

AMI DAY 5- Science/ Hughes**INQUIRY SKILL FOCUS Assessment**

Directions: Questions 11–20: Column 1 below describes steps that may occur before, during, or after an experiment. Column 2 describes a specific experiment. On the line at the left, write the letter(s) from Column 2 that matches the description in Column 1. Some items from Column 1 may have more than one matching answer from Column 2.

Column 1

11. conclusion
12. controlling variables
13. hypothesis
14. interpreting data
15. materials
16. observations
17. operational definition
18. procedure
19. scientific question(s) that led to the experiment
20. scientific question(s) that resulted from the experiment

Column 2

- A. On a cold winter day, Sayeeda, who lives near a lake, visits her friend Roberto, who lives near the ocean. Sayeeda is surprised to see that the ocean water has no ice on it. The lake near her home is covered with thick ice.
- B. Sayeeda asks, “Why doesn’t the ocean water have ice on it when the lake does?”
- C. Roberto responds, “Well, the lake has fresh water in it. Ocean water contains lots of salt. The salt causes the water to freeze at a lower temperature than usual. I know, because I did an experiment on this in school.”
- D. Sayeeda says, “I wonder why that happens. Does it just happen with salt? Would the same thing happen with sugar?”
- E. Sayeeda and Roberto decide to test this idea, so they write: “If water contains sugar, then it will freeze at a lower temperature than fresh water.”

F. They write out these plans:

- Fill Container *A* and Container *B* with tap water.
- Dissolve 15 grams of sugar in Container *A*.
- Place both containers in a freezer kept at -1°C .
- Leave the containers in the freezer for 24 hours and then observe the contents.

G. They write a list of what they will need: 2 plastic containers, tap water, 15 grams of sugar, 2 wooden stirrers, a freezer.

H. In their notes, they write: “The two containers must be made of the same material and be the same size and shape. The amounts of water must be the same.”

I. They decide that if they tilt the container and see any movement in the water, it is not yet frozen. If they tilt it and they observe no change in the water, it is frozen.

J. After 24 hours, Sayeeda and Roberto tilt the containers. They see that the contents of Container *A* flow when they tilt the container. The contents of Container *B* do not move when they tilt the container.

K. They write, “The fresh water froze. The water with sugar dissolved in it did not freeze.”

L. They write, “Water that contains sugar freezes at a lower temperature than water without sugar.”

M. They then raise these questions: “How cold would it have to get before the water with sugar or salt would freeze? Does it matter how much sugar or salt is in the water? Why does sugar or salt in the water change the way water freezes?”

Questions 21–25: Write the letter of the correct answer on the line at the left.

21. Which of the following is an example of a scientific question?

- a. Is experimenting on white mice right or wrong?
- b. Should scientists make as much money as athletes?
- c. Does tanning harm the skin?
- d. Who is the most famous scientist in the world?

22. Which of the following is an example of a properly written, testable hypothesis?

- a. People should taste this new health food and see whether it makes them stronger.
- b. When dog owners don't feed their puppies Brand *A* food, the puppies do not grow properly.
- c. If Frederico had added the leaves to the compost pile last year, he wouldn't have to buy organic fertilizer now.
- d. If it is dark, then an owl will find a mouse by the sound the mouse makes.

23. Which of the following might be the materials list for an experiment?

- a. data tables and graphs
- b. meters, liters, and kilograms

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- c. plastic containers, soil, water, thermometers, and plants
- d. temperature, light, and time

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