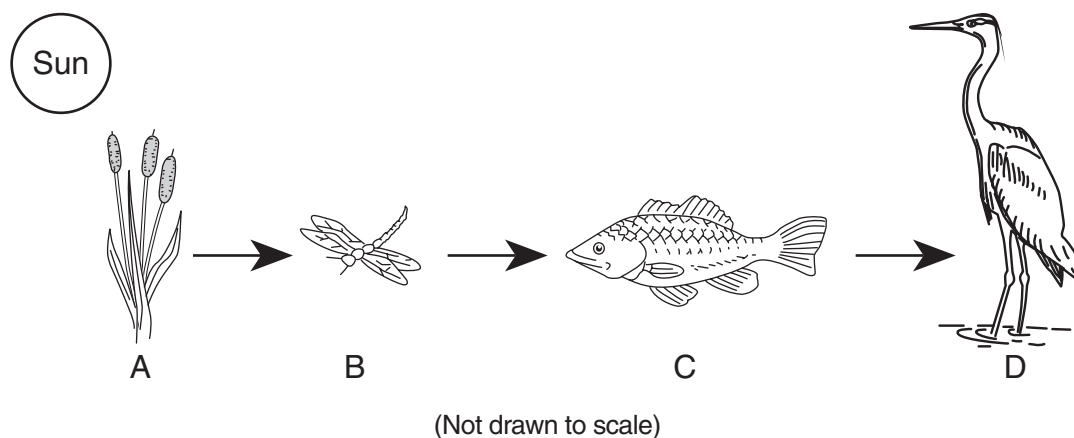
The correct answer is **bird**, which is next to letter **A**. On your answer sheet, you should have filled in circle **A**.

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

Base your answers to questions 1 and 2 on the food chain below and on your knowledge of science. Four organisms in the food chain are labeled *A*, *B*, *C*, and *D*.



1 Which organism in this food chain is both predator and prey?

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

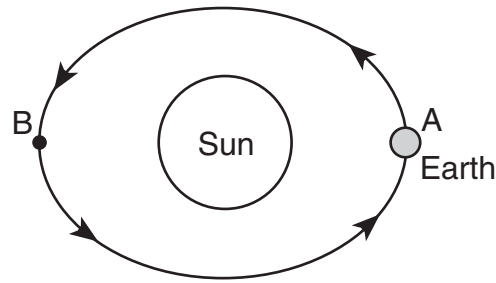
**Note that question 2 has only three choices.**

2 If the population of organism *A* **decreases**, the population of organism *B* would most likely

- A decrease
- B increase
- C remain the same

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- 3 The diagram below shows Earth revolving around the Sun. Letters *A* and *B* show two locations in Earth's orbit around the Sun.



(Not drawn to scale)

It takes Earth one year to revolve around the Sun. How long will it take for Earth to travel from point *A* to point *B*?

- A 1 month
  - B 3 months
  - C 6 months
  - D 9 months
- 4 Which two terms are used to describe weather?
- A wind direction and amount of erosion
  - B gravity and amount of rain
  - C groundwater and cloud cover
  - D air temperature and wind speed
- 5 Which process occurs when ocean waves drop seashells on a beach?
- A condensation
  - B deposition
  - C classification
  - D rotation

- 6 Which unit of measurement should be used to describe the mass of an apple?
- A gram
  - B liter
  - C minute
  - D meter

**Note that question 7 has only three choices.**

- 7 An object is attracted to a magnet. When the magnet is moved away from the object, the magnetic force on the object will
- A decrease
  - B increase
  - C remain the same
- 8 Which characteristic describes the texture of a kitten's fur?
- A gray
  - B warm
  - C long
  - D soft

- 9 The diagram below shows a pencil being measured with paper clips.



What is the length of the pencil in paper clips?

- A 4.0
- B 4.5
- C 5.0
- D 5.5

- 10** A student pours water into a cup and places the cup in a freezer. After many hours, the water will change from
- A solid to gas
  - B solid to liquid
  - C liquid to solid
  - D liquid to gas
- 11** Which energy transfer occurs when a student blows a whistle?
- A electrical to sound
  - B light to electrical
  - C heat to mechanical
  - D mechanical to sound
- 12** Which object is the best conductor of electricity?
- A glass rod
  - B wooden stick
  - C plastic straw
  - D metal nail
- 13** Which color baseball cap would absorb the most light on a sunny day?
- A pink
  - B black
  - C white
  - D yellow

