Name _____

Chemistry Summer Assignment

Welcome to Chemistry!!!!!!

PLEASE READ THIS WHOLE PAGE BEFORE YOU START.

During the course of the year we will be focusing on many topics dealing with scientific notation and algebra

1. **Scientific Notation**. Read the directions and complete the worksheet.
2. **Algebra**. You need good algebra skills in chemistry. Complete the practice worksheet. You must show all of your work.

Answers to Frequently Asked Questions.

This assignment will be due the first day of school. (start the year off right…. Have it done)

It will be your first grade of the first marking period. (so do a good job 😊)

It will be a test grade. (it should be worth something since you are taking time away from your summer to do it)

If you have any questions, you can email me at kscott@nazarehtacademyhs.org.

And lastly…. And most importantly…. This is CHEMISTRY. You are expected to do this work independently. You get out of it what you put into it.

We are going to have a great year and I look forward to working with you this fall. Enjoy your summer!

I _____ agree to do this assignment independently and that the work that is turned in is my own.

Name: _____

Date: _____ **Period:** _____

Scientific Notation

Scientific notation is often used in science to make working with very small or very large numbers easier. It is not practical to write out numbers like **0.00000000028** or **1,300,000,000** – scientific notation gives us another way to represent the same number.

A number given in scientific notation consists of three parts: the coefficient, the base, and the exponent. Coefficients must be between **1.0 and 9.99999**, the base is always **x10**, and the exponent represents the number of places we have moved the decimal point in order to convert from standard form to scientific notation.

- **For numbers less than 1, the exponent will always be negative.**
- **For numbers greater than 1, the exponent will always be positive.**

Examples:

Example 1: If we convert **0.00000000028** to scientific notation, we must first get the coefficient within the accepted range. The coefficient here would be **2.8**. The base is always **x10**, so the only thing left is identifying the correct exponent. For numbers less than 1, the exponent will always be negative.

The exponent is equal to the number of decimal places we moved the decimal to get to our coefficient. For this example the exponent would be **-10**. The final answer would be written as **2.8×10^{-10}**

Example 2: Converting **1,300,000,000** to scientific notation will use the same rules; the only difference is the exponent will be positive since the original number is greater than 1. The coefficient would be **1.3**, base **x10** and the exponent would be **9**. The final answer would be **1.3×10^{9}**.

Convert the following numbers into scientific notation:

1) 3,400 _____

2) 0.000023 _____

3) 101,000 _____

4) 0.010 _____

5) 45.01 _____

Convert the following numbers into standard notation:

6) 2.30×10^{4} _____

7) 1.76×10^{-3} _____

8) 1.901×10^{-7} _____

9) 8.65×10^{-1} _____

10) 9.11×10^{3} _____

Convert the following numbers into scientific notation:

1) 9230 _____

2) 0.0425 _____

3) 452300 _____

4) 0.0943 _____

5) 6753 _____

6) 92.3 _____

7) 71.8 _____

8) 0.0000032 _____

9) 0.000078 _____

10) 0.00002 _____

Convert the following numbers into standard notation:

11) 3.92400×10^{6} _____

12) 9.2×10^{-6} _____

13) 4.391×10^{3} _____

14) 6.825×10^{4} _____

15) 4.6978×10^{-4} _____

16) 8.36×10^{4} _____

17) 2.46×10^{-7} _____

18) 8.8×10^{4} _____

19) 2.46×10^{-3} _____

20) 8.8×10^{5} _____

In chemistry, you need to use your algebra skills to rearrange equations and solve for a variable. Solve for the "x" and show all your work. If your answer is a decimal, **round to 2 decimals places**- do not leave it a fraction form.

1. $3x + 4 = 14$

2. $12 = \frac{4}{x}$

3. $12 = \frac{x}{4}$

4. $28 - 6x + 12 = 45$

5. $25 = \frac{3x}{7} - 5$

6. $25 = 7 - \frac{3}{2x}$

7. $25 - 2x = 13$

8. $32 + 5x + 12 = 80$

The density of an object is determined using the formula $\textbf{\textit{Density}} = \frac{\textbf{\textit{Mass}}}{\textbf{\textit{Volume}}}$

1. If the mass of an object is 10g and the volume is 15mL. What would the density be? The unit for your answer would be g/mL

2. How would you rearrange the equation to solve for Mass? (Write mass on the left side of the equation and use your algebra skills

Mass = _____ (write the words)

If the volume of an object is 30mL and the density is 3.0 g/mL, what is the mass of the object?

3. How would you rearrange the equation to solve for Volume?

Volume = _____

If the mass of an object is 50g and the density is 2.0g/mL, what is the volume