

Minnesota MCA Grade 5 Science Practice

Exam Materials
Pages 2 - 22

Name _____

Minnesota Comprehensive Assessments-Series III

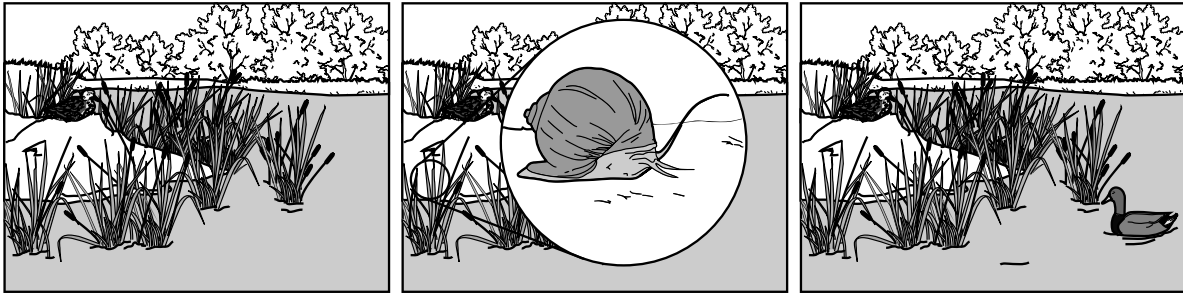
Science Item Sampler
Grade 5



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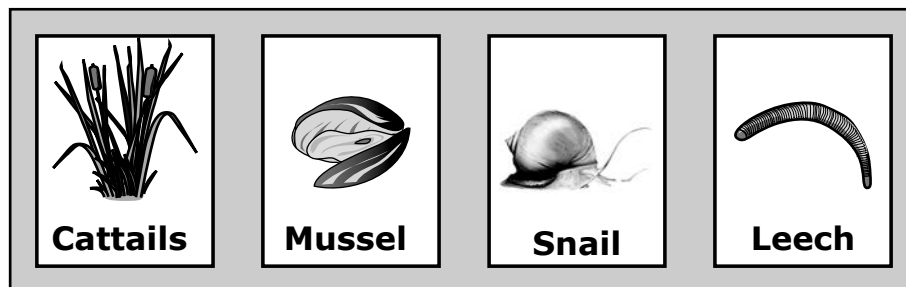
1

A teacher brings her students to observe a small pond. They notice many kinds of animals, including fish, snails, mussels, leeches, and ducks. The male duck is swimming across the pond to the female duck sitting on her nest.



1. Many organisms in this habitat have a way to protect themselves from predators. Identify 2 organisms that have coverings that protect them from predators.

On the diagram, circle 2 organisms you want to select.

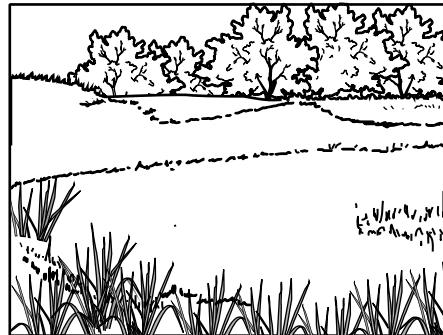
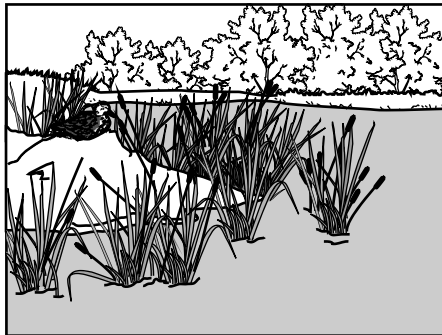
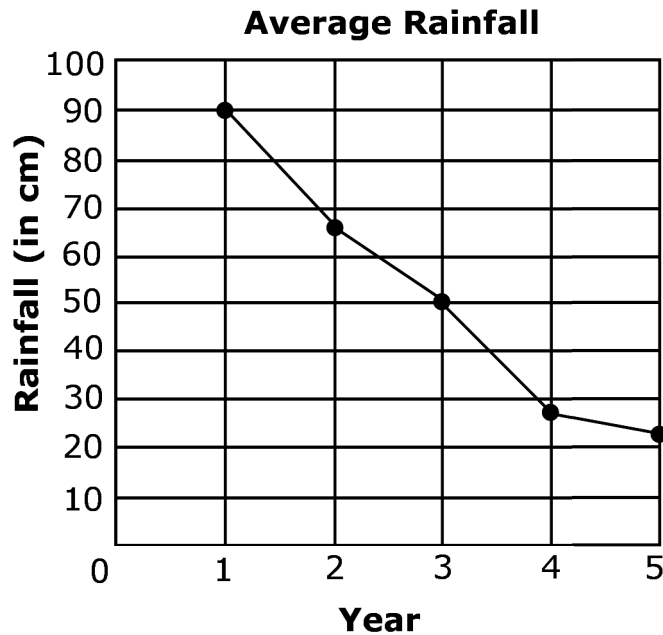


