Calculation with Scientific Notation (SN)

Steps for Multiplication/Division with SN

1) If necessary, write numbers in SN
2) Separate each SN into its two parts
3) Multiply/Divide number part
4) Multiply/Divide powers of 10 following exponent rules
    - add exponents if multiplication
    - subtract exponents if division
5) Rewrite answer using SN

Evaluate each expression. Express results in SN.

1) $(6 \times 10^5)(2.5 \times 10^7)$

6×2.5

15

$10^5 \times 10^7$

10^{12}

15×10^{12} ← Not SN

1.5×10^{13} ← SN

Evaluate each expression. Express results in SN.

2) $\dfrac{8.32 \times 10^{7}}{1.3 \times 10^{5}}$

$8.32 \div 1.3$ $\qquad$ $10^{7} \div 10^{5}$

6.4 $\qquad$ 10^{2}

6.4×10^{2} ← SN

Evaluate each expression. Express results in SN.

3) $(7.3 \times 10^4)(2.4 \times 10^6)$

7.3×2.4

17.52

$10^4 \times 10^6$

10^{10}

17.52×10^{10}

1.752×10^{11}

4) A penny is 1.35×10^{-3} meters thick. What would the height of a stack of one million pennies be in SN?

1×10^{6}

$(1.35 \times 10^{-3})(1 \times 10^{6})$

1.35×1 $\qquad$ $10^{-3} \times 10^{6}$

1.35 $\qquad$ 10^{3}

1.35×10^{3}

Standard Form 1,350 m

5) Largest Planet: Jupiter; diameter is 143,000 km.
Smallest Planet: Mercury; diameter is 5×10^3 km

About how many times greater is the diameter of Jupiter?

Jupiter 143,000

Mercury 5,000

$$\frac{143,000}{5000}$$

$$5\overline{)143} = 28.6$$

$$\begin{array}{r} 28.6 \\ 5\overline{)143} \\ -10 \\ \hline 43 \\ -40 \\ \hline 30 \end{array}$$

About 28 to 30 times larger.