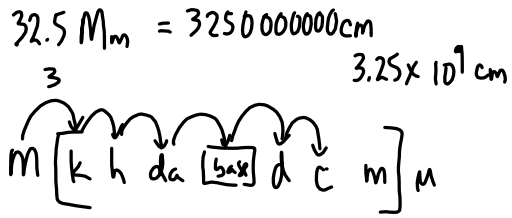


Metric Conversions (Review)

① Slide the decimal ($10^1 = 1 \text{ dec place} / 10^3 = 3 \text{ dec places}$)



② Use the prefix (to convert to the base unit)

$365 \text{ nm} = 365 \times 10^{-9} \text{ m}$
 $= 3.65 \times 10^{-7} \text{ m}$

③ Factor labelling:

$506 \text{ } \mu\text{g} \rightarrow ? \text{ Mg}$

$1 \text{ g} = 10^6 \text{ } \mu\text{g}$
 $1 \text{ } \mu\text{g} = 10^{-6} \text{ g}$

$? \text{ Mg} = 506 \text{ } \mu\text{g} \left(\frac{1 \text{ g}}{10^6 \text{ } \mu\text{g}} \right) \left(\frac{1 \text{ Mg}}{10^6 \text{ g}} \right)$

$? \text{ Mg} = \frac{506}{(10^6)(10^6)} \text{ Mg}$
 $= 506 \times 10^{-12} \text{ Mg}$
 $= 5.06 \times 10^{-10} \text{ Mg}$

On Sheet

8. 23.8 fg to kg

$23.8 \text{ fg} = 23.8 \times 10^{-15} \text{ g} = 23.8 \times 10^{-18} \text{ kg}$
 $2.38 \times 10^{-17} \text{ kg}$

11.

$45.6 \text{ } \mu\text{L}$ to ML

$45.6 \text{ } \mu\text{L} = 45.6 \times 10^{-6} \text{ L} = 45.6 \times 10^{-12} \text{ ML}$
 $4.56 \times 10^{-11} \text{ ML}$

Factor Label Method of Problem Solving

Convert $\frac{6'2''}{74''}$ to cm

$$x \text{ cm} = 74 \text{ in} \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right)$$

$$x \text{ cm} = 187.96 \text{ cm}$$

$$x \text{ cm} = 1.9 \times 10^2 \text{ cm}$$

Convert 35 g to pounds:

$$x \text{ lbs} = 35 \text{ g} \left(\frac{1 \text{ lb}}{454 \text{ g}} \right)$$

$$x \text{ lbs} = 0.077 \text{ lbs}$$

Convert 22 g of carbon to moles:

$$x \text{ mol} = 22 \text{ g} \left(\frac{1 \text{ mol}}{12.01 \text{ g}} \right)$$

$$x \text{ mol} = 1.8 \text{ mol}$$

Convert 1.8×10^{24} Oxygen atoms to g:

$$x \text{ g} = 1.8 \times 10^{24} \text{ O atoms} \left(\frac{1 \text{ mol O}}{6.02 \times 10^{23} \text{ atoms}} \right) \left(\frac{16.00 \text{ g}}{1 \text{ mol O}} \right)$$

$$\frac{(1.8 \times 10^{24})(16.00)}{(6.02 \times 10^{23})}$$

$$x \text{ g} = 48 \text{ g}$$

Convert 52.5 furlongs to km:

$$x \text{ km} = 52.5 \cancel{\text{furlong}} \left(\frac{220 \cancel{\text{yds}}}{1 \cancel{\text{furlong}}} \right) \left(\frac{3 \cancel{\text{ft}}}{1 \cancel{\text{yd}}} \right) \left(\frac{12 \cancel{\text{in}}}{1 \cancel{\text{ft}}} \right) \left(\frac{2.54 \cancel{\text{cm}}}{1 \cancel{\text{in}}} \right) \left(\frac{1 \cancel{\text{km}}}{100 \cancel{\text{m}}} \right) \left(\frac{1 \cancel{\text{km}}}{1000 \cancel{\text{m}}} \right)$$

← exact ← exact ← exact
 ↑ exact

calculator →
$$\frac{52.5(220)(3)(12)(2.54)}{(100)(1000)}$$

$$x \text{ km} = 10.6 \text{ km}$$

Convert 82 km/h to m/s:

$$x \left(\frac{\text{m}}{\text{s}} \right) = 82 \cancel{\frac{\text{km}}{\text{h}}} \left(\frac{1000 \cancel{\text{m}}}{1 \cancel{\text{km}}} \right) \left(\frac{1 \cancel{\text{h}}}{60 \cancel{\text{min}}} \right) \left(\frac{1 \cancel{\text{min}}}{60 \cancel{\text{s}}} \right)$$

$$x \frac{\text{m}}{\text{s}} = 23 \text{ m/s} \quad \left(\frac{1 \text{ h}}{3600 \text{ s}} \right)$$