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1

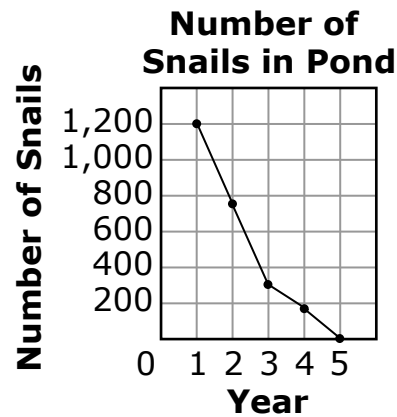
Five years later, the teacher brings another group of students to the same spot. Many changes have taken place. The area has dried up, and the pond is now gone. The teacher explains that the area has had little rain. The teacher shows this graph to the students.



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2. A type of snail is extinct in this area. Which statement explains why this may have happened?



- A. It reproduced too rapidly.
- B. It could not live near plants.
- C. It could not adapt to new conditions.
- D. It was eaten by too many consumers.




1

Twenty years later, grasses are growing where the pond was. The teacher and some students dig up shells.

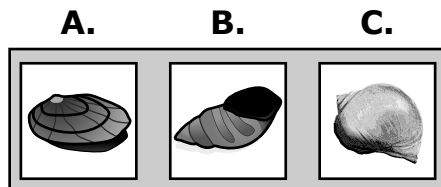


3. The shells are sorted by shape. Sort the remaining 3 shells by shape.

Each remaining shell is labeled A, B, or C. Write the letter of each shell in the correct group. You may only use each letter 1 time.

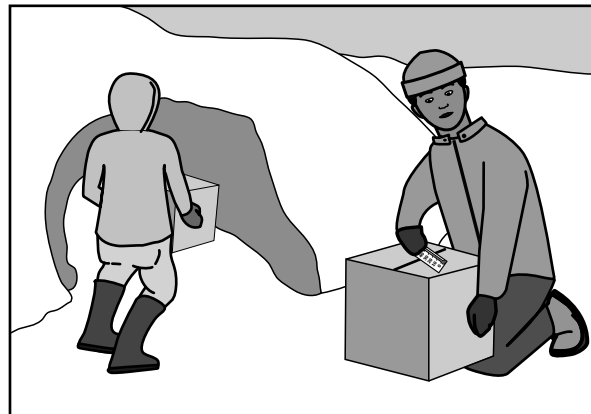
Group 1	Group 2
	 

Shells



1

The students and their teacher are making a pile of snow and then digging it out to make a snow cave. The cave will be used for some investigations. The students place 1 box inside the cave and 1 box outside the cave. Both boxes are placed upside down. A thermometer is placed on each box.



4. The air temperature is -2 degrees Celsius (28 degrees Fahrenheit). Which statement correctly describes what happens to snow at this temperature?
- A. Snow starts to melt.
 - B. Snow remains frozen.
 - C. Snow changes to steam.
 - D. Snow melts and then freezes again.

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1

One cardboard box is inside the cave and the other is outside the cave. Students place the thermometers and bottles filled with hot water on the cardboard boxes. Later, the students check the air temperatures on their thermometers. The air temperature readings are shown in the table.



