**Scientific Method Study Guide**

Questions to know

1. **List the steps of the scientific method in order**

Testable question

Identify Variables

Hypothesis

Write procedure

List materials

Make observations

Track Data

Analyze/write conclusion

1. **Be able to recognize and write qualitative and quantitative observations.**

Write two qualitative and two quantitative observations below.

The sky looks dark and ominous. The students were talking loud and appeared very excited.

There are two left-handed students in my homeroom. It takes 16 minutes for the students to eat their lunches.

1. **Be able to recognize and write a testable question.**

Write a testable question for the following observations:

1. You want to know if the cost of tennis balls affects how high they bounce.

Do more expensive tennis balls bounce higher?

1. You want to know if the size of a magnet affects the strength of a magnet.

Are bigger magnets stronger?

1. **Write a hypothesis in the IF…THEN.. BECAUSE.. format**

Make a hypothesis for the question:

1. Will an object’s weight be different in and out of water?

If I place a ball in water, then its weight will be the same because the ball is filled with air and will be buoyant.

1. What type of material, paper or plastic, is the best insulator against temperature change?

If I pour my coffee in a paper cup, then it will stay warmer on my walk to school because the plastic is too soft and can’t hold the heat.

1. **Be able to recognize the independent, dependent, and control variables in an experiment.**

Pick out the variables in the following experiment:

*Students are testing the paper and plastic to see which material insulates water best against temperature change*.

IV: Material of cup

DV: liquid that holds original temp.

CV: amount of liquid, size of cup, kind of liquid and starting temp. or liquid

1. **Be able to create a data table and graph your data.**

On a separate sheet of paper, chart and graph the following data:

Distribution of science grades

A=12 B= 14 C=7 D=2 F=1

**Vocabulary:**

Scientific method Series of steps to follow (be able to identify the steps)

Observation Using your senses

Infer To explain or interpret an observation

Hypothesis An educated guess

Variable Any factor that can change in an experiment

Data Information gathered through observation or an experiment

Conclusion Sums up what you learned from an experiment and answers the question

Independent variable What I changed on purpose

Dependent variable What you measure in an experiment – the outcome, result

Constant variable Variable must stay the same

Quantitative Uses numbers

Qualitative Uses the senses