CHAPTER 8: EXPONENTS & EXPONENTIAL FUNCTIONS

Scientific Notation

OBJECTIVES

- I can simplify expressions in scientific notation

PART 1: SCIENTIFIC NOTATION

- Scientific notation is a way to write either really large or really small numbers more efficiently

Definition **Scientific Notation**

A number in **scientific notation** is written as the product of two factors in the form $a \times 10^n$, where n is an integer and $1 \leq a < 10$.

Examples 3.4×10^6 5.43×10^{13} 2.1×10^{-10}

PART 1: SCIENTIFIC NOTATION

1 Is each number written in scientific notation? If not, explain.

a. 3.42×10^{-7} **b.** 52×10^{4} **c.** 0.04×10^{-5}

PART 2: CONVERTING TO & FROM SCI NOT

2 Write each number in scientific notation.

a. 267,000 **b.** 46,205,000 **c.** 0.0000325 **d.** 0.000000009

3 Write each number in standard notation.

a. 3.2×10^{12} **b.** 5.07×10^{4} **c.** 5.6×10^{-4} **d.** 8.3×10^{-2}

PART 3: ORDERING NUMBERS IN SCI NOT

4. The following masses of parts of an atom are measured in grams. Order the parts of an atom from least to greatest mass.

neutron: 1.6749×10^{-24}, electron: 9.1096×10^{-28}, proton: 1.6726×10^{-24}

PART 4: OPERATIONS WITH SCI NOT MULTIPLYING BY A NUMBER

6 Simplify. Write each answer using scientific notation.

a. $2.5(6 \times 10^3)$

b. $0.4(2 \times 10^{-9})$

PART 4: OPERATIONS WITH SCI NOT MULTIPLYING

3 Simplify each expression. Write each answer in scientific notation.

a. $(2.5 \times 10^8)(6 \times 10^3)$ **b.** $(1.5 \times 10^{-2})(3 \times 10^4)$ **c.** $(9 \times 10^{-6})(7 \times 10^{-9})$

PART 4: OPERATIONS WITH SCI NOT DIVIDING

2 Find each quotient. Write each answer in scientific notation.

a. $\frac{2 \times 10^3}{8 \times 10^8}$

b. $\frac{7.5 \times 10^{12}}{2.5 \times 10^{-4}}$

c. $\frac{4.2 \times 10^5}{12.6 \times 10^2}$

CAN YOU?? PROVE IT!!

- I can simplify expressions in scientific notation
  - Go back and finish all the blank problems ☺