Air Temperature

	Inside	Outside
Before	-2°C (28°F)	-2°C (28°F)
After	5°C (41°F)	-2°C (28°F)

5. Make a graph of the air temperatures inside and outside of the cave 30 minutes after the hot water bottles are added.

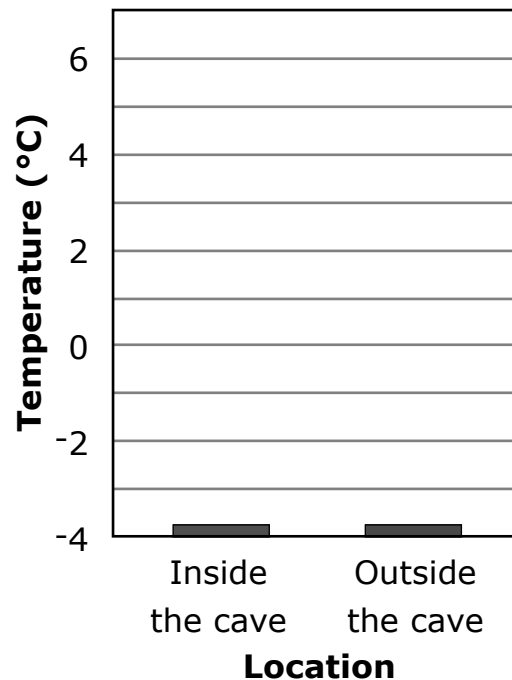
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Air Temperature

	Inside	Outside
Before	– 2°C (28°F)	– 2°C (28°F)
After	5°C (41°F)	– 2°C (28°F)

Write a "+" above each bar where the top of the bar should be.

**Air Temperature After Hot
Water Bottles Are Added**



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1

Students fill 4 containers with equal amounts of water and seal them. Two of the containers are placed in mittens. One container with a mitten and one container without a mitten are placed in the snow cave. One container with a mitten and one container without a mitten are left outside the snow cave. One hour later, the container left outside without a mitten is frozen. The other containers still contain liquid water.



6. There is ice in the container that was left outside without a mitten. If the air temperature increases to 10 degrees Celsius (50 degrees Fahrenheit), what will happen to the ice?
- A. It will lose mass.
 - B. It will get heavier.
 - C. It will start to boil.
 - D. It will change into a liquid.

Mining is a common practice used to obtain different resources. Many of the resources obtained by mining go through different processes before they are used by people.



2

7. Iron is found in the mineral hematite. What is done to the mineral hematite to separate out the iron?
- A. Hematite is processed.
 - B. Hematite is kept in one piece.
 - C. Hematite is found in more than one mine.
 - D. Hematite is sold for a large amount of money.
8. People use mined natural resources to supply energy to their homes. Which resource is a source of non-renewable energy?
- A. Coal
 - B. Solar
 - C. Water
 - D. Wind

A gravel pit is a location where gravel is mined. Different minerals can be found in a gravel pit.

Mineral	Streak Test	Luster	Hardness	Color
Hematite	Red	Metallic	6	Silver
Bauxite	Light brown	Non-metallic	3	Brown
Gypsum	White	Non-metallic	2	White

A lower hardness number means a softer mineral.

2

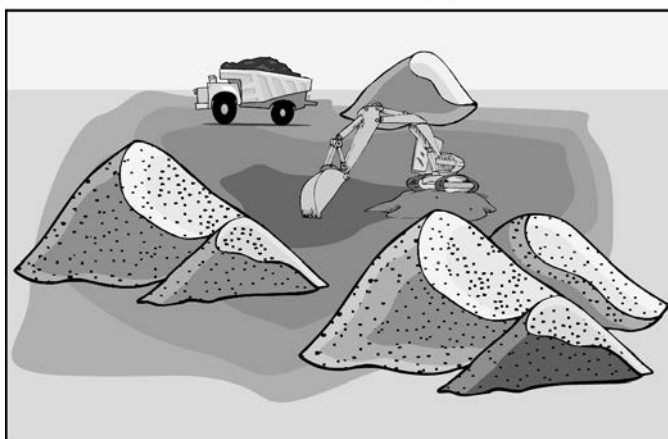
9. A student tests an unknown mineral. This unknown mineral can be scratched by hematite. What conclusion can the student make about the mineral based on this test?
- A. The mineral is bauxite.
 - B. The mineral is gypsum.
 - C. The mineral is softer than hematite.
 - D. The mineral is harder than hematite.

Before this area was mined, the land looked very different.

Before Mining



After Mining



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- 10.** Mining in this forested area can have positive and negative effects on the environment. Identify the 2 possible negative effects.

Circle the 2 effects you want to choose.

