Mathematics

Sturgeon Composite High School

10-3

Measurement

Imperial to Imperial	Metric to Metric	Imperial to Metric	Metric to Imperial
1 ft = 12 in	1 cm = 10 mm	1 in = 2.54 cm	1 cm = 0.3937 in
1 yd = 3 ft	1 cm = 0.01 m	1 ft = 0.3048 m	1 m = 3.2808 ft
1 yd = 36 in	1 m = 1000 mm	1 yd = 0.9144 m	1 m = 1.0936 yds
1 mi = 5280 ft	1 m = 100 cm	1 mi = 1.6093 km	1 km = 0.6214 mi
1 mi = 1760 yds	1 km = 1000 m		

Area

Imperial to Metric	Metric to Imperial
1 in^2 = 6.4516 cm^2	1 cm^2 = 0.1550 in^2
1 ft^2 = 0.0929 m^2	1 m^2 = 10.7639 ft^2
1 yd^2 = 0.8361 m^2	1 km^2 = 0.3861 mi^2
1 mi^2 = 2.5900 km^2	

Volume

Imperial to Imperial	Metric to Metric	Imperial to Metric	Metric to Imperial
1 ft^3 = 1728 in^3	1 hm^3 = 1 000 000 m^3	1 in^3 = 16.38706 cm^3	1 cm^3 = 0.06102 in^3
1 yd^3 = 27 ft^3	1 Dam^3 = 1000 m^3	1 ft^3 = 28.3168 dm^3	1 m^3 = 1.3147 ft^3
	1 m^3 = 1 000 000 cm^3	1 ft^3 = 0.02832 m^3	1 m^3 = 1.30795 yds^3
	1 dm^3 = 0.001 m^3	1 yd^3 = 0.764555 m^3	1 km^3 = 0.23991 mi^3
	1 km^3 = 1 000 000 000 m^3	1 mi^3 = 4.16818 km^3	
	1 cm^3 = 1 mL		

Temperature

$$°F = \frac{9}{5}°C + 32$$

$$°C = \frac{5}{9}(°F - 32)$$

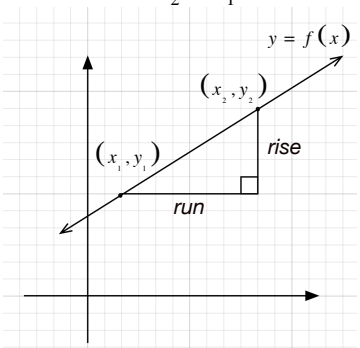
Capacity

Imperial to Imperial	Metric to Metric	Imperial to Metric	Metric to Imperial
1 fl oz = 2 tablespoons	1 kL = 1000 L	1 gallon (US) = 3.7854 L	1 mL = 0.03 fl oz (US)
1 cup = 8 fl oz	1 hL = 100 L	1 gallon (Imp) = 4.5461 L	1 mL = 0.03 fl oz (US)
1 pint = 2 cups	1 Dal = 10 L	1 fl oz (US) = 29.5735 mL	1 L = 2.11338 pint (US)
1 quart = 2 pints	1 L = 10 dL	1 fl oz (Imp) = 28.4131 mL	1 L = 1.75975 pint (Imp)
1 gallon = 4 quarts	1 L = 100 cL	1 bushel (US) = 35.2391 L	1 L = 1.05669 quart (US)
1 gallon (Imp) = 1.2 gallon (US)	1 L = 1000 mL	1 bushel (Imp) = 36.3688 L	1 L = 0.879877 quart (Imp)
	1 metric cup = 250 mL		1 L = 0.264172 gallon (US)
			1 L = 0.219969 gallon (Imp)

Linear Relations

Slope Formula

$$m = \frac{rise}{run} \; or \; \frac{y_2 - y_1}{x_2 - x_1}$$



Mass

Imperial to Imperial	Metric to Metric	Imperial to Metric	Metric to Imperial
1 lb = 16 oz	1 g = 1000 mg	1 oz = 28.35 g	1 g = 0.04 oz
1 T (ton) = 2000 lbs	1 kg = 1000 g	1 lb = 0.45 kg	1 kg = 2.21 lb
	1 t (tonne) = 1000 kg	1 T (ton) = 0.91 t (tonne)	1 t (tonne) = 1.10 T (ton)

