

Arizona's Instrument to Measure  
Standards  
AIMS Science

Sample Test  
Grade 4



Arizona Department of Education  
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Instruction

Assessment Section

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## Directions

Read the information about Regina's experiment, look at the illustrations and Table 1, then answer questions 1 – 3.

Regina explored the strength of a magnetic field by testing the number of paperclips the magnet could hold by following these steps:

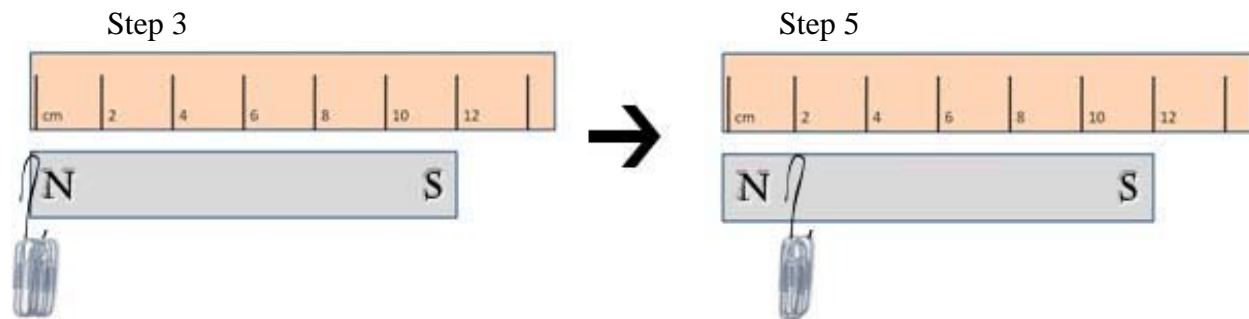
Step 1 - She opened a large paperclip to make a hook.

Step 2 - She placed the hook on the magnet at the edge of the magnet's north pole.

Step 3 - She added one paperclip at a time until the hook fell off the magnet.

Step 4 - She recorded the highest number of paperclips the hook could hold.

Steps 5 through 10 - She repeated this test every 2 cm until she reached the magnet's south pole and recorded the data each time (see Table 1).

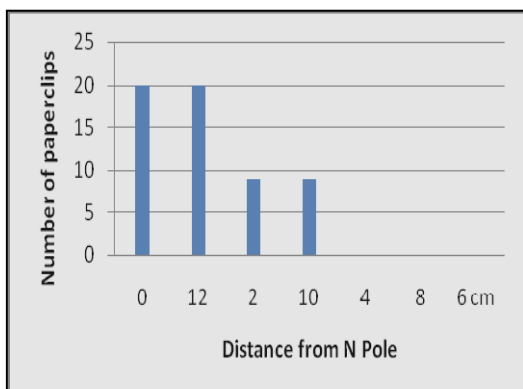


**Table 1:** Regina's data

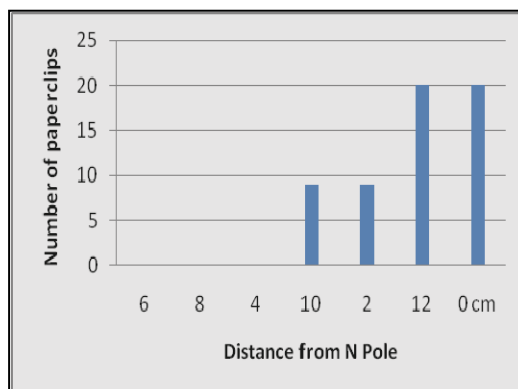
Distance from N pole of magnet	Number of paperclips held
0 cm	20
2 cm	9
4 cm	0
6 cm	0
8 cm	0
10 cm	9
12 cm	20

- 1 What did Regina need to keep the same so that her test was fair?
- A type of magnet used and the type of hook used
  - B distance from the north pole and the type of hook used
  - C type of magnet used and the number of paperclips used
  - D distance from the north pole and number of paperclips used

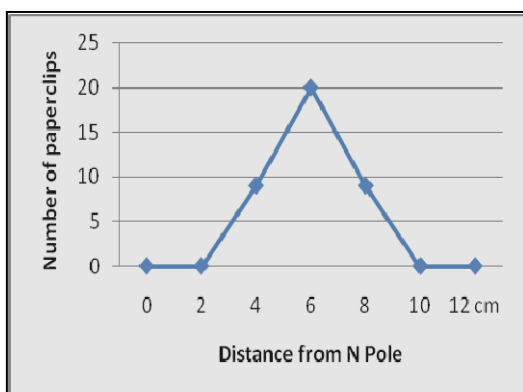
2 Which of the following graphs **best** display the data Regina collected?