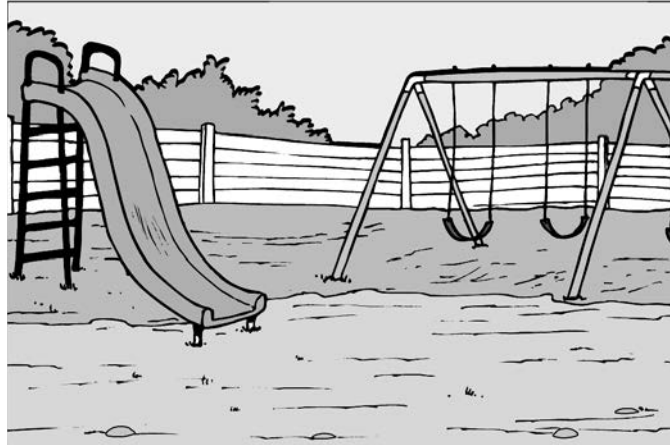
Possible Effects

Decreases natural habitat	Discover source of groundwater
Pollution produced by machines	Find needed resources

2

After the mining is finished, the land can be used for recreation.

Playground



2

- 11.** Students go down the slide. Identify each force that affects the students' motion on the slide.

Circle each force you want to choose.

Forces

Electricity

Friction

Gravity

Magnetism

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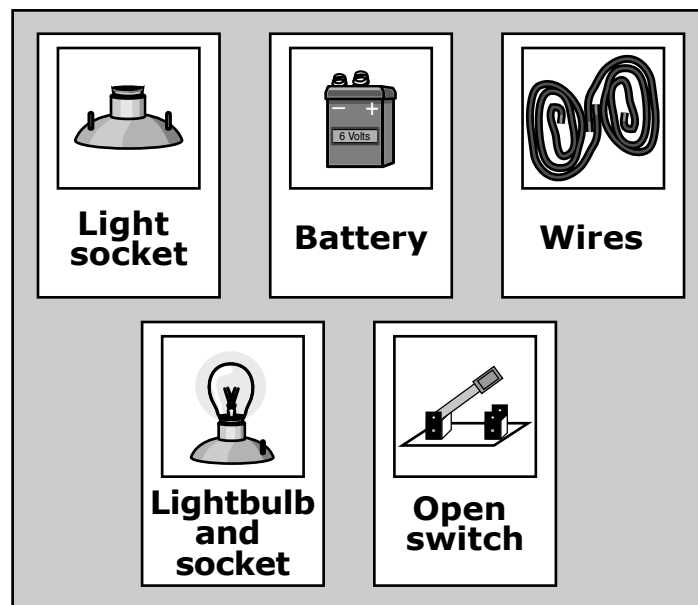
A teacher will build an electrical circuit to light a lightbulb.

2



- 12.** These are parts of electrical circuits. Identify the 3 parts that will make a complete circuit together.

On the diagram, circle the 3 parts you want to select.



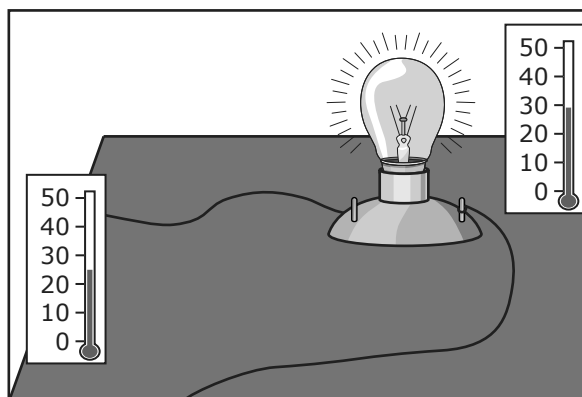
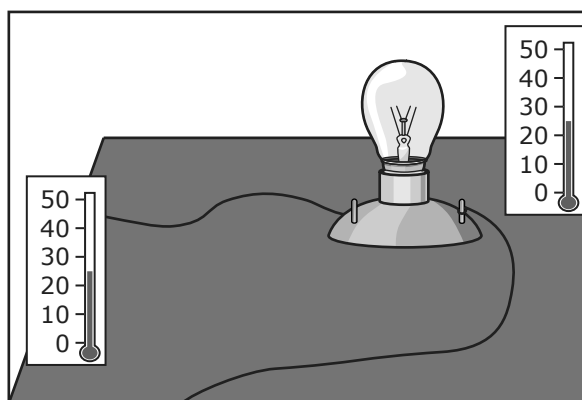
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When a lightbulb is lit, it represents an energy source that produces light and heat. Thermometers are used to measure heat energy. When the lightbulb is lit, the students observe the thermometers and record their observations in their journals.

