Scientific Method Notes – Objectives 1-5

Objective 1: I can describe each step in the scientific method

The _____: is a series of _____to follow to answer a question or solve a problem

Step 1: _____

- ▶ Scientists ask questions based on observations from their surroundings

- ▶ Questions _____ be _____

  - ▶ Can be answered through _____

  - ▶ _____ can be collected

  - ▶ _____(personal preferences)

Step 2: _____

- ▶ A hypothesis is a _____to a scientific question

- ▶ Take an _____ about what you think the answer is to your question using an "_____/_____" statement

Step 3: _____

- ▶ Set up an experiment to test your question
- ▶ Data is the_____collected (facts, figures, observations, etc…)

Step 4: _____

Look at your data and decide what it tells you about your question

Step 5: _____

Decide what the answer to your question is and ask:

- ▶ Was my hypothesis right or wrong?
- ▶ Do I need to do the experiment again to find out more?

Objective 2: I can define the Independent (IV) and Dependent (DV) variables, and find the IV and DV in an experiment.

There are 2 main types of variables:

▶ _____ **Variable**: The variable that is _____ **(manipulated)** by the scientist; the _____ variable

▶ _____ **Variable**: The variable that _____ **(respond)** (because of what the scientist changes)
  o – this is the variable that is _____

Your hypothesis can TELL you what your variables are!

Ex. If I drink Mountain Dew before bed, then I will not sleep very much.

IV (Independent Variable): _____

DV (Dependent Variable) : _____

Practice: *Use this hypothesis to identify the variables:*

If I leave the lights on all day, then my electric bill will be expensive

IV: _____

DV: _____

Objective 3: I can write a hypothesis using an "If…Then…" statement, and use the words increase and/or decrease.

Hypothesis: an educated guess or prediction; an "if, then" statement that _____

_____ (___independent variable_____), _____ (__dependent variable__)

Example:

- Independent Variable: _____
- Dependent Variable: _____

_____ I _____ the amount of food I give my cat *(IV the part you are controlling)*, _____ **her** weight will _____ (DV the part you are measuring, the effect of feeding her a bunch of food.)

Objective 4: I can define and identify constants and controls in an experiment

Constant: something that scientist makes sure is the_____

    Ex. Watering the plants the same amount of water or making sure you are testing the same person every time

Control: The part of the experiment that the scientist _____

    Ex. When testing to see if miracle grow really increases plant growth, the plant that does not receive the miracle grow is the control

Observation: Using your _____ to collect data about your surroundings

▶ Example: There are 8 trees in the picture; there is a dog in the picture

Inference is when you make an _____ about something that you observe

After you make an _____, you usually make an _____about what is going on

▶ Example: the truck driver was not paying attention