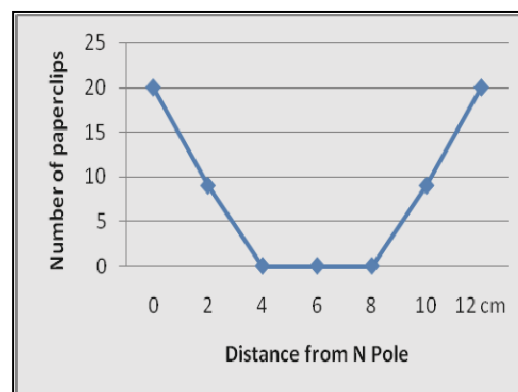
**A**



**C**



**B**



**D**

3 Based on the data collected, what can Regina conclude about the strength of magnetic fields?

- A Magnetic fields are stronger at the north pole of a magnet and weaker at the south pole.
- B Magnetic fields are stronger at the south pole of a magnet and weaker at the north pole.
- C Magnetic fields are stronger near the poles and get weaker as you move away from the poles.
- D Magnetic fields are weaker near the poles and get stronger as you move away from the poles.

4 Television provides some benefits. What is one way that television has helped people?

- A Television manufacturing uses many toxic chemicals.
- B The ads on television show many popular toys that kids want.
- C Television provides information about current weather conditions.
- D The electricity used to run televisions is one use of natural resources.

- 5** Which of the following **best** conserves natural resources that are used to make a television?
- A** repair your broken television
  - B** buy a television that is on sale
  - C** throw old televisions in the trash
  - D** donate a new television to your school
- 6** Alex looked at an electric toothbrush that had a plug with three metal prongs. Why are these prongs made out of metal?
- A** Metal doesn't get hot and melt when you plug it into the outlet.
  - B** Metal is strong and is less likely to break when you plug it into the outlet.
  - C** Metal is an insulator and prevents shocks when you plug it into the outlet.
  - D** Metal is a conductor and completes a circuit when you plug it into the outlet.
- 7** Electricity to play your radio can be made using renewable or nonrenewable resources. Which of the following resources are renewable?
- A** wind and oil
  - B** wind and sunlight
  - C** natural gas and oil
  - D** natural gas and coal

**Directions**

Read the information about wind erosion then answer questions 8 – 10.

Wind can cause erosion that changes the surface of the Earth. Wind erosion can have negative effects on the environment by removing soil and polluting the air during dust storms.

- 8 What is one way to prevent wind erosion?
- A People can drive off-road bikes across the desert.
  - B Ranchers can let their cattle graze in areas with little plant growth.
  - C Construction workers can wet the ground before driving on it or digging.
  - D Farmers can remove all plant material in the soil between planting seasons.
- 9 Which of the following land forms are created by wind erosion?
- A arches and faults
  - B sand dunes and arches
  - C meanders and moraines
  - D moraines and sand dunes
- 10 Walter wanted to find out if faster wind speeds increased the amount of wind erosion. Which instrument should he use to measure wind speed?
- A anemometer
  - B barometer
  - C rain gauge
  - D thermometer
- 11 Kerry made a simple flashlight. She recorded the following statements in her lab book. Which statement is an inference?
- A The wire was 35 cm long.
  - B The flashlight contained a battery.
  - C The plastic switch was better than the metal switch.
  - D The bulb was lit for 20 minutes before it burned out.

