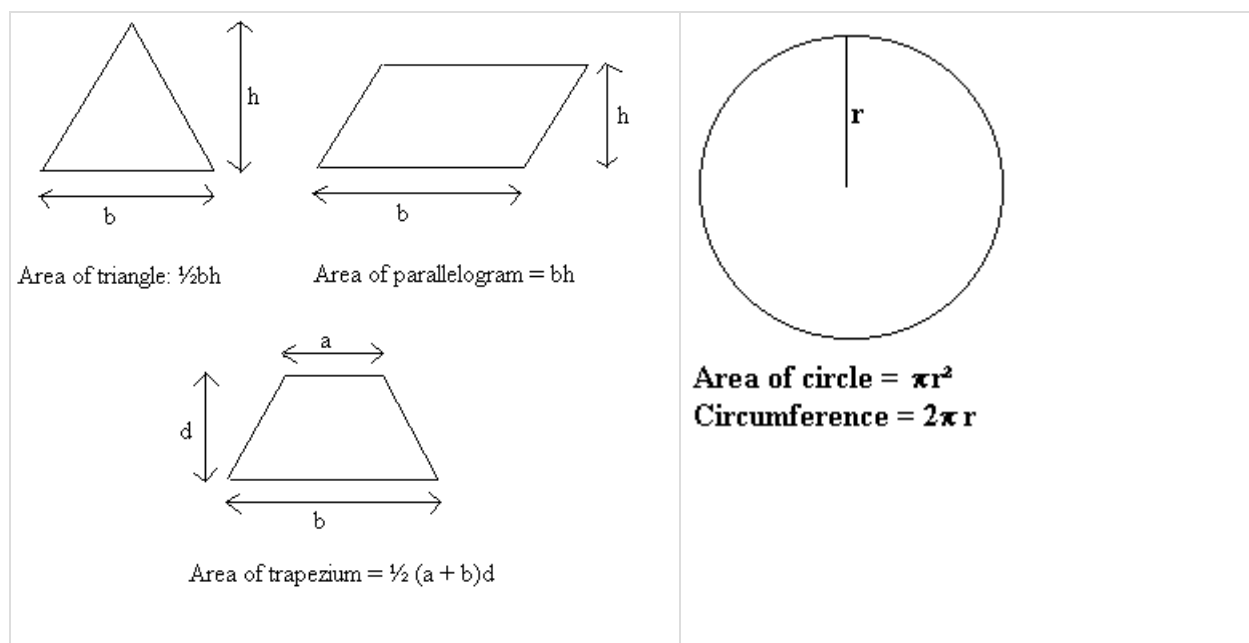# Volume

A prism is a shape with a constant cross section, in other words the cross-section looks the same anywhere along the length of the solid (examples: cylinder, cuboid).

The volume of a prism = the area of the cross-section × the length. So, for example, the volume of a cylinder $=\pi r^2 \times length.$

- area of a triangle = half * base * height so the volume of a triangular prism is half*base*height*length

- area of a circle $=\pi r^2$ (r is the radius of the circle) so volume $=\pi r^2 l$

- area of a parallelogram = base × height so volume =base*height*length as for a rectangle

- area of a trapezium = half × (sum of the parallel sides) × the distance between them [$\frac{1}{2}(a+b)d$] so volume of a trapezoidal prism is $\frac{1}{2}(a+b)dl$

Area of triangle: ½bh

Area of parallelogram = bh

Area of trapezium = ½ (a + b)d

Area of circle = πr^2
Circumference = $2\pi r$

There are some shapes that must have their own formula for volume since cross section of a sphere for example, doesn't make much sense.

Sphere: Volume: $\frac{4}{3}\pi r^3$

Pyramid: Volume = 1/3 × area of base × perpendicular height ($=\frac{1}{3}\pi r^2 h$ for a cone).