Unit 1 Study Guide

Vocabulary (know the definitions and understand what these terms mean)

1. Controlled Experiment-
2. Data-
3. Dependent Variable
4. Hypothesis-
5. Inference-
6. Independent Variable-
7. Median-
8. Scientific method-

Lesson 1

1. Understand what an observation and inference is.
2. Be sure and understand the parts of a controlled experiment: independent variables, dependent variables, control group and be able to identify them in an experiment.
   1. Students are working on an experiment. They have been asked to find out if adding salt to a solution will increase conductivity. One student is having trouble dissolving the salt and suggests that his team boil the water as he adds the salt. What is wrong with his suggestion?
   2. Alex wants to determine how temperature affects the life of a battery. Which factors should he consider in his scientific investigation?
   3. A scientist wants to know if a fertilizer causes plants to grow taller. She gives one group of the plants the fertilizer every month. A second group receives no fertilizer. Why does one group receive no fertilizer?
   4. A scientist is studying the effects of low gravity on plant growth. He has a tray of rice plant seedlings on board a space lab orbiting Earth and an identical tray of rice plant seedling in a lab on Earth. Which is his **control group**?

Lesson 2

1. Be able to recognize all steps of the scientific method. Choose from the following choices to identify the statements below:
   * + 1. Recognize a Problem
       2. Form a Hypothesis
       3. Test the hypothesis with an Experiment
       4. Draw Conclusions

\_\_\_\_\_\_\_\_ Susan said, “If I fertilize my geranium plants, then they will blossom.”

\_\_\_\_\_\_\_\_ Angela’s experiment proved that earthworms move away from light

Lesson 3

1. Be able to tell the difference between an explanation and a description.
   1. Identify following statements as either explanations or descriptions:
      * 1. \_\_\_\_\_ The density of gold is 19.28 g/cm .
        2. \_\_\_\_\_ The branch fell from the tree by the force of gravity alone.
        3. \_\_\_\_\_ Ionic bonds form because ions with opposite charges are attracted to each other.
        4. \_\_\_\_\_ The white substance that appeared indicated that a precipitate had formed.
        5. \_\_\_\_\_\_ Pennies have a copper coating
        6. \_\_\_\_\_\_ Ice melts at 0 C.
        7. \_\_\_\_\_\_ Malaria is caused by microscopic organisms.
        8. \_\_\_\_\_\_ Metal conducts both heat and electricity.
2. Be able to calculate mean, median, mode, and range for a set of given data.
   1. An athlete practiced the 100-meter dash. She made five runs with the following times: 14 s, 11 s, 15 s, 12 s, and 14 s. What is her **mean** time?
   2. The students in a study group earned these scores on a science test: 90, 95, 90, 65, 95. What is the **median** grade for the group?
3. Understand all lab safety procedures:
   1. In science lab, a glass beaker slips from Maya’s grip and shatters on the floor. What is **first** thing Maya should do?
4. A scientist makes an important discovery- what should he/she do next?
   1. Tell the other scientists about the experiment AND the discovery.
   2. Tell the other scientists about the discovery but not about the experiment.
   3. Tell other scientists about the experiment but not about the discovery.
   4. Write about the discovery in his or her notebook but not tell any other scientists about it.
5. A scientist performed an experiment with an unlikely result. Before telling anyone about the result, the scientist performed the experiment again. What is the most likely reason the scientist performed the experiment more than once?
6. A scientist must measure 15 mL of glycerine. Which instrument will she use?
   1. Scale
   2. Graduated cylinder
   3. Ruler
   4. thermometer