Name_____

Per. _____

What is Science?

Limitations:

- What can it be used for?

- What can't it be used for?

How Scientists Work - The Scientific Method

Designing an Experiment

The basic steps of designing an experiment are? We covered these on the vocab sheet.

1. ***Observation***
2. ***Problem***
3. ***Hypothesis***
4. ***Experiment***
5. ***Analysis***
6. ***Conclusion***

Now, how do you perform each of these steps so that you get answers you can trust.

1. Make useful observations

   Qualitative – _____

   Quantitative – _____

2. Ask a focused question-

   _____

3. Compose an educated and testable hypothesis-

   _____

Name_____

Per. _____

4. Design a controlled experiment-
   - ✓ What makes it controlled?

   - ✓ What two groups are needed?

○ Control Group –
○ Experimental Group –

5. What are constants (or controlled variables) in a controlled experiment?

_____

6. What are the two variables that we care most about?

   1. Independent (Manipulated) variable

   _____

   2. Dependant (Responding) Variable

   _____

7. What is the point of trying an experiment more than once (repeatability)?

_____

8. There are different types of measurement?
   - ✓ Direct vs. Indirect
     - ○ _____
     - ○ _____

9. Random sample

_____

Name_____

Per. _____

10. Bias & Blind Experiments

_____

11. Evidence vs. Inference
    - ✓ Evidence: _____
    - ✓ Inference: _____

12. Record the data you get from an experiment in the best format?
    - A table- good for two linked measurements (Age vs. Height)
    - A graph- things that change over time (seasonal temperature)
    - A diagram- for qualitative data

13. Analyze the data to understand its meaning.

_____

14. Decide on a conclusion.
    - ✓ What exactly is a conclusion?

_____

    - ✓ What may be used to draw a conclusion?

_____

15. Experimental Error

_____

Degrees of Certainty

1. Hypothesis

2. Theory

3. Law