

Read the following statements and then answer the questions.

- A. A scientist wants to determine the effects of carbon dioxide on air temperature.
- B. The scientist uses the internet and reads a number of articles about the properties of carbon dioxide, atmosphere, air composition, and global warming. Temperature was also studied.
- C. The scientist reviews data on ice cores and learns the atmosphere in the past contained less carbon dioxide and the atmospheric temperature was less than today.
- D. The scientist views a documentary video "Inconvenient Truth" and take notes.
- E. After considering all this information, the scientist sits at a desk and writes, "if carbon dioxide is added to air, then the temperature will increase.
- F. The scientist goes back to the laboratory and does the following:
 - a. Drills holes in the caps of two 2-Liter bottles.
 - b. Both bottles are filled naturally with atmospheric air.
 - c. Carbon dioxide is placed into one of the bottles and labeled.
 - d. A thermometer is inserted into each cap and sealed with clay.
 - e. The bottles are placed in a sunny location and the temperature is recorded every 5 minutes.
- G. After 3 hours of observation, the scientist examines the data. The bottle with carbon dioxide had an average increase of 3°C.
- H. The carbon dioxide bottle felt warmer than the atmospheric bottle.
- I. The scientist writes in a notebook, "The addition of carbon dioxide does appear to increase the air's temperature, which could result in global warming.
- J. The scientist continues, "It can be inferred the temperature rose because the carbon dioxide is denser than oxygen or nitrogen, so the molecules move faster and the temperature increases."
- K. Designing cars to reduce exhaust emissions (carbon dioxide) could slow global warming.

Questions-use Scientific Method

- 1. Which statement(s) contain conclusions? _____
- 2. Which statement(s) contain hypothesis? _____
- 3. Which statement(s) contain qualitative observations? _____
- 4. Which statement(s) describe an experiment? _____
- 5. In which statement is the problem described? _____
- 6. Which statement(s) contain quantitative observations? _____
- 7. What is the independent variable in the experiment? _____

8. What statement contains the application? _____
9. What is the dependent variable in the experiment? _____
10. List 5 controls that should be included in the above experiment?
11. Explain why it is important for an experiment to be controlled?

Read the scientific problems below and identify the independent and dependent variable.

Problem	IV	DV
12. What acids erode rocks the fastest?		
13. What kind of clouds produce the most violent storms?		
14. How many types of fossils are found in different rock strata?		

15. List 3 quantitative observations about your shoes?
16. List 3 qualitative observations about your shirt?

17. Explain pH in a paragraph. Underline at least 5 facts you included in your explanation.

18. List 3 safety rules when using chemicals. Be specific.

19. What part of the scientific method contains a data table and paragraph? _____

20. Metrics is what type of observation? _____

Bonus: What do scientists use when they cannot conduct an experiment? _____