Name:

Class:

**Scientific Method Unit Review (AB)**

1. Science is defined as both a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it produces.
2. How is the scientific method… like a cycle?

* How is it self-correcting?
* How is it cumulative / collaborative?

**Hypothesis vs Theory.** Fill in each blank with *hypothesis, theory or both*.

1. Has a large amount of data/evidence behind it\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Is a suggested answer to a question \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Can be tested or changed ­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Is an accepted explanation for a phenomenon ­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Is a guess \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Has the format if (I test this) then (this will result) because (reason) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Currently explains ALL the evidence on a topic \_\_\_\_\_\_\_\_\_\_\_\_

**Matching Vocabulary on Scientific Method**

1. \_\_\_\_\_\_ The experimental trial that is not tested for baseline comparison purposes.
2. Observation
3. Inference
4. Qualitative Observation
5. Quantitative Observation
6. Independent Variable
7. Dependent Variable
8. Constants
9. Control Group
10. Experimental Group
11. \_\_\_\_\_\_ The item changed by the experimenter to test their question
12. \_\_\_\_\_\_ The items kept the same in an experiment so that only one thing is tested and results will be meaningful
13. \_\_\_\_\_\_ Observations that are descriptive (like color, shape, smell)
14. \_\_\_\_\_\_ A conclusion made based on observations.
15. \_\_\_\_\_\_ The item in an experiment that results from the test, it is recorded as data
16. \_\_\_\_\_\_ The experimental trial that is tested on to see if the hypothesis is supported.
17. \_\_\_\_\_\_ Any data collected with your senses (smell, touch, taste, sight, hearing).
18. \_\_\_\_\_\_ Any information collected that is numerical and measured

**Identify the parts of the experimental design.** Sam had a plant near the window where his radio was so he thought that plants loved music. He experimented to see if more music would make them grow more. Group one plants got 4 hours of music, group two got 2 hours and group three got no music. He saw group one grew 1 cm and was very yellow with small leaves, group two grew 2 cm and group one grew 4 cm.

1. Independent variable
2. Dependent variable
3. Constants
4. Control Group
5. Experimental Group
6. \_\_\_\_\_ The amount of plant growth
7. \_\_\_\_\_ The trial given no music
8. \_\_\_\_\_ The amount of water and sunlight
9. \_\_\_\_\_ The amount of music provided
10. \_\_\_\_\_ The trials given different amounts of music

1. Hypothesis
2. One Quantitative observation
3. One Qualitative observation
4. An inference
5. Label the sketched graph with a title, x-axis title and y-axis title.
6. What conclusion should he make when looking at the graphed data?

Is that positive, negative or no correlation?

**Metric Practice**

1. The base unit for volume is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the tool you would use is the ­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The base unit for length is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the tool you would use is the ­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The base unit for mass is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the tool you would use is the ­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The unit for temperature is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the tool you would use is the ­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the range of degrees is from water’s freezing point at \_\_\_\_\_\_ to boiling at \_\_\_\_\_\_\_\_.
5. Common prefixes that can be added to the bases are centi which has a value of \_\_\_\_\_\_\_\_\_, milli with a value of \_\_\_\_\_\_\_\_\_, and kilo with a value of \_\_\_\_\_\_\_\_\_.
6. The prefixes from large (left) to small (right) are:
7. Three reasons metric is a better system than the imperial US system of measuring are:
8. Practice metric conversions
9. 23.5 g = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_mg
10. 398.2 mL = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hL
11. 23 km = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm
12. 34 mm = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m
13. Label the diagram of the water molecules. Use the following labels

* Hydrogen atom
* Oxygen atom
* Water molecule
* + charge
* - charge
* covalent bond (strong)
* hydrogen bond (weak attraction)

1. Define the term polar

**Match the water property and it’s definition**

1. \_\_\_\_\_Water is able to stick to and dissolve most substances
2. Cohesion
3. Adhesion
4. Capillary Action
5. Surface Tension
6. Universal Solvent
7. High Heat Capacity
8. \_\_\_\_\_Water sticks to itself to form spheres, droplets
9. \_\_\_\_\_Molecules at the top are very strongly bonded and can hold light objects
10. \_\_\_\_\_Water is able to stick to any other substance that is also polar
11. \_\_\_\_\_Water draws up small tubes due to adhesion and cohesion combined
12. \_\_\_\_\_It takes a large amount of energy before it changes temperature as the energy must first pull apart hydrogen bonds