

LABORATORY SKILLS

Performing an Experiment

Read the following statements and then answer the questions.

1. A scientist wants to find out why sea water freezes at a lower temperature than fresh water.
2. The scientist goes to the library and reads several articles about the physical properties of solutions.
3. The scientist also reads about the composition of sea water.
4. The scientist travels to a nearby beach and observes the conditions there. The scientist notes the taste of the sea water and other factors such as waves, wind, air pressure, temperature, and humidity.
5. After considering all this information, the scientist sits at a desk and writes, "If sea water has salt in it, it will freeze at a lower temperature than fresh water."
6. The scientist goes back to the laboratory and does the following:
 - a. Fills each of two beakers with 1 liter of fresh water.
 - b. Dissolves 35 grams of table salt in one of the beakers.
 - c. Places both beakers in a freezer at a temperature of 21°C .
 - d. Leaves the beakers in the freezer for 24 hours.
7. After 24 hours, the scientist examines both beakers and finds the fresh water to be frozen. The salt water is still liquid.
8. The scientist writes in a notebook, "It appears that saltwater freezes at a lower temperature than fresh water does."
9. The scientist continues, "I suggest that the reason sea water freezes at a lower temperature is that sea water contains dissolved salts, while fresh water does not."

Questions

- A. Which statement(s) contain **conclusions**?
- B. Which statement(s) contains a **hypothesis**?
- C. Which statement(s) contain **observations**?
- D. Which statement(s) describe an **experiment**?
- E. In which statement is the **problem** described?
- F. Which statement(s) contain **data**?
- G. Which is the **independent variable** in the experiment?
- H. What is the **dependent variable** in the experiment?