**Scientific Method Review - Identifying Variables Practice**

**Date: Excellent Experimenter (Name):**

Read each experiment and try to define all the variables used by the scientist in the experiment.

1. You water three sunflower plants with salt water. Each plant receives a different concentration of salt solutions. A fourth plant receives pure water. After a two-week period, the height is measured.

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| **Experimental Group** (the group that you are testing – receives the independent variable) | **Control Group** (the group used to compare against – does NOT receive the independent variable) |
| **Independent Variable** (what you are interested in testing, the m*anipulated* variable, the CAUSE) |  |
| **Dependent Variable** (your data that you are collecting by measurement or observation, the *responding* variable, the EFFECT) | |
| List some **controls** (constants) that should be used to make this a fair, **controlled** experiment. | |
| What is this scientist studying? | |

1. Pea plant clones are given different amounts of water for three-week period. The first pea plant receives 400 milliliters a day. The second pea plant receives 200 milliliters a day. The third pea plant receives 100 milliliters a day. The fourth pea plant does not receive any extra water: the plant only receives natural ways of receiving water. The heights of the pea plants are recorded daily.

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| What is this scientist studying? | |

1. One tank of gold fish is fed the normal amount of food once a day. A second tank is fed twice a day. A third tank is fed four times a day during a six week study. The fish’s weight is recorded daily.

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| **Experimental Group** | **Control Group** |
| **Independent Variable** |  |
| **Dependent Variable** | |
| List some **controls** (constants) that should be used to make this a fair, **controlled** experiment. | |
| What is this scientist studying? | |

1. Three oak trees are kept at different humidity levels inside a greenhouse for 12 weeks. One tree is left outside in normal conditions. The heights of the trees are measured once a week.

**EG CG**

**IV**

**DV**

**Controls**

**What is this scientist studying?**

1. You decide to clean the bathroom. You notice that the show is covered in a strange green slime. You try to get rid of this slime by adding lemonade juice. You spray half of the shower with lemonade juice and spray the other half of the shower with water. After 3 days of spraying equal amounts 3 times a day, there is no change in the appearance of the green slime on either side of the shower.

**EG CG**

**IV**

**DV**

**Controls**

**What is this scientist studying?**

1. Four groups of rats are first massed and then fed identical diets except for the amount of vitamin A they receive. Each group gets a different amount. After 3 weeks on the diet, the rats’ masses are measured again to see if there has been a decrease.

IV DV Controls

1. A study was done to find if different tire treads affect the braking distance of a car.

IV DV Controls

1. The height of bean plants depends on the amount of water they receive.

IV DV Controls

1. An investigation found that more bushels of potatoes were produced when the soil was fertilized more.

IV DV Controls

1. The amount of pollution produced by cars was measured for cars using gasoline containing different amounts of lead.

IV DV Controls