

DIGITS LESSON 4-3/4-4

Operations with scientific notation

11/13/2019

Goal: I will be able to **add/subtract/multiply/divide scientific notation.**

Tool Bag
Formulas, equations
Vocabulary, etc

Here's How... Notes & Examples

The exponents must be the same. Then you add or subtract the front numbers

Adding
Subtracting

Example 1) $5000 + 200 = 5200 = 5.2 \times 10^3$

$$5 \times 10^3 + 2 \times 10^2$$

$$5 \times 10^3 + .2 \times 10^3$$

$$(5 + 0.2) \times 10^3$$

$$5.2 \times 10^3$$

2) $3.4 \times 10^{-5} + 6.2 \times 10^{-5}$

$$(3.4 + 6.2) \times 10^{-5}$$

$$9.6 \times 10^{-5}$$

3) $(3.2 \times 10^3) - (1.7 \times 10^3)$

$$(3.2 - 1.7) \times 10^3$$

$$1.5 \times 10^3$$

4)

Multiplying
Dividing

The exponents do NOT need to be the same. You multiply or divide the first numbers, and then use the rules of exponents for the "10's"

Examples

1) $(3 \times 10^4)(7.2 \times 10^2)$

$$3 \cdot 7.2 \cdot 10^4 \cdot 10^2$$

Commutative Property

$$21.6 \times 10^{4+2}$$

Rules of exponents

$$21.6 \times 10^6$$

Move the decimal

$$2.16 \times 10^7$$

2) $\frac{12 \times 10^8}{3 \times 10^2} = \frac{12}{3} \cdot \frac{10^8}{10^2}$

$$= 4 \times 10^{8-2}$$

$$= 4 \times 10^6$$

1) $(2.4 \times 10^3)(3 \times 10^5)$

$$(2.4)(3) \times 10^3 \cdot 10^5$$

$$7.2 \times 10^8$$

Try

2) $\frac{8.4 \times 10^7}{\frac{2 \times 10^3}{2} \times \frac{10}{10^2}} = 4.2 \times 10^4$

3) $(3.51 \times 10^4) + (1.7 \times 10^3)$

$$3.51 \times 10^4 + 0.17 \times 10^4$$

$$3.68 \times 10^4$$

1700

4) $(6.8 \times 10^{-3}) - (2.3 \times 10^{-4})$

$$6.8 \times 10^{-3} - 0.23 \times 10^{-3}$$

$$6.57 \times 10^{-3}$$