- 14** Which force causes a soccer ball to fall to the ground after it has been kicked up in the air?
- A erosion
  - B friction
  - C gravity
  - D magnetism
- 15** Volume and mass are properties of
- A friction
  - B light
  - C matter
  - D sound
- 16** Which tool should a student use to examine spots on a frog?
- A thermometer
  - B hand lens
  - C graduated cylinder
  - D magnet



**17** Which process is common to most living things?

- A flying
- B talking
- C seeing
- D reproducing

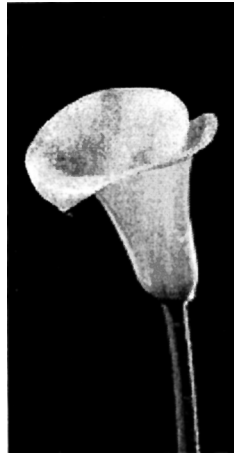
**18** Which trait can children inherit from their parents?

- A long hair
- B favorite color
- C brown eyes
- D broken arm

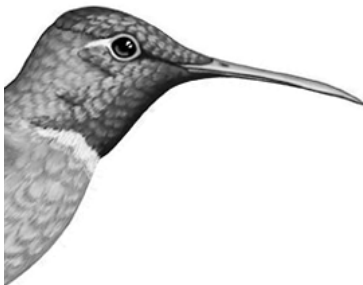
**19** During which process do animals increase in size?

- A breathing
- B growing
- C shedding
- D repairing

**20** The diagram below shows a flower that contains a sweet liquid called nectar.



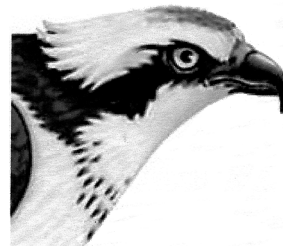
Four birds, labeled *A*, *B*, *C*, and *D*, are shown below. The birds eat different foods.



*A*



*B*



*C*



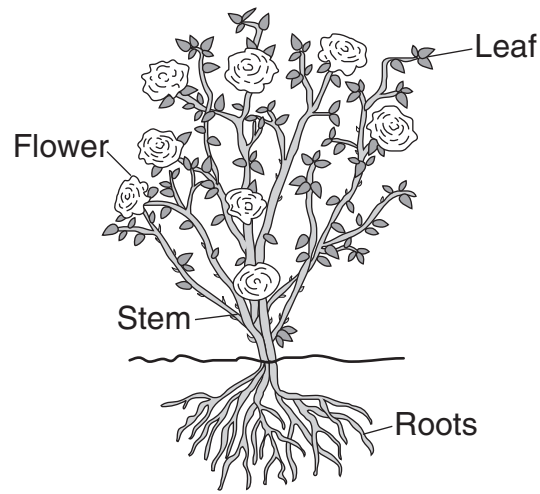
*D*

(Not drawn to scale)

Which bird's beak will make it easiest to get nectar out of the flower?

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

Base your answers to questions 21 and 22 on the diagram of a flowering plant below and on your knowledge of science. Four structures that help the plant to survive, grow, and reproduce are labeled.



(Not drawn to scale)

**21** Which structure takes in water and nutrients from the soil?

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

**22** Which structure produces seeds for reproduction?

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

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- 23** An octopus squirts black ink around itself to hide from predators. This adaptation is an example of
- A creating shelter
  - B recycling nutrients
  - C a transfer of energy
  - D a defense mechanism
- 24** Which activity is an example of a good health habit?
- A riding a bicycle without a helmet
  - B smoking cigarettes
  - C wearing a hat while in the Sun
  - D eating with dirty hands
- 25** The correct order of a plant's stages of growth and development is
- A young plant → seed → mature plant
  - B seed → mature plant → young plant
  - C seed → young plant → mature plant
  - D mature plant → young plant → seed

- 26** In the spring and early summer, bears often scratch their backs against trees to remove winter fur. This is an example of an animal
- A completing its life cycle
  - B beginning hibernation
  - C responding to its environment
  - D preparing for migration
- 27** A bird builds a nest to
- A hibernate in winter
  - B shelter its offspring
  - C produce more feathers
  - D eliminate waste
- 28** Which type of organism helps return nutrients from dead plants and animals to the soil?
- A producer
  - B prey
  - C predator
  - D decomposer

