Algebra 1 Notes

8.2-> SCIENTIFIC NOTATION

Scientific Notation is a shorthand way to write very large or very small numbers.

Scientific Notation is a number written as the product of two factors in the form : $a \times 10^n$

Examples:

3.4×10^6 5.43×10^{13} 2.1×10^{-10}

*Only one number in front of the decimal.

1. Is each number written in scientific notation?

a. 3.42×10^{-7} Yes

b. 52×10^4 No, Should be 5.2

c. $.04 \times 10^{-5}$ No, Should be 4 or 4.0

Use positive exponents for numbers greater than one, and negative exponents for numbers less than one (decimals).

2. Write each number in scientific notation: NEW → OLD

a. 267,000 2.67×10^5

b. 46,205,000 4.6205×10^7

c. 0.0000325 3.25×10^{-5}

d. 0.000000009 9×10^{-9}

8.2 Notes
Sci. Notation

3. Write each number in standard notation:

*Positive Exponent-> Move decimal to the right.

*Negative Exponent-> Move decimal to the left.

a. 3.2×10^{12}

3.2 → 3,200,000,000,000

b. 5.07×10^{4}

5.07 → 50,700

c. 5.6×10^{-4}

5,6 ← .00056

d. 8.3×10^{-2}

8,3 ← .083

4. Using Scientific Notation to Order Numbers

*Make sure they are all in scientific notation form first.

a. List the planets in order of their distance from the sun from least to greatest.

(3) Jupiter: 4.84×10^{8} miles

(2) Earth: 9.3×10^{7} miles

(4) Neptune: 2.8×10^{9} miles

(1) Mercury: 3.8×10^{7} miles

b. Order 60.2×10^{-5} (1), 63×10^{4} (4), 0.067×10^{3} (3), 61×10^{-2} (2)

from least to greatest. Put in scientific notation first.

* Put exponents in order first
* If there are two of the same exponents, look at the number.

$60.2 \times 10^{-5} \overset{+1}{=} 6.02 \times 10^{-4}$ (1)

$63 \times 10^{4} = 6.3 \times 10^{4+1} = 6.3 \times 10^{5}$ (4)

$0.067 \times 10^{3} \overset{-2}{=} 6.7 \times 10^{1}$ (3)

$61 \times 10^{-2} \overset{+1}{=} 6.1 \times 10^{-1}$ (2)