Scientific Method -

1. Observation – uses the senses =



1. Problem/Question – always worded as a and is always

 about the



Ex.

1. Research – Find out what others know about the problem



4. Hypothesis – a possible to the question ( );

 must be

* If the water faucet is opened, then the amount of water flowing will increase.
* If fenders are placed on a bicycle, then the user will stay dry when going through puddles.
* If a prisoner learns a work skill while in jail, then he is less likely to commit a crime when he is released.
* If I raise the temperature of a cup of water, then the amount of sugar that can be dissolved in it will be increased.
* If there is a relation between the wave length of light and the photosynthesis rate, then light of different colors will cause the plant to make different amounts of oxygen.
* More students get sick during the final week of testing that at other times.
* One solar panel can replace one C battery.

* Worker satisfaction increases worker productivity.
* Amount of sun exposure will increase the growth of a tomato plant.
* Childhood obesity is tied to the amount of sugary drinks ingested daily.

 A dog can be trained to alert a human if the telephone is ringing.

5. Experiment – a test of your and must be done many times and

 by many people to the answer



 **Usually there are 2 groups in an experiment**:

1. Control Group – the normal or - and it is used to compare

 to the group that has in it what you are testing;

 THIS GROUP DOES NOT HAVE WHAT YOU ARE

 TESTING

1. Experimental Group – this is set up EXACTLY as the control group

 EXCEPT it has what is being tested

1. Independent Variable – the *one part* of the experimental

 group that is *different* from the

 from the control group

 IT IS WHAT IS BEING TESTED

1. Dependent Variable – the *result* of using the Independent

 Variable

Go to: tinyurl.com/controlvsexperimental - and read this example

6. Data - the information gathered from the experiment

 - put into graphs, charts and tables

 a) Quantitative = anything that can be counted, measured, weighed



b) Qualitative = descriptions (not numbers)



7. Analysis – interprets the info (determines what it means)



8. Conclusion – Statement that either supports (agrees with) or

 refutes (disagrees with) the hypothesis



9. Theory – hypothesis that has been supported many times by

 many people over many years – IT IS BELIEVED TO

 BE TRUE BUT MAY CHANGE WITH NEW

 INFORMATION

 Examples of scientific theories are:

 theory of evolution

 theory of planetary motion

 big bang theory

 theory of the expanding universe

 germ theory of disease