1st Hour

1.6 Scientific Notation

Scientific Notation: when a number is written as the product of a factor and an integer power of 10

$a \times 10^n$, where $a \geq 1$ or $a < 10$
n is an integer

Here are the rules:

1) If the # is ≥ 1, the power of 10 is positive Big # → Positive

2) If the # is < 1, the power of 10 is negative Little # → Negative

Ex 1) Write each number in standard form.

5.34×10^4
5.3400
53,400

3.27×10^{-3}
.00327

7.42×10^5
7.42000
742,000

6.1×10^{-2}
.061

3.714×10^2
371.4

Ex 2) Write each number in scientific notation.

3,725,000
3.725×10^6

.000316
3.16×10^{-4}

931,500,000
9.315×10^8

.0044
4.4×10^{-3}

14,140,000
1.414×10^7

.00876
8.76×10^{-3}

.114
1.14×10^{-1}

1.7 Computation with Scientific Notation

**You can use the properties of exponents to multiply and divide numbers written in scientific notation.

Ex 1) Evaluate and express in scientific notation.

$(7.2 \times 10^3)(1.6 \times 10^4)$

11.52×10^7

1.152×10^8

$(8.4 \times 10^2)(2.5 \times 10^4)$

21×10^6

2.1×10^7

$(2.63 \times 10^4)(1.2 \times 10^{-3})$

3.156×10^1

$\frac{8.37 \times 10^8}{2.7 \times 10^3}$

3.1×10^5

$\frac{4.64 \times 10^{-4}}{2.9 \times 10^{-6}}$

1.6×10^2

Ex 2) In 2010, the world population was about 6,860,000,000. The population of the United States was about 3×10^8. About how many times larger is the world population than the population of the United States?

Ex 3) The surface area of Lake Superior, the largest of the Great Lakes, is 8×10^4 square kilometers. The surface area of the smallest Great Lake, Ontario, is 18,160 square kilometers. About how many times as great is the area covered by Lake Superior than Lake Ontario?

Ex 4) Evaluate each expression. Express your answer in scientific notation.

$(6.89 \times 10^4) + (9.24 \times 10^5)$

$(2.85 \times 10^7) + (1.61 \times 10^9)$