

# Objective #16

## Scientific notation, multiply and divide

Simplify:

1.  $(1.5 \times 10^{-6})(2.3 \times 10^{-3})$

- [A]  $3.45 \times 10^{-9}$     [B]  $3.8 \times 10^{-9}$     [C]  $3.45 \times 10^{18}$     [D]  $34.5 \times 10^{-10}$

Multiply #'s and bases

Ex: 
$$\begin{array}{r} 1.5 \\ \times 2.3 \\ \hline 45 \\ + 300 \\ \hline 3.45 \end{array}$$

$10^{-6} \times 10^{-3} = 10^{-9}$

$3.45 \times 10^{-9}$

Still scientific notation?  
yes!

2.  $(6.1 \times 10^{-10})(4.8 \times 10^{15})$

- [A]  $10.9 \times 10^5$     [B]  $2.928 \times 10^7$     [C]  $2.928 \times 10^6$     [D]  $10.9 \times 10^6$

$$\begin{array}{r} 6.1 \\ \times 4.8 \\ \hline 488 \\ + 2440 \\ \hline 29.28 \end{array}$$

$10^{-10} \times 10^{15} = 10^5$

$29.28 \times 10^5$

Scientific notation?  
NO!

$\Rightarrow 2.928 \times 10^6$

increased since decimal moved left.

3.  $\frac{6 \times 10^{-3}}{3 \times 10^1}$

$\frac{6}{3} \times \frac{10^{-3}}{10^1} = 2 \times 10^{-4}$

- [A]  $2 \times 10^{-4}$     [B]  $3 \times 10^{-2}$     [C]  $18 \times 10^{-3}$     [D]  $2 \times 10^{-2}$

Exponent Quotient Rule

4.  $(2.3 \times 10^{-8})(1.5 \times 10^{-5})$

$$\begin{array}{r} 2.3 \\ \times 1.5 \\ \hline 115 \\ + 230 \\ \hline 3.45 \end{array}$$

$10^{-8} \times 10^{-5} = 10^{-13}$

$3.45 \times 10^{-13}$

Scientific notation?  
yes!