

# 1.7 Scientific Notation

A # written as the product of a factor & an integer power of 10.

(the factor must be between 1-10)

examples:  $5.123 \times 10^5$        $3.2 \times 10^{-2}$

non-examples  $42.5 \times 10^3$        $.5 \times 10^4$

$5.123 \times 10^5$       • (+) exponent  
 $5.123 \times 100,000$       • # getting larger  
                                          • move to right

$5.12300 \Rightarrow 512300$

$6.78 \times 10^{-3}$       • (-) exponent  
                                          • # getting smaller  
 $0.00678 \Rightarrow .00678$       • move to left

$3.26 \times 10^5$   
 $3.26000$   
 $\Downarrow$   
 $326000$

$3.26 \times 10^{-4}$   
 $.000326$   
 $\Downarrow$   
 $.000326$

72

1.7

+, -, ×, ÷

+

$$(6.8 \times 10^5) + (4.2 \times 10^4)$$

$$(68 \times 10^4) + (4.2 \times 10^4)$$

$$68 + 4.2 \times 10^4$$

$$72.2 \times 10^4$$

$$7.22 \times 10^5$$

must have same  
exponents! convert  
larger to smaller

$$(4.89 \times 10^3) + (9.2 \times 10^5)$$

$$(4.89 \times 10^3) + 920 \times 10^3$$

$$(4.89 + 920) \times 10^3$$

$$924.89 \times 10^3$$

$$9.2489 \times 10^5$$

-

$$(7.83 \times 10^8) - (6.5 \times 10^6)$$

$$(783 \times 10^6) - (6.5 \times 10^6)$$

$$(783 - 6.5) \times 10^6$$

$$776.5 \times 10^6$$

$$7.765 \times 10^8$$

\* smaller # bigger exp

Cont'd

$$(1.1 \times 10^4)(2.5 \times 10^3)$$

$$(1.1 \times 2.5)(10^4 \times 10^3)$$

$$2.75 \times 10^{4+3}$$

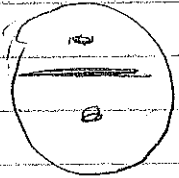
$$2.75 \times 10^7$$

multiply #  
multiply powers  
(add)

$$(2.4 \times 10^{-1})(3.6 \times 10^5)$$

$$(2.4 \cdot 3.6)(10^{-1} \times 10^5)$$

$$8.64 \times 10^4$$



$$\frac{7 \times 10^9}{3 \times 10^6}$$

$$\frac{7}{3} \times \frac{10^9}{10^6}$$

$$\frac{7}{3} \times 10^3$$

$$2.3 \times 10^3$$

$$\frac{1.45 \times 10^5}{5 \times 10^3}$$

$$\frac{1.45}{5} \times \frac{10^5}{10^3}$$

$$0.286 \times 10^2$$

$$28.6 \times 10$$

?

divide #  
divide power  
(sub)