Time and Temperature

Time (in minutes)	Temperature Close to Lightbulb (in °C)	Temperature Away from Lightbulb (in °C)
0	25	25
2	27	25
4	29	25



- 13.** The data in the table show the temperature away from the lightbulb and the time in minutes. Make a graph of the data.

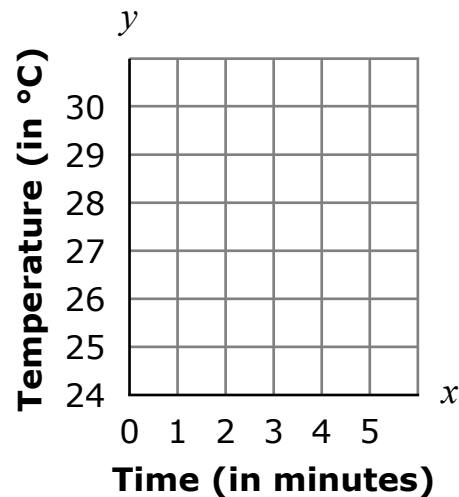
Time and Temperature

Time (in minutes)	Temperature Close to Lightbulb (in °C)	Temperature Away from Lightbulb (in °C)
0	25	25
2	27	25
4	29	25

2

Write a "+" on the graph to plot each data point from the table.

Temperature Away from Lightbulb

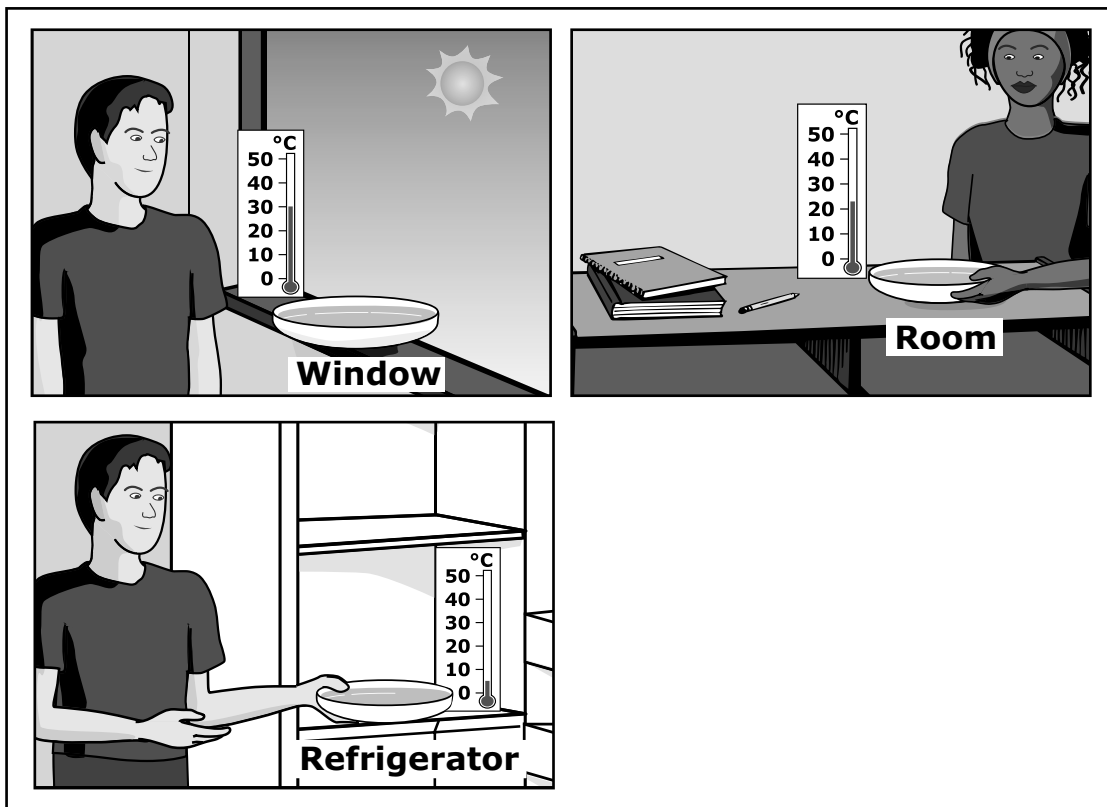


The Sun also produces light and heat. Students want to know how an energy source like the Sun affects the amount of water that evaporates. They place equal amounts of water in 3 different locations. They measure the temperature in each location and record the data in their journals.