**29** What is the main source of energy for all of the organisms in most food chains?

- A sunlight
- B water
- C green plants
- D decomposers

**30** Which human activity will help conserve Earth's natural resources?

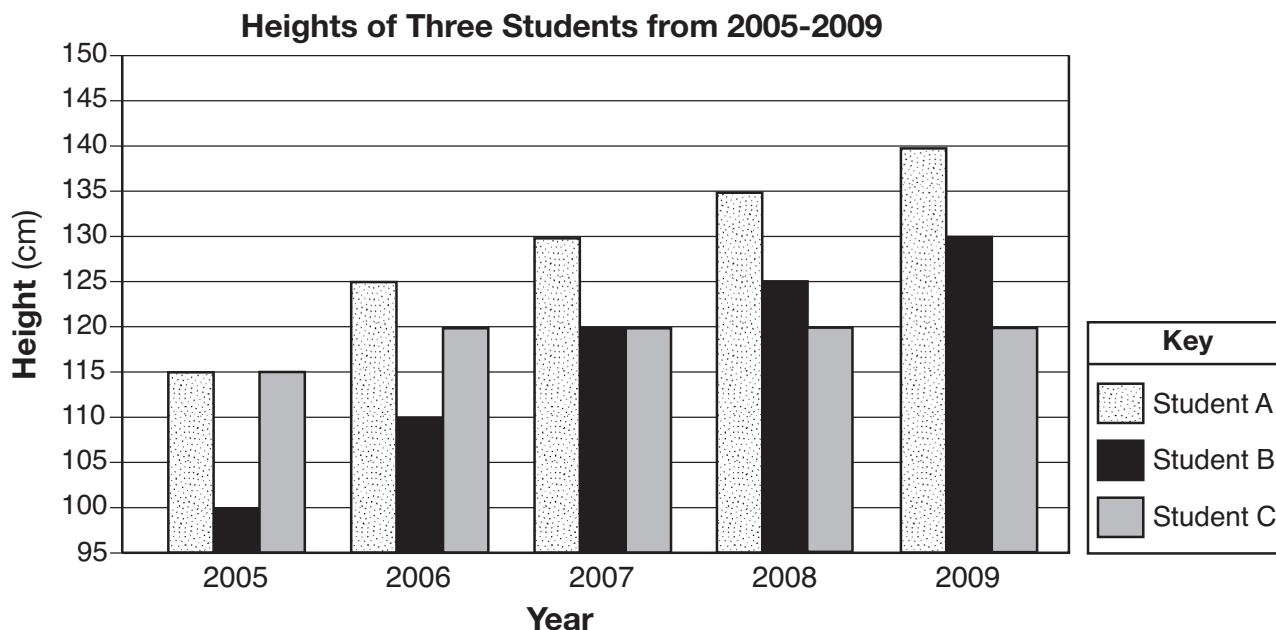
- A leaving the television on all day
- B recycling plastic bottles
- C cutting down trees
- D burning trash in the yard

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## Part II

*Directions* (31–44): 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 heights, in centimeters (cm), of three different students from 2005 to 2009.



**31** In which year were student *B* and student *C* the same height? [1]

\_\_\_\_\_

**32** In 2006, how much taller was student *A* than student *C*? [1]

\_\_\_\_\_ **cm**

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Base your answers to questions 33 and 34 on the data table below and on your knowledge of science. A student observes the color, temperature, and volume of five different liquids, *A*, *B*, *C*, *D*, and *E*. The observations are shown in the data table.

**Observations of Five Liquids**

Liquid	Color	Temperature	Volume
A	brown	80°C	6 mL
B	white	40°C	10 mL
C	clear	60°C	15 mL
D	pink	80°C	18 mL
E	brown	40°C	20 mL

**33** Based on the data table, which liquid is brown and has the lowest temperature? [1]

Liquid \_\_\_\_\_

**34** Write a statement that describes the difference between the volume of liquid *A* and the volume of liquid *D*. [1]

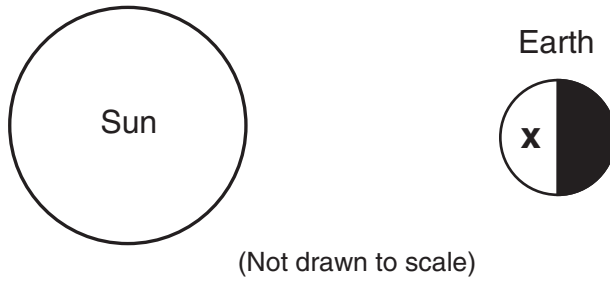
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**35** The diagram below shows the Sun and Earth. Letter *X* shows a location on Earth's surface.



