Name_____Due Date:_____Hour:_____

Science, Engineering, and Technology Skills

STEM Part 1 Lessons 1 & 3

Review Guide

Directions: Use this as a guide to help you grapple with what you should know for the quizzes and tests. If additions are made to this study guide they will be available in class but also on Mrs. Bobo's website (boboscience.weebly.com).

Essential Question: *What does it mean to think like a scientist?*

Skills and Knowledge Required:

1. Asking scientific questions
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Obtaining, evaluating, and communicating information

You will know you have the skills when you can:

1. Identify skills scientists use to learn about the world. (Part 1 Lesson 1)
2. Explain what a model is, identify the different types of models, and in what circumstance each type of model would be used. (Part 1 Lesson 1)
3. Read a scenario and develop a quality scientific question that could be tested. (Part 1 Lesson 3)
4. Properly plan an investigation (understanding variables and bias) and you can safely carry it out (knowing science safety rules). (Part 1 Lesson 3)
5. Correctly identify the variables on a graph and determine if there is a trend or no trend present in the graph. If there is a trend, you can correctly determine what the trend is. (Part 1 Lesson 3)
6. Verbally explain the results of an experiment using a graph, diagram, or reading passage. (Part 1 Lesson 3)

Information to study:

Vocabulary:

Part 1 Lesson 1: science, observing, quantitative observation, qualitative observation, inferring, predicting, classifying, making models, evaluating, scientific investigation

Part 1 Lesson 3: hypothesis, variables, independent variable (manipulated variable), dependent variable (responding variable)

Content: You should be familiar with and understand the content found on pages 464 to 469, and 478 to 487.

Practice Questions:

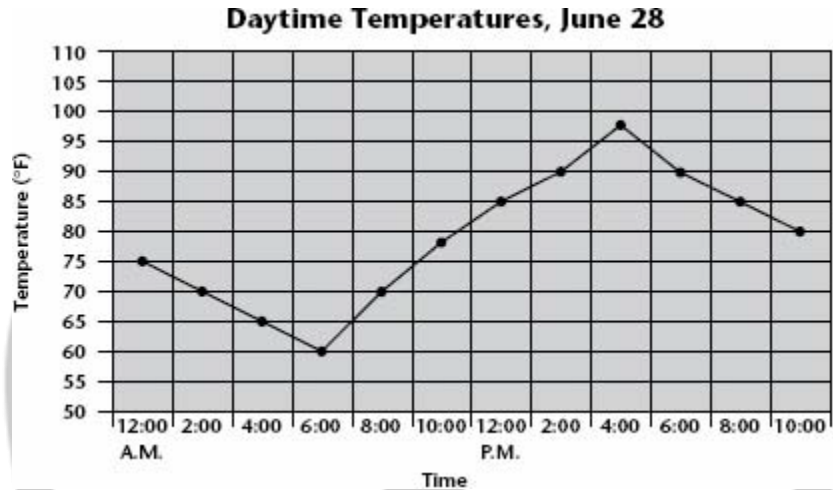Here are some questions that might help you study for the upcoming quizzes and test.

Modified True/False: Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

1. Noting that a certain plant has opposite leaves and blue flowers is an example of a <u>quantitative</u> observation. _____ (Part 1 Lesson 1)
2. A <u>qualitative</u> observation deals with numbers or amounts. _____ (Part 1 Lesson 1)
3. Proposing an explanation for the changing colors of the sky is an example of a <u>hypothesis</u>. _____ (Part 1 Lesson 3)
4. In a scientific experiment, the one variable that is purposely changed to test a hypothesis is called the <u>manipulated</u> variable. _____ (Part 1 Lesson 3)

Completion: Complete each statement.

1. If you state that your basketball team will win tonight's game because your team has always beaten the other team in the past, you are making a(n) _____. (Part 1 Lesson 1)
2. Making _____ involves creating representations of complex objects or processes to help people study and understand things that cannot be observed directly. (Part 1 Lesson 1)
3. Facts, figures, and other evidence collected during a scientific investigation are called _____. (Part 1 Lesson 3)
4. The factors that can change in an experiment are called _____. (Part 1 Lesson 3)
5. In a scientific experiment, the factor that may change in response to the manipulated variable is called the responding or _____ variable. (Part 1 Lesson 3)
6. An experiment in which only one variable is manipulated at a time is called a(n) _____ experiment. (Part 1 Lesson 3)

Directions: Use the graph below to answer questions.

Daytime Temperatures, June 28

1. Study the graph. What is a likely hypothesis for what happened between 6:00 A.M. and 10:00 A.M.? (Part 1 Lesson 3)

_____

_____

_____

2. What is a likely hypothesis for what happened after 4:00 P.M.? (Part 1 Lesson 3)

_____

_____

_____

Directions: Use the diagram to answer each question.