Temperature in Three Locations

Location	Air Temperature (in °C)
Window	30
Room	23
Refrigerator	5

2

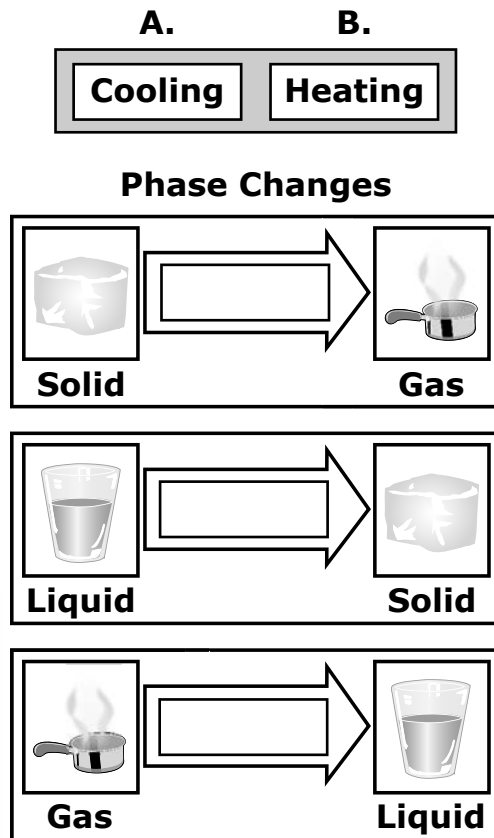


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14. What causes the phase change in each of the pictures?

Each word is labeled A or B. Write the letter of the correct word in each empty box of the diagram. You may use each letter more than once.



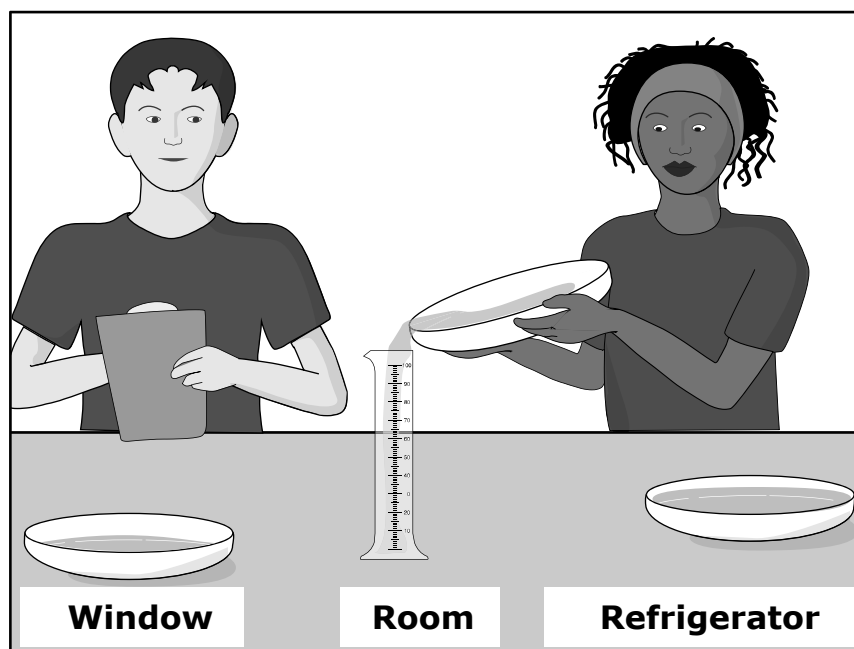
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At the end of the day, the students measure the amount of water left in each pan. They record the data in their journals.

Temperature's Effect on Evaporation

Location	Water at Start (in mL)	Air Temperature (in °C)	Water at End (in mL)
Window	10	30	5
Room	10	23	7
Refrigerator	10	5	9

2



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15. What happens when water evaporates?

- A.** The water gets hotter.
- B.** The water changes color.
- C.** The water changes into a gas.
- D.** The water changes into a solid.

2