GEOMETRIC FORMULAE

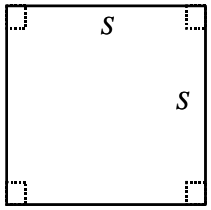
Shape	Diagram	Formulae

FLAT OBJECTS
2 DIMENSIONAL

Square

(all four sides same length, 90°corners)

(a rectangle with all sides same length)



Perimeter, P:

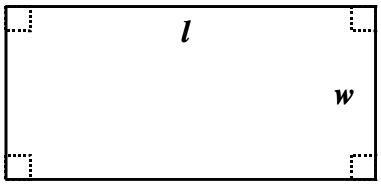
$P = s + s + s + s = 4*s$

Area, A:

$A = s * s = s^2$

Rectangle

(Four sides, square corners)



Perimeter, P:

$P = l + w + l + w = 2l + 2w$

Area, A:

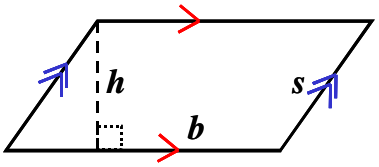
$A = l * w$

Parallelogram and Rhombus

(leaning rectangle/leaning square)

Note

b is always ⊥ to h



Perimeter; P:

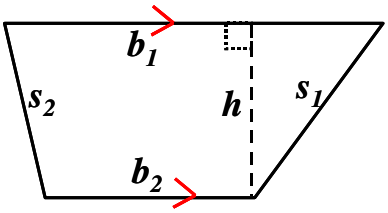
$P = 2b + 2s$

Area; A:

$A = b * h$

Trapezoid

(Four sides, only two sides parallel { ∥ })



Perimeter; P:

$P = b_1 + s_1 + b_2 + s_2$

Area; A:

$A = b_{avg} * h$

$= \frac{1}{2}(b_1 + b_2) * h$

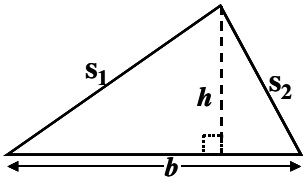
Note

b is always ⊥ to h

Triangle

(three sides)

(half a parallelogram or rectangle)
(acute, obtuse, or right)
(scalene, isosceles, equilateral)

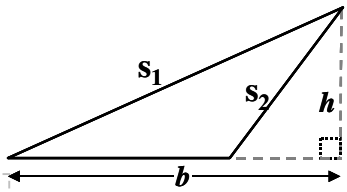


Perimeter; P:

$P = s_1 + s_2 + b$

Area; A:

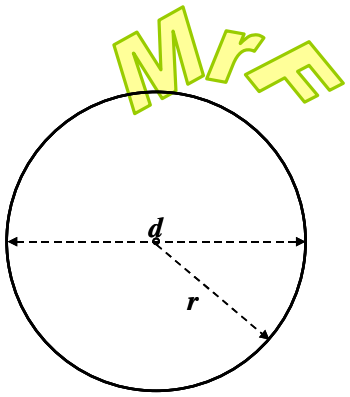
$A = \frac{1}{2} * b * h$



Note

b is always ⊥ to h

Circle



Circumference; C:

$$C = \pi d = 2\pi r$$

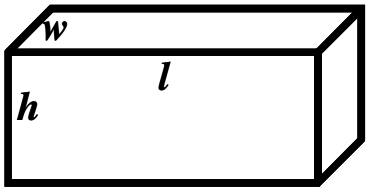
Area; A

$$A = \pi r^2$$

SOLID OBJECTS
3 DIMENSIONAL

Rectangular Prism

(Two congruent rectangles connected at edges by rectangles)



Surface Area; SA

SA = Add area of all faces; *or*
SA= 2*lw* + 2*hl* + 2*hw*

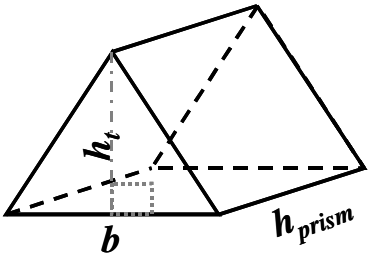
Volume; V:

$$V = A_{base} * h$$
$$V = l*w*h$$

Triangular Prism

(Two congruent triangles connected at edges by rectangles)

Gets confusing using height for the triangle, h_t, and height for the prism, h_{prism}.



Surface Area; SA

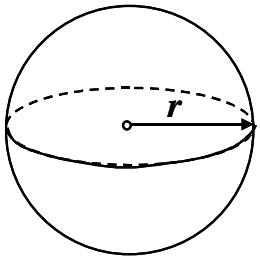
SA = Add area of all faces; the net is two triangles and three rectangles.

Volume; V:

$$V = A_{base} * h$$
$$V = \frac{1}{2} b h_{t\,riangle} h_{prism}$$

Sphere

(Ball)



Surface Area; SA

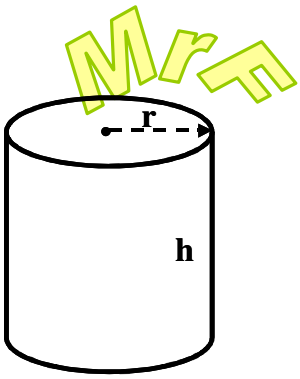
$$SA = 4\pi r^2$$

Volume; V:

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

Cylinder

(Two congruent circles connected with a rectangle wrapped around circumferences)



Surface Area; SA

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

Volume; V:

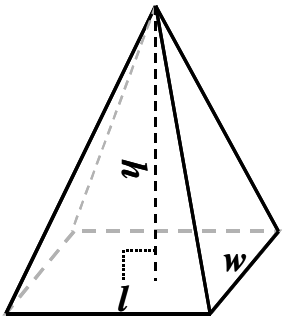
$V = Area_{base} * h$

$= \pi r^2 h$

Rectangular Pyramid or Square Pyramid

(A rectangle connected to a point with triangles on its edges)

caution the prism has a height, and the triangular faces each have a height



Surface Area; SA

SA = add up area of all the faces

Volume; V:

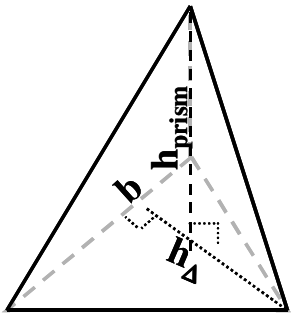
$$V = \frac{1}{3} * Area_{base} * h_{prism}$$

$$= \frac{1}{3} * l * w * h$$

Triangular Pyramid

(A triangle connected to a point by triangles on its edges)

caution the prism has a height, and the triangular faces each have a height



Surface Area; SA

SA = add up area of all four triangles.

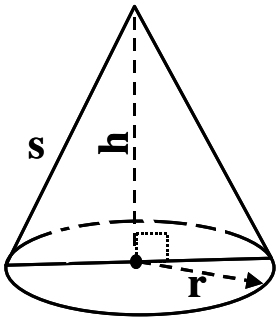
Volume; V:

$$V = \frac{1}{3} * Area_{base} * h_{prism}$$

$$= \frac{1}{6} * b * h_{\Delta} * h_{prism}$$

Cone

(The arc of a circular sector of a circle connected to a smaller circle base)



Surface Area; SA

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

Volume; V:

$$V = \frac{1}{3} * Area_{base} * h$$

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

Add your own favourite formulae below