

# Useful Calculations

<b>Perimeter or Circumference Calculation</b>	
Square	= L + L + L + L
Rectangle	= L + W + L + W
Circle	= 2 x π x r
Around a Cylinder	= 2 x π x r
<b>Area or Surface Area Calculation</b>	
Square	= L x L
Rectangle	= L x W
Parallelogram	= L x W
Trapezoid	= (L <sub>1</sub> x L <sub>2</sub> ) x W
Triangle	= B x (H/2)
Circle	= π x r <sup>2</sup>
Annulus or Ring	= π x (C <sup>2</sup> - D <sup>2</sup> )
Cube	= L x L x 6
Rectangular Prism	= (L <sub>1</sub> x W <sub>1</sub> x 2) + (L <sub>2</sub> x W <sub>2</sub> x 2) + (L <sub>3</sub> x W <sub>3</sub> x 2)
Cylinder	= (2 x π x r <sup>2</sup> ) + (2 x π x r x H)
Hemisphere	= 3 x π x r <sup>2</sup>
Sphere	= 4 x π x r <sup>2</sup>
Curved surface of a Cone	= π x r x ( √(r <sup>2</sup> x H <sup>2</sup> ))
Total surface of a Cone	= π x r x (r + ( √(r <sup>2</sup> x H <sup>2</sup> )))
Curved Surface of a Frustrum	= π x ((E x √(E <sup>2</sup> + F <sup>2</sup> )) - (G x √(G <sup>2</sup> + (F - J) <sup>2</sup> )))
<b>Volume Calculation</b>	
Cube	= L x L x L
Rectangular Prism	= L x W x H
Triangular Prism	= 1/2 x L x W x H
Cylinder	= π x r <sup>2</sup> x H
Sphere	= 4/3 x (π x r <sup>2</sup> x H)
Cone	= 1/3 x (π x r <sup>2</sup> x H)
Pyramid	= 1/3 x L x W x H
Frustrum	= 1/3 x π x J x (E <sup>2</sup> + (G x E) + G <sup>2</sup> )
Hemisphere	= 2/3 x π x r <sup>3</sup>
<b>Where</b>	
L = Length.	π = 3.142
W = Width.	r = Radius of the circle, cylinder, cone or sphere.
L <sub>1</sub> = Length of side one.	r = 1/2 the diameter of the circle, cylinder, cone or sphere.
L <sub>2</sub> = Length of side two.	C = Outer radius of the ring.
L <sub>3</sub> = Length of side three.	D = Inner radius of the ring.
W <sub>1</sub> = Width of side one.	E = Base radius of the large end of the frustrum.
W <sub>2</sub> = Width of side two.	F = Height of the original frustrum cone.
W <sub>3</sub> = Width of side three.	G = Base radius of the small end of the frustrum.
B = Base length of the triangle.	J = Height of the frustrum.
H = Height.	
Frustrum = Cone that has had its pointed end removed, leaving a cone having a flat base & flat top.	