Metric Staircase

divide by 10

m	c	d	base	da	h	k
milli	centi	deci	unit	deca	hecta	kilo

multiply by 10

Trigonometry

Trigonometric Ratios

$$\sin(\theta) = \frac{opp}{hyp}$$

$$\cos(\theta) = \frac{adj}{hyp}$$

$$\tan(\theta) = \frac{opp}{adj}$$

Arc Trigonometric Ratios

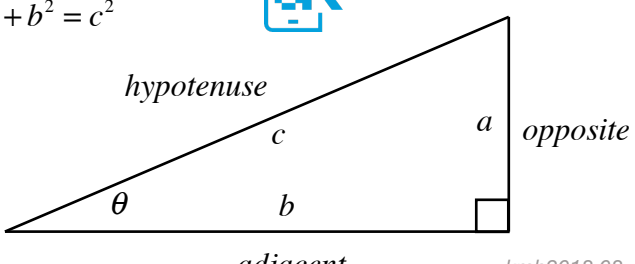
$$\theta = Sin^{-1}\left(\frac{opp}{hyp}\right)$$

$$\theta = Cos^{-1}\left(\frac{adj}{hyp}\right)$$

$$\theta = Tan^{-1}\left(\frac{opp}{adj}\right)$$

Pythagorean Theorem

$$a^2 + b^2 = c^2$$



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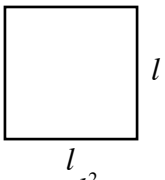
2D Shapes

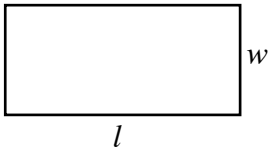
Square



$Area = l^2$

$Perimter = 4l$

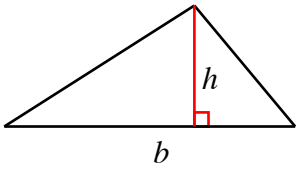
Rectangle



$Area = lw$

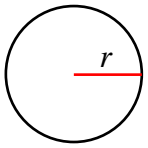
$Perimter = 2l + 2w$

Triangle



$Area = \frac{1}{2}bh$

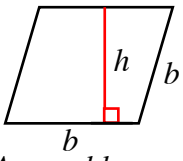
Circle



$Area = \pi r^2$

$Circumference = 2\pi r$

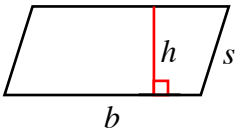
Rhombus



$Area = bh$

$Perimeter = 4b$

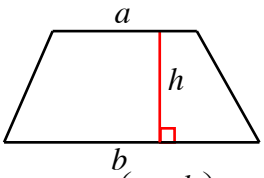
Parallelogram



$Area = bh$

$Perimeter = 2b + 2s$

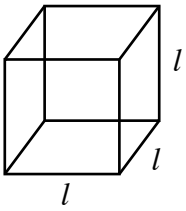
Trapezoid



$Area = \left(\frac{a+b}{2}\right)h$

3D Objects

Cube

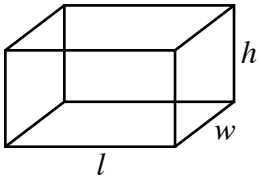


$Volume = l^3$

$TSA = 6l^2$

$LSA = 4l^2$

Rectangular Prism

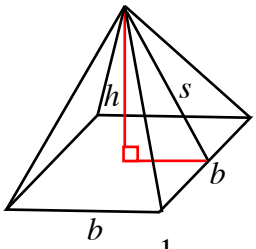


$Volume = lwh$

$TSA = 2lw + 2lh + 2wh$

$LSA = 2lh + 2wh$

Square Pyramid

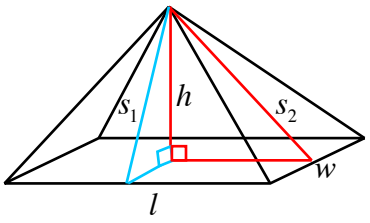


$Volume = \frac{1}{3}b^2h$

$TSA = b^2 + 2bs$

$LSA = 2bs$

Rectangular Pyramid

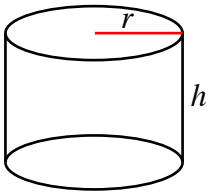


$Volume = \frac{1}{3}lwh$

$TSA = lw + ls_1 + ws_2$

$LSA = ls_1 + ws_2$

Cylinder

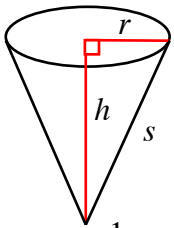


$Volume = \pi r^2 h$

$TSA = 2\pi r^2 + 2\pi rh$

$LSA = 2\pi rh$

Cone

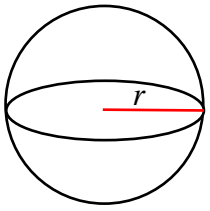


$Volume = \frac{1}{3}\pi r^2 h$

$TSA = \pi r^2 + \pi rs$

$LSA = \pi rs$

Sphere



$Volume = \frac{4}{3}\pi r^3$

$TSA = 4\pi r^2$

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