Number of Chirps per Minute			
Cricket	15°C	20°C	25°C
1	91	135	180
2	80	124	169
3	89	130	176
4	78	125	158
5	77	121	157
Average	83	127	168

1. Identify the independent variable and the dependent variable in the table. What is the relationship between variables in the table? (Part 1 Lesson 3)

_____

_____

_____

2. Based on the data in the table, make a qualitative prediction about the number of cricket chirps at 30°C. Explain. (Part 1 Lesson 3)

_____

_____

_____

3. What hypothesis might a scientist be testing when collecting these data? (Part 1 Lesson 3)

_____

_____

_____

4. What is the purpose of recording data in a table like the one above? (Part 1 Lesson 3)

_____

_____

_____

5. How many different crickets were tested in this experiment? Explain why researchers typically test several subjects rather than just one. (Part 1 Lesson 3)

_____

_____

_____

6. Is there a relationship between the number of chirps per minute and the temperature? If so, describe the relationship. (Part 1 Lesson 3)
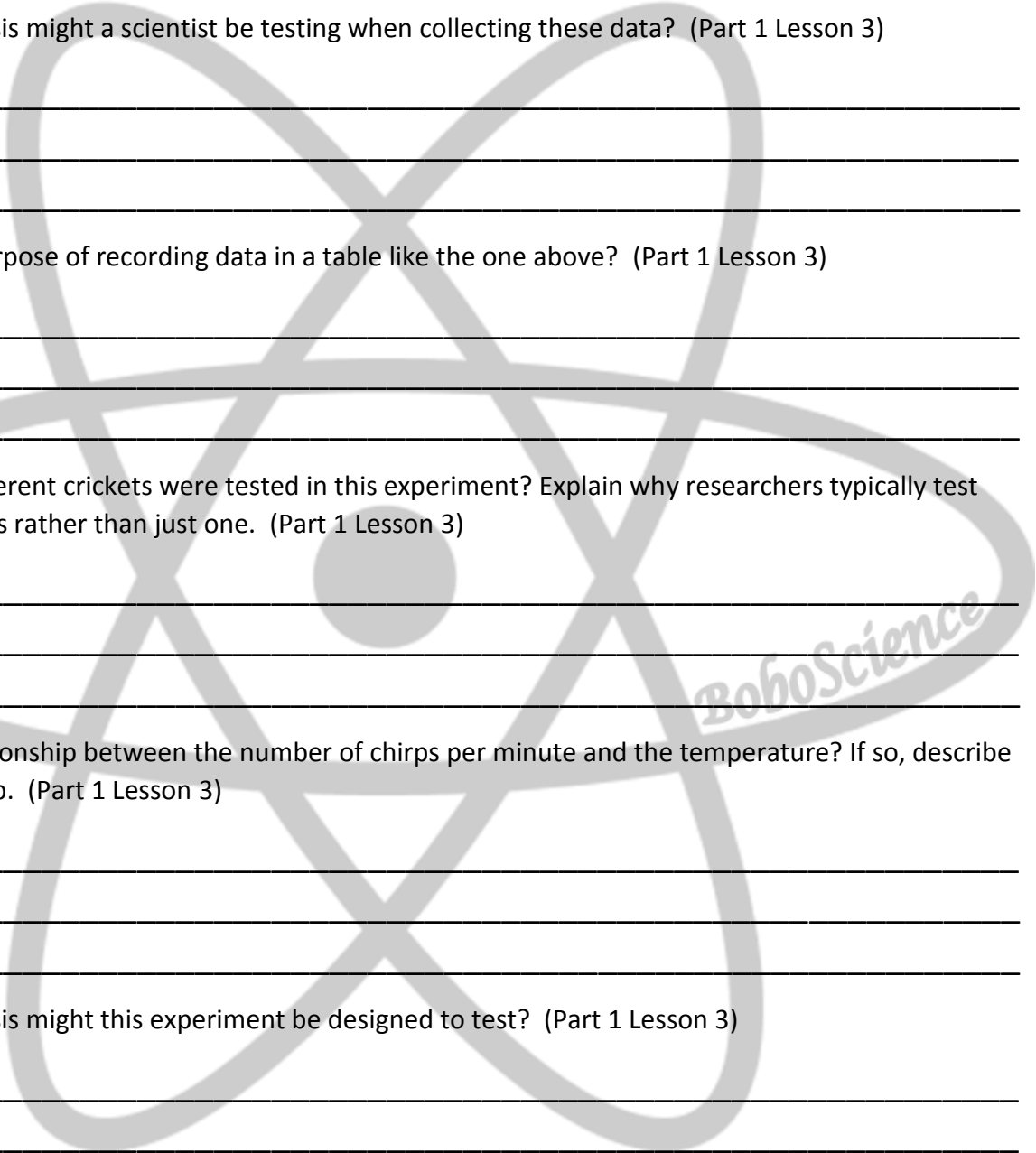
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7. What hypothesis might this experiment be designed to test? (Part 1 Lesson 3)

_____

_____

_____

8. The scientist repeated the experiment several times and recorded the data in the data table. If the data found in the data table was analyzed and did not support the scientist's hypothesis, what should the scientist do next? (Part 1 Lesson 3)

_____

_____
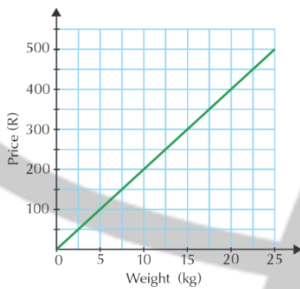
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9. State a conclusion based on the data from this experiment. (Part 1 Lesson 3)
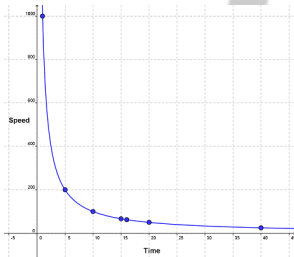
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Directions: Label each of the following graphs with the type of trend found on the graph. (Part 1 Lesson 3)

1. _____

2. _____