

Physics  
conversion / sig fig practice

name key

\* Convert the following:

1) 250 mg to grams  $\frac{250 \text{ mg}}{1000 \text{ mg}} \cdot 1 \text{ g} = \boxed{.25 \text{ g}}$

2) 25 in to ft  $\frac{25 \text{ in}}{12 \text{ in}} \cdot 1 \text{ ft} = \boxed{2.08 \text{ ft}}$

3) 58.4 kg to mg  $\frac{58.4 \text{ kg}}{1 \text{ kg}} \cdot \frac{1000 \text{ g}}{1 \text{ g}} \cdot \frac{1000 \text{ mg}}{1 \text{ mg}} = \boxed{5.84 \times 10^7 \text{ mg}}$

4) 24 km/hr to m/s  $\frac{24 \text{ km}}{1 \text{ hr}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{3600 \text{ s}} = \boxed{6.67 \text{ m/s}}$

5) .46 m<sup>3</sup> to cm<sup>3</sup>  $\frac{.46 \text{ m}^3}{1 \text{ m}} \cdot \frac{100 \text{ cm}}{1 \text{ m}} \cdot \frac{100 \text{ cm}}{1 \text{ m}} \cdot \frac{100 \text{ cm}}{1 \text{ m}} = \boxed{460,000 \text{ cm}^3}$

6) 20 ft/s to mi/hr  $\frac{20 \text{ ft}}{1 \text{ hr}} \cdot \frac{3600 \text{ s}}{1 \text{ hr}} \cdot \frac{1 \text{ mi}}{5280 \text{ ft}} = \boxed{13.64 \text{ mi/hr}}$

7) 3.2 ml to l  $\frac{3.2 \text{ ml}}{1000 \text{ ml}} \cdot 1 \text{ L} = \boxed{3.2 \times 10^{-3} \text{ L}}$

8) 9.2 ft<sup>3</sup> to in<sup>3</sup>  $\frac{9.2 \text{ ft}^3}{1 \text{ ft}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = \boxed{15,897.6 \text{ in}^3}$

9) .0045 mi<sup>2</sup> to in<sup>2</sup>  $\frac{.0045 \text{ mi}^2}{1 \text{ mi}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = \boxed{18,065,203.2 \text{ in}^2}$

10) 12 km/h to m/s  $\frac{12 \text{ km}}{1 \text{ hr}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{3600 \text{ s}} = \boxed{3.33 \text{ m/s}}$

11) 4.003 km to m  $\frac{4.003 \text{ km}}{1 \text{ km}} \cdot 1000 \text{ m} = \boxed{4,003 \text{ m}}$

12) 5340 ml to l  $\frac{5340 \text{ ml}}{1000 \text{ ml}} \cdot 1 \text{ L} = \boxed{5.34 \text{ L}}$

13) 3.8 yd to cm  $\frac{3.8 \text{ yd}}{1 \text{ yd}} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} = \boxed{347.47 \text{ cm}}$

14) 400.6 cm<sup>3</sup> to liters  $\frac{400.6 \text{ cm}^3}{1 \text{ cm}^3} \cdot \frac{1 \text{ mL}}{1 \text{ cm}^3} \cdot \frac{1 \text{ L}}{1000 \text{ mL}} = \boxed{.4006 \text{ L}}$

15) 3200 ft<sup>3</sup> to yd<sup>3</sup>  $\frac{3200 \text{ ft}^3}{3 \text{ ft}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} = \boxed{118.52 \text{ yd}^3}$

\* Determine the number of sig figs in the following. Write answer to the left of the numbers.

3 53.9    1 .00004    4 6.000    4 .2040    1 40000    7 80000.00    1 7000    4 .09000    7 102.0500

5 25.030    3 0.680    5 1.2300    ∞ 30 nut cases    6  $6.40700 \times 10^{-4}$     1 80000    6 21600.0    7 3.020500

2 720000    2 67000    3 30.0    8 8000.0000    2 8900000    7 .000030    1 2000    7 700770.0

\* Compute the following then give answer in correct sig figs.

1)  $5.90 + .4778$

6.38

2)  $4.44400 \times 3.005$

13.35

$30.67 \times 5.00$

153

4)  $5.90 - 4.65000$

1.25

5)  $12 \div 23400$

.00051

6)  $12 \times 3.0 \times 595,670.0$

21,000

7)  $7.9999 \div 9.9$

.81

8)  $7.7598 + 8.900 + 2.346678$

19.0075

9)  $689 \times 4$

3000

\* In a particular experiment, we observed and recorded the following data. 90 Newtons, 46 Newtons, 5 Newtons, 60 Newtons. It is later determined that the actual target value for the experiment was 70 Newtons. Determine the relative error of each observed value.

$$\frac{90-70}{70} = 29\%$$

$$\frac{46-70}{70} = 34\%$$

$$\frac{5-70}{70} = 93\%$$

$$\frac{60-70}{70} = 14\%$$