**Scientific Method**

**Information and Practice Problem Solutions**

1. Problem – what you want to know. This is usually in the form of a question. What does the person in the problem want to find out.
2. Hypothesis – what you THINK the answer to the problem-question will be. This looks like an answer to the problem question.
3. Experiment – the steps of the experiment. This is what is done to find the answer to the problem.
4. Record observations – writing down what you found out during the experiment – data.
5. Make a conclusion and communicate results – based on the experiment, this is the answer to the problem-question. It tells the results of the experiment. Communicating is how you can tell others what you found out.
6. Control – The part of the experiment you do not change – the part that is the same, just like it would normally be. Nothing is changed.
7. Independent variable – The part of the experiment you change – what you are testing.
8. Dependent variable – what changes because of the independent variable. This is usually part of the results of the experiment.

Examples:

From daily science:

SpongeBob and Patrick love to go jellyfishing. They wondered if a new brand of jellyfish bait would help them catch more jellyfish. To test their idea, they bought a big container of bait for their next 3 trips to their top-secret fishing spot. SpongeBob fished without any bait, while Patrick used the new bait. Both of them kept track of how many jellyfish they caught in 30 minutes, which is shown in the chart.

1. Problem: Does the new jellyfish bait help catch more jellyfish?
2. Hypothesis: Yes, the new jellyfish bait will help Patrick and SpongeBob catch more jellyfish.
3. Experiment: Patrick fishes with new bait. SpongeBob uses no bait. They fish for 30 minutes. They repeat the experiment 3 times. They count how many jellyfish they catch.
4. Record Observations:
5. Control: Using no jellyfish bait
6. Independent variable: The new jellyfish bait
7. Dependent variable: the number of jellyfish caught (changes based on independent variable)
8. Conclusion: The new jellyfish bait works a little, but Patrick only caught 2 more jellyfish than SpongeBob, so it isn’t really, really good.

**Examples of Controls, Independent Variables and Dependent Variables:**

**Mythbusters: Talking to Plants**

Control: No sound played for plants - silence

Independent Variables: sound played for plants – talk nice, talk naughty, rock music, classical music

Dependent Variables: growth of plant – how much they grew

**SpongeBob: Growing Flowers for Sandy:**

Control: no fertilizer

Independent Variables: fertilizer on seed

Dependent Variables: size of flowers

**SpongeBob: Jellyfishing:**

Control: no jellyfish bait

Independent Variables: jellyfish bait

Dependent Variables: number of jellyfish caught