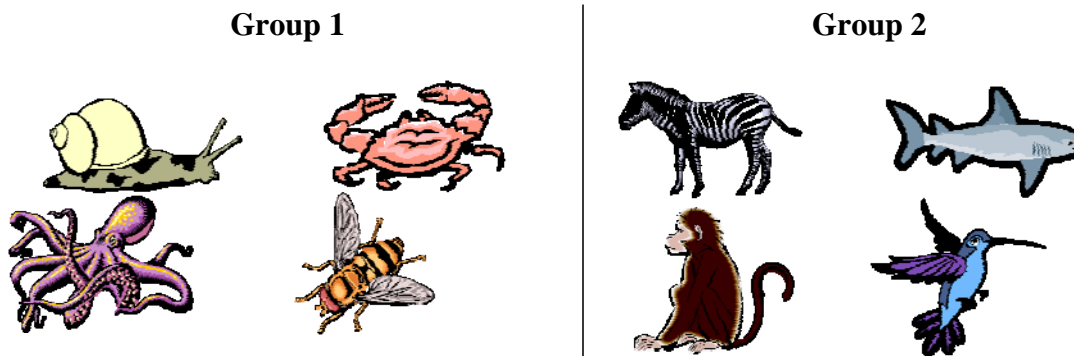
12 Sam poured water on a pile of dirt and observed that some dirt eroded from the pile. Which question could he test to learn more about erosion?

- A How long will the dirt stay wet?
- B What types of animals live in the dirt?
- C Will adding more water change the type of dirt?
- D Do different types of dirt wash away at different rates?

13 All animals need air to survive. An insect gets air through tiny holes on the sides of its body. A whale breathes through a blow hole. What body part do fish use to breathe?

- A gills
- B skin
- C nose
- D mouth

14 The pictures below show animals separated into two groups.



The animals are grouped by whether they have a backbone or not. Which of the following belongs in Group 1?



C



B

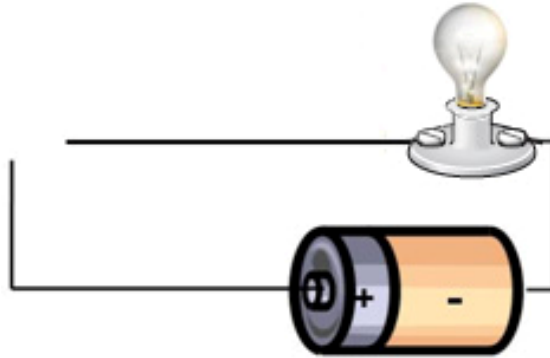


D





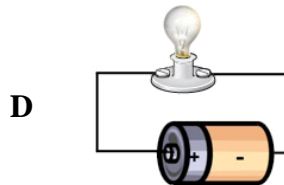
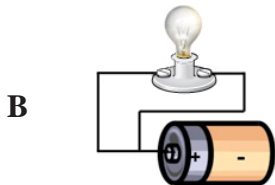
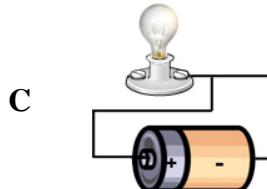
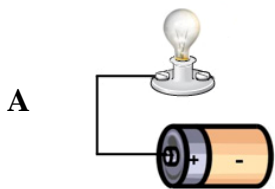
15 Carlos connected a battery, bulb, and wires as shown in the drawing below.



If the free ends of both wires touch the following objects, which object will allow the bulb to light?



16 Each picture shows a light bulb connected to a battery. Which bulb will light?



- 17** Scientists claim that the area around the Grand Canyon was once covered by an ocean. What evidence would support their claim?
- A** Dinosaur footprints were found near the Grand Canyon.
  - B** Fish were found living in the rivers of the Grand Canyon.
  - C** Fossils of ocean animals were found at the Grand Canyon.
  - D** Bones from desert animals were found at the Grand Canyon.
- 18** How do the spines of a cactus help it survive?
- A** Spines help the cactus get moisture.
  - B** Spines anchor the cactus in the ground.
  - C** Spines protect the cactus from animals.
  - D** Spines support the stems and branches of the cactus.
- 19** A glacier is a slow moving river of ice. How does a glacier help create soil?
- A** It scrapes small particles off large rocks.
  - B** It carries plants down mountains and to oceans.
  - C** It melts and becomes part of streams and rivers.
  - D** It freezes small particles of dirt to form large rocks.
- 20** Ducks live near ponds and lakes. The shape of a duck's foot helps it swim and walk on muddy ground. Which factor is **most** important in determining the shape of a baby duck's foot?
- A** the shape of the parent ducks' feet
  - B** the temperature of the pond water
  - C** the amount of mud in the bottom of the pond
  - D** the amount of rain that fell before the duck was born
- 21** While Anna was testing a circuit, she dropped a light bulb. What is the safest thing Anna can do?
- A** get a new bulb to finish the test
  - B** push the broken glass under a table
  - C** tell her teacher that she broke the bulb
  - D** ask her partner to help pick up the broken glass

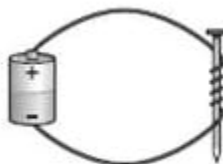
22 A bicycle is a system of parts that work together.



