

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### The Scientific Method

#### EXPERIMENTAL DESIGN PRACTICE #1

Read the following description of this experiment and identify the elements of the experiment.

1. Sam wished to investigate how fertilizer run-off affects the growth of algae in freshwater lakes and streams. He set his experiment up in this way. He placed 900 ml of water into each of 5 1000 ml glass beakers. To each beaker he added 5 ml of water from a aquarium which contained a large concentration of algae. The beakers were placed under a grow light which was timed to provide 12 hours of light each day. Liquid fertilizer was added to the beakers in the following amounts: beaker 1 — no fertilizer, beaker 2 — 2 ml fertilizer, beaker 3 — 4 ml fertilizer, beaker 4 — 6 ml fertilizer, beaker 5 — 8 ml fertilizer. Each week a random sample from each of the beakers was examined under a microscope to get a count of the number of algal cells present.

1a. Independent Variable \_\_\_\_\_

1b. Dependent Variable \_\_\_\_\_

1c. Experimental Group \_\_\_\_\_

1d. Control Group \_\_\_\_\_

1e. (Constants)  
Controlled Variables \_\_\_\_\_

1f. Problem question \_\_\_\_\_

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**The Scientific Method**  
**EXPERIMENTAL DESIGN PRACTICE #2**

*Read the following description of this experiment and identify the elements of the experiment.*

2. Brittany wanted to find out which wheels were best for her skateboard. She purchased 4 sets of new wheels of different brands. She and a friend set up a slalom course on her driveway. Brittany rode through the course 5 times on each set of wheels. Her friend timed her with a stopwatch and recorded the times. They then averaged the times for each wheel.

2a. Independent Variable \_\_\_\_\_

2b. Dependent Variable \_\_\_\_\_

2c. Experimental Group \_\_\_\_\_

~~(constants)~~  
2d. Control Group \_\_\_\_\_

(Constants)  
2e. Controlled Variables \_\_\_\_\_

2f. Problem question \_\_\_\_\_

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### The Scientific Method

#### EXPERIMENTAL DESIGN PRACTICE #3

Read the following description of this experiment and identify the elements of the experiment.

3. Sara and Michael tested electromagnets to see if the size of wire they used would make the magnets stronger. They selected 6 steel nails of the same size to make the magnets. Using 6 different sizes of insulated wire, they put 50 turns around each nail. Then each nail was hooked to 2 D cell batteries to make electromagnets. The strength of each magnet was tested by counting the number of paper clips which could be picked up by the electromagnet.

3a. Independent Variable \_\_\_\_\_

3b. Dependent Variable \_\_\_\_\_

3c. Experimental Group \_\_\_\_\_

3d. Control Group \_\_\_\_\_

3e. <sup>(Constants)</sup> Controlled Variables \_\_\_\_\_

3f. Problem questions \_\_\_\_\_