

M10 - 1.0 - Measurement Notes

How many centimeters around a 400m track?

① $\frac{?}{400m} = \frac{100cm}{1m}$

OR

② $400m \times \frac{100cm}{1m} = 40000cm$

$100cm \times 400 = 40000cm$

How many inches in 1m?

$1m \times \frac{100cm}{1m} \times \frac{1in}{2.54cm} = \frac{100in}{2.54} = 39.37in$

How many square meters (m^2) in 2 km^2 ?

$2km^2 \times \frac{1000m}{1km} \times \frac{1000m}{1km} = 2000000m^2$

Notice: choose a conversion factor that allows you to cross off the units given to get the units you want.

$\frac{\square}{3m} = 2m = \frac{\square}{300cm}$

Unit Rates

$\frac{3kg}{\$44.85} = \frac{1kg}{\$14.95} = \frac{\$14.95}{1kg} = \frac{0.07kg}{\$1}$

How many Litres are in 50 Millilitres?

OR

$50 mL \times \frac{1L}{1000mL} = 0.05L = 5 \times 10^{-2}L$

$50 mL \times \frac{10^{-3}L}{1mL} = 0.05L = 5 \times 10^{-2}L$

Scientific Notation

Attach Prefix Exponent to the Base Unit!

Metric	Metric <-> Imperial	Imperial
<u>Distance</u>		
1cm = 10mm	1in = 2.54cm	1ft = 12in
1m = 100cm	1m = 3.3ft	1yd = 3ft
1km = 1000m	1ft = 30.48cm	1yd = 36in
Millimeter (mm)	1yd = 0.9144m	1mi = 5280 ft
Centimeter (cm)	1mi = 1.609 km	1mi = 1760yd
Meter (m)		Inch (in)
Kilometer (km)		Foot (ft)
		Yard (yd)
		Mile (mi)

Prefixes	Mass <-> Volume
Kilo = $10^3 = 1000$	1L = 1kg
Base = $10^0 = 1$ ie. meters	1ml = 1g
Centi = $10^{-2} = \frac{1}{100} = 0.01$	1cm ³ = 1mL
Milli = $10^{-3} = \frac{1}{1000} = 0.001$	<u>Water*</u>
	$\frac{3000mL}{2000g} = \frac{3L}{2kg}$

Mass	Volume
1kg = 1000g	1qt = 40oz
1t = 1000kg	1gal = 4qt
Grams (g)	1L = 1.06qt
Kilogram (kg)	1L = 0.26gal
Tonne Metric (t)	*Fluid Ounce (fl oz)
	Pound (lb)
	Tonne Imperial (tn)
	Ounce (oz)
	Quart (qt)
	Gallon (gal)

Time	Rates: DistanceVolumeTime*
1min = 60s	$\frac{m}{s}$
1hr = 60min	$\frac{km}{hr}$
1days = 24hrs	$\frac{L}{min}$
Second (s)	$\frac{L}{m}$
Minute (min)	
Hour (hr)	
Days	