Not every part of the bicycle is needed for it to move. Some parts make it easier or safer to ride. Which of the following parts is needed to make the bicycle move?

- A brakes
- B handlebars
- C seat
- D wheels

23 The diagram below shows an object made from a battery, a nail, and some wire.



What will happen if you touch a metal paperclip to the nail?

- A The wires will melt.
  - B The battery will spark.
  - C The nail will give you a shock.
  - D The paperclip will stick to the nail.
- 24 Tyrone put two stones in a plastic bottle of water and shook it. After he stopped shaking the bottle, he observed that small pieces of the stones were floating in the water. What is the **best** prediction he can make based on this observation?

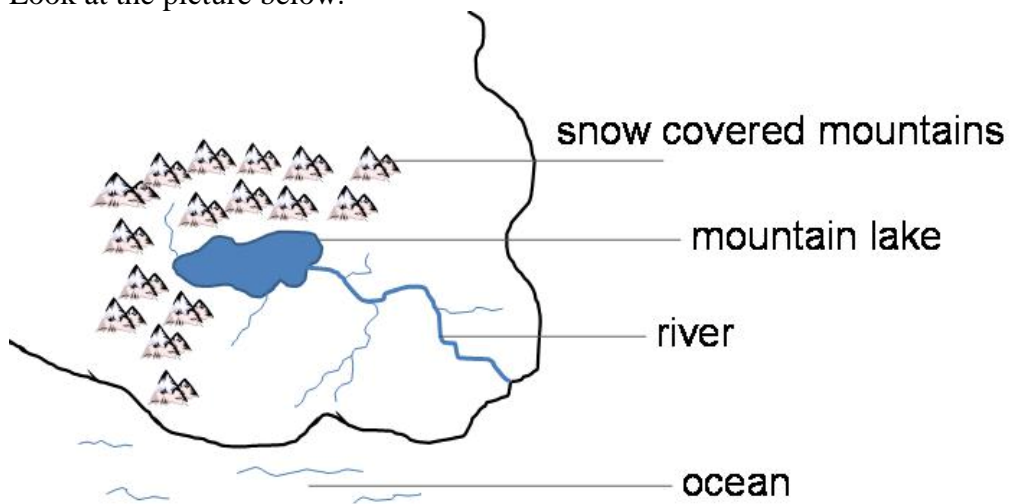
If shaking the bottle causes pieces of stones to break off,

- A then using cold water will break off more pieces.
- B then using hot water will make the stones change colors.
- C then shaking for a longer amount of time will break off more pieces.
- D then shaking for a shorter amount of time will make the rocks change colors.

**25** Four students tried to find out which magnet was the strongest. They each shared one idea. Which idea shows scientific thinking?

- A** We can pick the longest magnet.
- B** We can pick the heaviest magnet.
- C** We can measure the strength of the magnets.
- D** We can vote for the magnet that we think is the strongest.

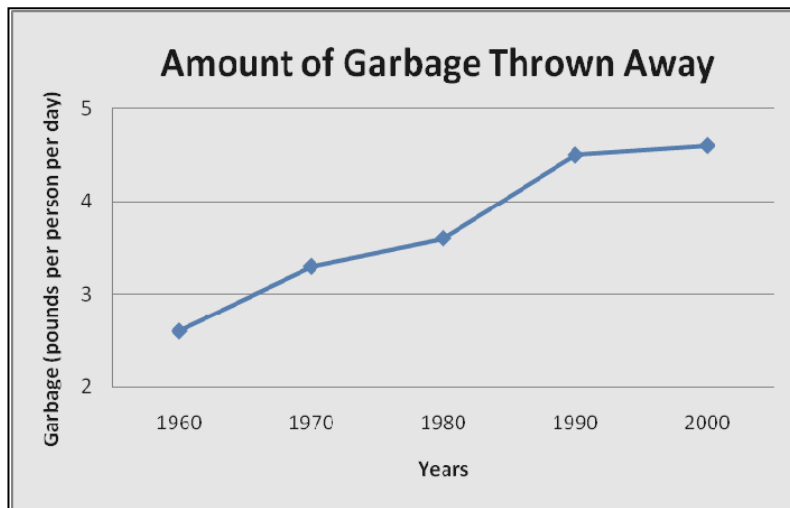
**26** Look at the picture below.



