Name _____ JMJ Date _____
Period _____ Miss Pisciotta

Introduction Chapter HW Sheet

**HW #1**

1. Define science.
2. What are the three branches of science? What are they the study of?
3. Who is Marie Curie? What did she discover?
4. What is the relationship between an inference, hypothesis, and a prediction? (This may be how they are similar and different.)
5. List steps to the scientific method. Also give an example or explain each step and give any important information for each.

**HW #2**

1. Explain what a scientific theory is.
2. Explain what a scientific law is.
3. Compare and contrast a scientific theory and scientific law using a Venn diagram.

**HW #3**

One way to scientifically investigate to find new information is through controlled experiments.

1. Define the following terms: experimental group, control group, independent variable, dependent variable, constant,.
2. Using these terms, explain how all of these become part of a controlled experiment in a paragraph form.
3. Why are controlled experiments important for scientists to use?
4. What is the difference between an independent variable and a dependent variable? What is another name for each variable?
5. What is the role of constants in a controlled experiment?
6. Explain why scientists need a control group in a controlled experiment.

**HW #4**

1. What is the International System of Units also known as?
2. Why was it developed?
3. What are the base units for: length, mass, and volume?
4. Scientific units are based on powers of _____. What are the prefixes?
5. Why is scientific notation used?

**HW #5**

*SI Conversion Problems*

1. 50 meters = _____ millimeters
2. 1.2 liters = _____ hectoliters
3. 280 grams = _____ decigrams
4. 1000 kiloliters = _____ liters
5. 30 dekameters = _____ centimeters
6. 20 centigrams = _____ kilograms
7. 5000 milliliters = _____ hectoliters
8. 42 kilometers = _____ centimeters
9. 780 dekagrams = _____ grams
10. 22,080 deciliters = _____ kiloliters
11. 53.4 meters = _____centimeters
12. 90 milligrams = _____ hectograms
13. 600 dekameters = _____ decimeters
14. 350.09 kiloliters = _____centiliters
15. 720 decigrams = _____kilograms

**HW #6**

*Please place these numbers into scientific notation.*

| | | | |
|---|---|---|---|
| 1. | 243290000000000000 | 6. | 765100000000 |
| 2. | 875600000000 | 7. | 90875000000000 |
| 3. | 430970000 | 8. | 23190000000 |
| 4. | 125000000 | 9. | 52300000 |
| 5. | 7035000000000000 | 10. | 784800000000 |

*Please place these numbers in standard form.*

| | | | |
|---|---|---|---|
| 11. | $7.3 \times 10^{8}$ | 16. | $7.356 \times 10^{-5}$ |
| 12. | $8.95 \times 10^{-4}$ | 17. | $1.5693 \times 10^{6}$ |
| 13. | $2.34 \times 10^{9}$ | 18. | $3.248 \times 10^{3}$ |
| 14. | $9.732 \times 10^{-3}$ | 19. | $6.129543 \times 10^{8}$ |
| 15. | $5.128 \times 10^{7}$ | 20. | $7.453 \times 10^{-2}$ |

**HW #7**

1. What do figures A and B represent? What is the difference between them?
2. _____ used to measure the temperature of substances.
3. _____ used to measure the mass of an object.
4. _____ used to measure the acidity of a liquid.
5. _____ used to measure the weight or the amount of force applied to an object.
6. _____ used to heat substances in the laboratory.
7. _____ used to measure time.
8. _____ used to record observations, collect data, etc.
9. _____ used to measure the distance between two large trees
10. List any other scientific tools scientists use during experiments and how they are used.

Figure A

Figure B