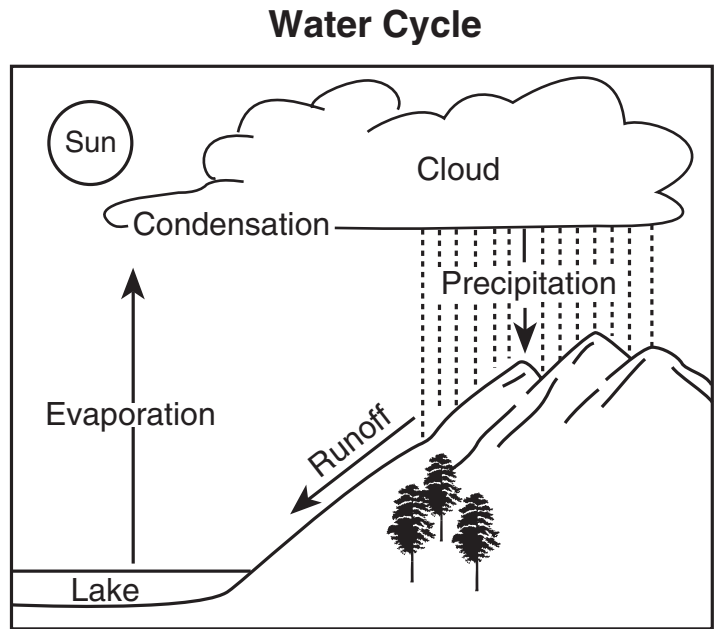
Location *X* is shown during the day. Explain why it will be night at location *X* in 12 hours. [1]

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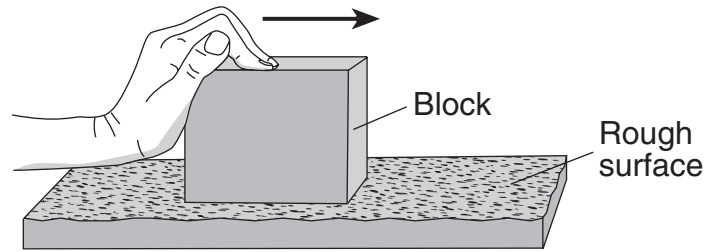
**36** Four processes in the water cycle are labeled in the diagram below.



The first column of the chart below describes what happens during each process in the water cycle. Complete the chart by filling in the word for **each** process. The process in the first row is shown. [1]

What Happens During the Process	Water Cycle Process
Water falls from the cloud to the ground.	precipitation
Liquid water flows over Earth's surface.	
Liquid water changes into water vapor.	
Water vapor changes into liquid water.	

Base your answers to questions 37 and 38 on the diagram below, which shows a wooden block being pushed across a rough surface.



**37** Explain why pushing the wooden block across the rough surface will make the bottom of the block feel warm. [1]

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**38** Describe **one** change to the block or to the surface that could be made so that the bottom of the block will **not** feel as warm after it is pushed. [1]

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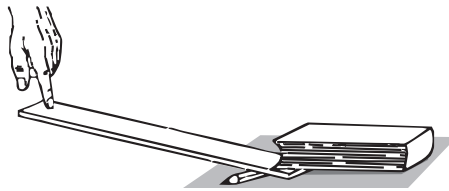
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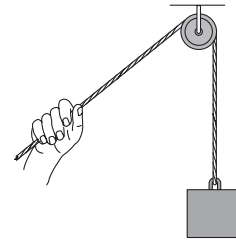
39 The diagrams below, labeled A, B, and C, show three different simple machines being used.



A



B



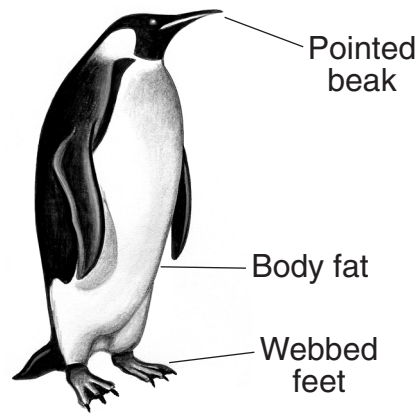
C

(Not drawn to scale)

In the chart below, write the letter of the diagram that shows an example of **each** simple machine. [1]

Simple Machine	Letter
lever	
pulley	
inclined plane	

**40** The diagram below shows a penguin. This penguin lives near water in a very cold environment. Three body structures are labeled.