Where would you find the saltiest water?

- A** river
- B** ocean
- C** mountain lake
- D** snow covered mountains

- 27 A scientist wanted to see if the amount of garbage that Americans threw away changed over time. He collected information and then showed his results in the graph below.



Based on this graph, what could the scientist say about the amount of garbage that each person threw away?

- A It increased over time.
  - B It decreased over time.
  - C It increased the most in 1980.
  - D It decreased the most in 1990.
- 28 Many life scientists study only one kind of animal their entire career. Which type of life scientist would likely study the animal shown below?



- A fish scientist
- B snail scientist
- C insect scientist
- D reptile scientist

**29** A refrigerator uses electricity to create a cold place to store food. What negative impact does refrigerator use have on the environment?

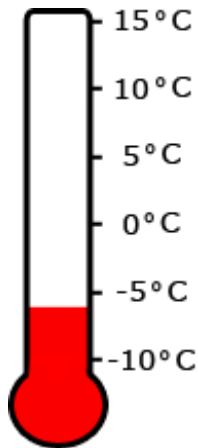
- A The electricity needed to keep food cold can be expensive.
- B If the electricity goes out, the food will spoil and make you sick.
- C Storing food longer reduces grocery store trips and gasoline use.
- D Old refrigerators contain chemicals and take up space in landfills.

**30** Which statement is a description of weather?

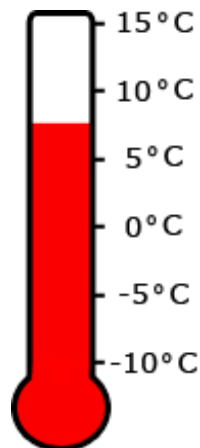
- A Summers in Tucson are hot and dry.
- B Winters in Flagstaff are cold and snowy.
- C The temperature is 55° F in Winslow today.
- D The Sun will set in Yuma today at 6:45 p.m.

**31** Maria checked the outside temperature before and after school. According to the thermometers below, how much did the temperature change during the day?

before school temperature



after school temperature



- A It increased by 2° C.
- B It increased by 14° C.
- C It decreased by 2° C.
- D It decreased by 14° C.

**32** The table below shows the temperature and precipitation (rain or snow) in four different cities on the same day.

	Atlanta	Boston	Chicago	Dallas
Lowest temperature	2° C	-10° C	-8° C	12° C
Highest temperature	16° C	-2° C	4° C	25° C
Precipitation (rain or snow)	0 cm	6 cm	0 cm	3 cm

In which city did it snow?

- A** Atlanta
- B** Boston
- C** Chicago
- D** Dallas

## Answer Key

Item	Response	Alignment
1	A	S1C2-02
2	D	S1C4-02
3	C	S1C3-02
4	C	S3C2-01
5	A	S4C3-04
6	D	S5C3-03
7	B	S4C3-02
8	C	S3C1-01
9	B	S6C2-02
10	A	S1C2-04
11	C	S1C1-01
12	D	S1C1-02
13	A	S4C1-01
14	B	S4C1-02
15	A	S5C3-03
16	D	S5C3-02
17	C	S6C2-06
18	C	S4C4-02
19	A	S6C2-03
20	A	S4C4-01
21	C	S1C2-01
22	D	S2C2-02
23	D	S5C3-05
24	C	S1C1-03
25	C	S2C2-01
26	B	S6C3-01
27	A	S1C3-01
28	C	S2C1-02
29	D	S3C2-02
30	C	S6C3-03
31	B	S6C3-04
32	B	S6C3-06