**GRADE 12 BIOLOGY**
**INTRODUCTION TO SCIENCE**
**STUDY GUIDE TO 1.1 WHAT IS SCIENCE**

Name: _____

Date: _____

*Written responses should always be complete and grammatically correct sentences.*

1. Which of the following statements about the image shown below is **NOT** an observation?

**a.** The insect has three legs on the left side.

**b.** The insect has a pattern on its back.

**c.** The insect's pattern shows that it is poisonous.

**d.** The insect is symmetrical

**2.** The statement "*The worm is 2 centimeters long*" is a(n)

**a.** observation. **b.** theory. **c.** inference. **d.** hypothesis.

**3.** An inference is

**a.** the same as an observation.
**b.** a logical interpretation of an observation.
**c.** a statement involving numbers.
**d.** a way to avoid bias.

**4.** To be useful in science, a hypothesis must be:

**a.** measurable. **b.** observable. **c.** testable. **d.** correct.

**5.** Which of the following statements about a controlled experiment is true?

**a.** All the variables must be kept the same.
**b.** Only one variable is tested at a time.
**c.** Everything can be studied by setting up a controlled experiment.
**d.** Controlled experiments cannot be performed on living things.

**6.** What are the goals of science?

**7.** How does an observation about an object differ from an inference about that object?

**8.** How does a hypothesis help scientists understand the natural world?

**9.** Why does it make sense for scientists to test just one variable at a time in an experiment?

**10.** Distinguish between an experimental group and a control group. (Example)

**11.** What steps are involved in drawing a conclusion? (state or list)

**12.** How can a graph of data be more informative than a table of the same data? (*Sketch* an example of a graph of data)

**Think Critically** (Don't get fancy- just a simple idea!)

**13. Design an Experiment** Suggest an experiment that would show whether one food is better than another at speeding an animal's growth.

**14. Control Variables** Explain why you cannot draw a conclusion about the effect of one variable in an investigation when the other key variables are not controlled.