Select **one** body structure labeled in the diagram. Explain how it helps the penguin survive in its environment. [1]

Body structure: \_\_\_\_\_

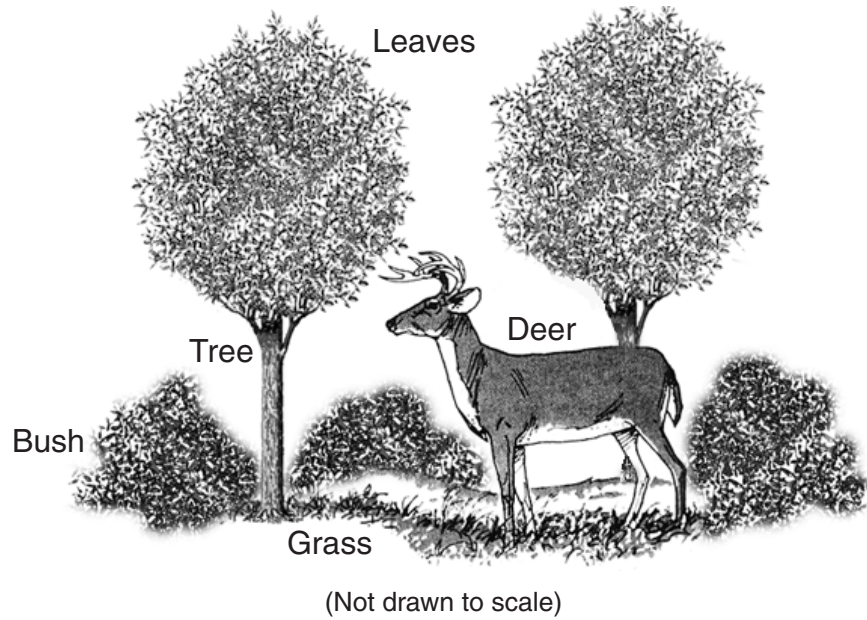
How this body structure helps the penguin survive in its environment:

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41 The diagram below shows a deer in a woodland environment.



Identify **two** ways that the deer depends on plants to survive. [2]

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

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

42 Give **one** reason why butterflies migrate in the fall. [1]

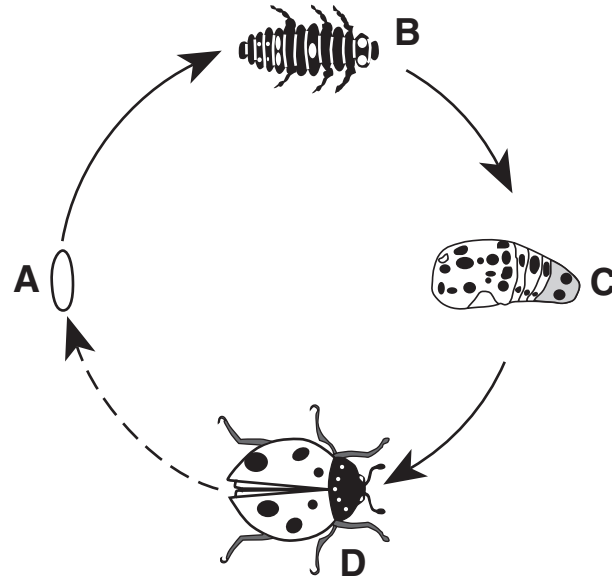
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Base your answers to questions 43 and 44 on the diagram below and on your knowledge of science. The diagram shows the life cycle of a lady bird beetle (ladybug). The four stages of development are labeled A, B, C, and D.

### The Life Cycle of the Lady Bird Beetle



(Not drawn to scale)

**43** In the chart below, write the letter from the diagram that represents **each** stage of development listed. The letter for the adult stage is shown. [1]

Stage of Development	Letter
adult	D
egg	
pupa	
larva	

**44** List **two** things that the lady bird beetle and other animals need to live. [1]

\_\_\_\_\_ and \_\_\_\_\_

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# GRADE 4 ELEMENTARY-LEVEL SCIENCE

## 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>1</b>	
<b>38</b>	<b>1</b>	
<b>39</b>	<b>1</b>	
<b>40</b>	<b>1</b>	
<b>41</b>	<b>2</b>	
<b>42</b>	<b>1</b>	
<b>43</b>	<b>1</b>	
<b>44</b>	<b>1</b>	
<b>Total</b>	<b>15</b>	