Scientific Inquiry

Name _____

Date _____

Per _____ page_____

Understanding Main Ideas: Use your text book, Chapter 1, Section 3 (pages 18-22) to help you with the following questions. Answer in complete sentences.

1. What is a scientific question? _____
2. What makes a hypothesis testable? _____
3. Why is it important to control variables in an experiment? _____
4. When you begin an experiment, why should you create a table to record your data? _____
5. When you make a conclusion about an experiment, what do you need to consider?

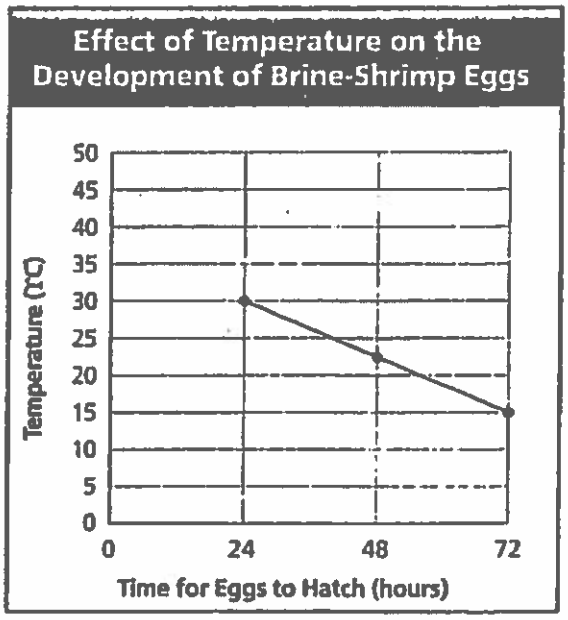
Building Vocabulary: Fill in the blank to complete each statement.

6. A(n) _____ is a possible explanation for a set of observations or an answer to a scientific question.
7. Factors that can change in an experiment are called _____.
8. The sharing of ideas and experimental findings with others through writing and speaking is called _____.
9. Facts, figures, and other evidence gathered through observations are called _____.
10. The factor that may change in response to the manipulated variable is called the _____ _____.
11. An experiment in which only one variable is manipulated at a time is called a _____ _____.
12. The process of _____ refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence they gather.
13. A(n) _____ is a statement that describes how to measure a particular variable or define a particular term.
14. . The one variable that is purposely changed to test a hypothesis is called the _____ _____.

Scientific Inquiry and Brine-Shrimp Eggs

Scientific inquiry involves different processes, such as posing questions, developing hypotheses, performing experiments, and interpreting data. A scientist was studying brine shrimp, which are tiny animals that live in salt water. The scientist wondered whether the temperature of the water affects the time it takes for brine-shrimp eggs to hatch. The scientist performed an experiment to find the effect of temperature on brine-shrimp eggs. In the experiment, one group of eggs was in water that had a temperature of 30°C. A second group of eggs was in water that had a temperature of 22°C, and a third group was in water at 15°C. The graph below shows the data that the scientist collected.

Study the graph, and then answer the following questions on a separate sheet of paper.



1. What question did the scientist pose? _____

_____

2. What was the manipulated variable in the experiment the scientist performed?

_____

3. What was the responding variable in the experiment? _____
4. How long did the brine-shrimp eggs take to hatch at 30ºC? _____
   How long did the eggs take to hatch at 15ºC? _____
5. What do the data show about the effect of temperature on the time brine-shrimp eggs take to hatch? _____

_____

6. Suppose that, before the experiment, the scientist proposed the following hypothesis: Temperature has no effect on the time brine-shrimp eggs take to hatch. Does the data support this hypothesis? _____ Explain why or why not.

_____

_____

7. Predict how long brine-shrimp eggs would take to hatch in water that had a temperature of 20ºC. (Hint: use the graph) _____