GCSE Maths

Formula Sheet

Areas

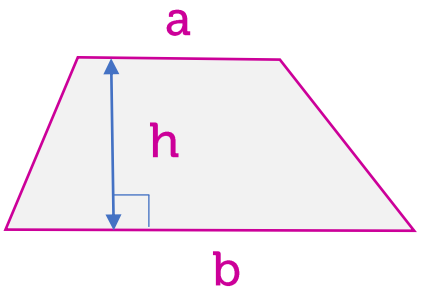
Area is the same as surface. A real life example of when you'd use this type of calculation, is if you wanted to work out how much paint would be needed to cover one of these surfaces.

Rectangle

$l \times w$

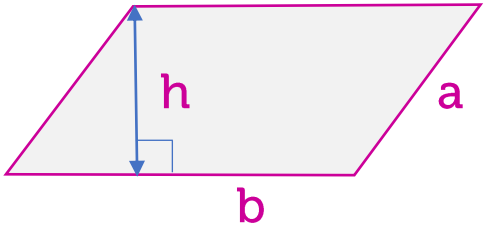
Trapezium

$\frac{1}{2}(a + b)h$



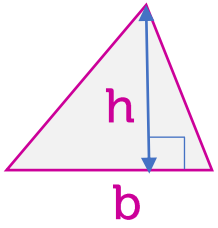
Parallelogram

$b \times h$



Triangle

$\frac{1}{2} b \times h$

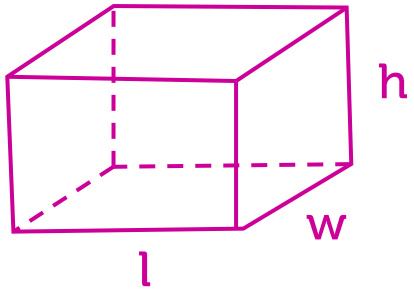


Volumes

Volume is the amount of three dimensional space that something takes up. A real life example of when you'd use this type of calculation, is if you wanted to work out how much water it would take to fill one of these objects up.

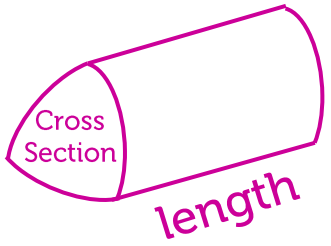
Cuboid

$l \times w \times h$



Prism

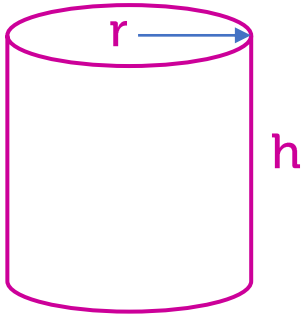
area of cross section x length



Cylinder

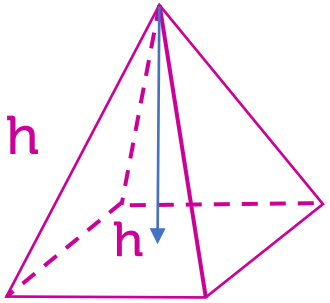
$\pi r^2 h$

(area of cirle x height)



Pryamid

$\frac{1}{3}$ x area of base x h



Circles

The Radius is the distance from the centre outwards. The Diameter goes straight across the circle, through the centre. The Circumference is the distance once around the circle. Dividing the circumference by the diameter gives you 3.141592654... which is the number π (pi)

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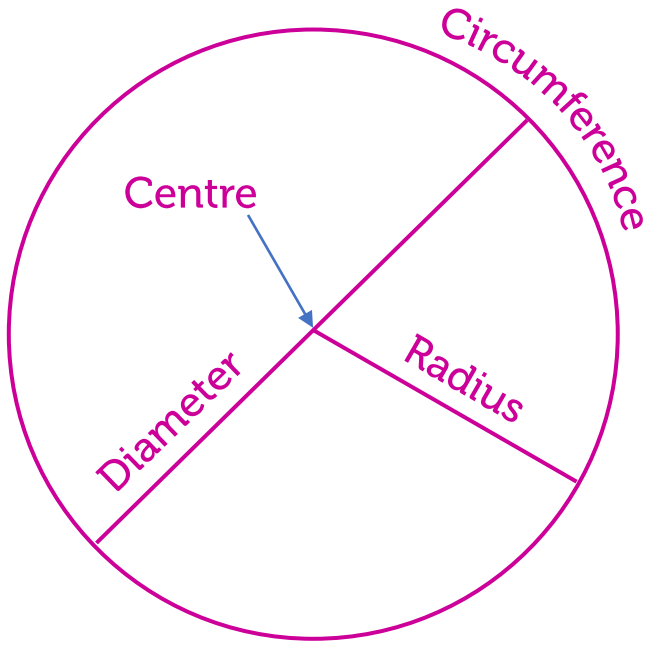


Circumference

π x diameter (or) c = πd

Circumference

2 x π x radius (or) c = 2πd

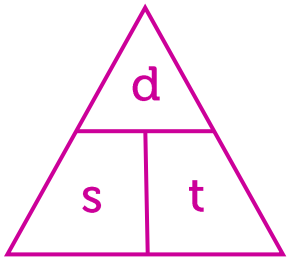
Area of a circle

π x radius squared (or) a = πr^2

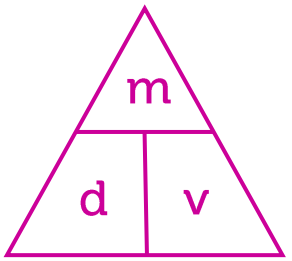
Compound Measures

A compound measure is made up of two or more other measurements. For example speed is a compound measure because it is calculated from distance and time. Another example, would be calculating fuel consumption to measure distance travelled for each litre of fuel used (an example of which is distance travelled / amount of fuel in litres)

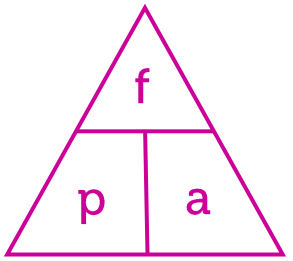
Speed = $\frac{\text{distance}}{\text{time}}$



Density = $\frac{\text{mass}}{\text{volume}}$



Pressure = $\frac{\text{force}}{\text{area}}$



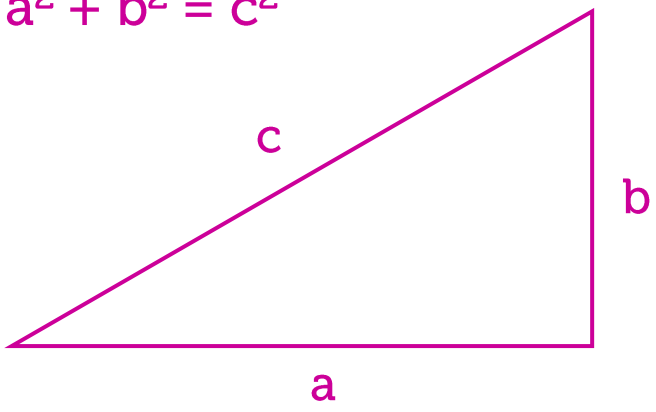
Pythagoras

This application is frequently used in architecture and physical construction projects. When Given two straight lines, the Pythagorean Theorem allows you to calculate the length of the diagonal connecting them e.g. find the length of a side, given the lengths of the two other sides.

Pythagoras Theorem

For a right-angled triangle,

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



Trigonometric Ratios

$\sin x^0 = \frac{opp}{hyp}$

$\cos x^0 = \frac{adj}{hyp}$

$\tan x^0 = \frac{opp}{adj}$