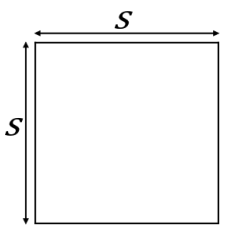
GEOMETRY

SHAPES AND SOLIDS

SQUARE

$P = 4s$

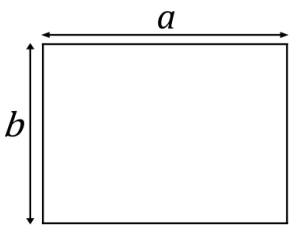
$A = s^2$



RECTANGLE

$P = 2a + 2b$

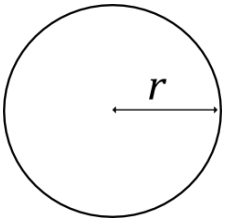
$A = ab$



CIRCLE

$P = 2\pi r$

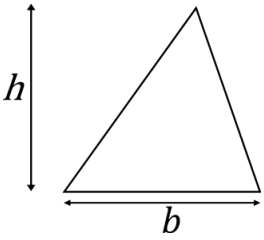
$A = \pi r^2$



TRIANGLE

$P = a + b + c$

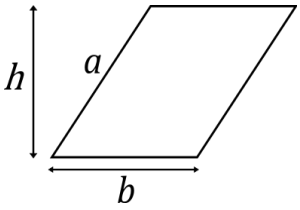
$A = \frac{1}{2}bh$



PARALLELOGRAM

$P = 2a + 2b$

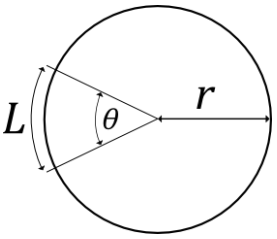
$A = bh$



CIRCULAR SECTOR

$L = \pi r \frac{\theta}{180°}$

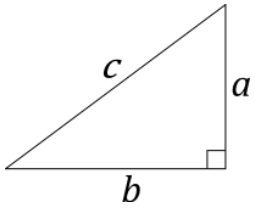
$A = \pi r^2 \frac{\theta}{360°}$



PYTHAGOREAN THEOREM

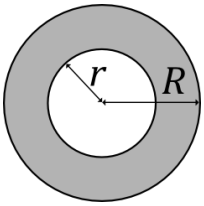
$a^2 + b^2 = c^2$

$c = \sqrt{a^2 + b^2}$



CIRCULAR RING

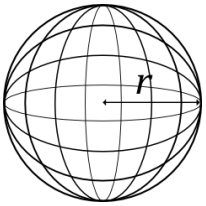
$A = \pi(R^2 - r^2)$



SPHERE

$S = 4\pi r^2$

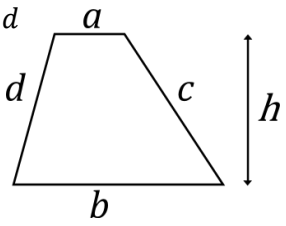
$V = \frac{4\pi r^3}{3}$



TRAPEZOID

$P = a + b + c + d$

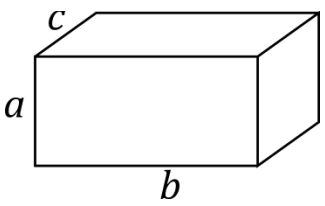
$A = h\frac{a+b}{2}$



RECTANGULAR BOX

$A = 2ab + 2ac + 2bc$

$V = abc$

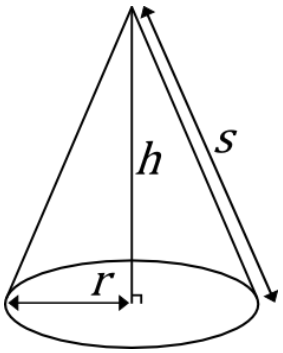


RIGHT CIRCULAR CONE

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

$s = \sqrt{r^2 + h^2}$

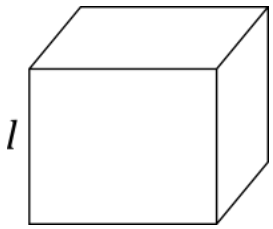
$V = \frac{1}{3}\pi r^2 h$



CUBE

$A = 6l^2$

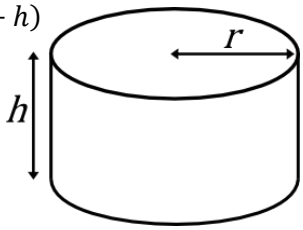
$V = l^3$



CYLINDER

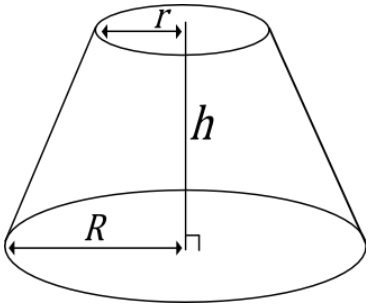
$A = 2\pi r(r + h)$

$V = \pi r^2 h$



FRUSTUM OF A CONE

$V = \frac{1}{3}\pi h(r^2 + rR + R^2)$



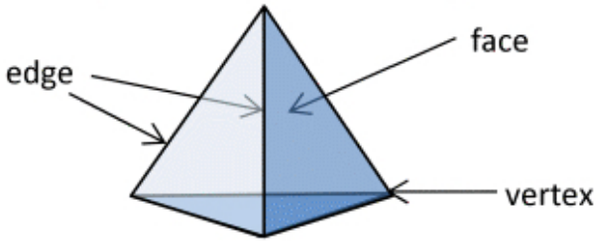
3D SHAPES

All 3d shapes can be described in terms of their faces, vertices and edges.

Face - a flat or curved surface

Edge - line where 2 faces meet

Vertex - point where 3 or more edges meet

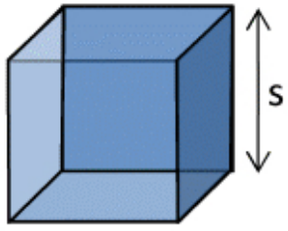


CUBE

Volume $= s^3$

Surface area $= 6s^2$

where s is the length of one side

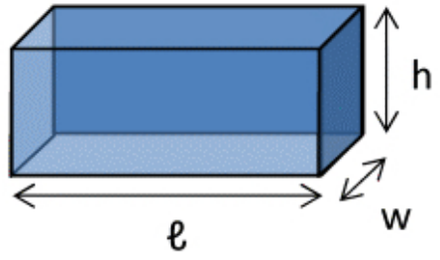


CUBOID (RECTANGULAR PRISM)

Volume $= \ell \times w \times h$

Surface area $= 2\ell h + 2\ell w + 2wh$

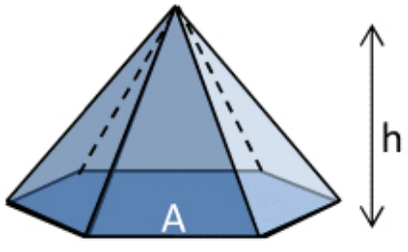
where ℓ = length, w = width, h = height



PYRAMIDS

Volume of a general pyramid $= {}^1/_3\,Ah$

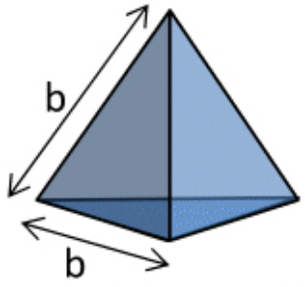
where A = base area and h = height



REGULAR TETRAHEDRON

Volume $= b^3/6\sqrt{2}$

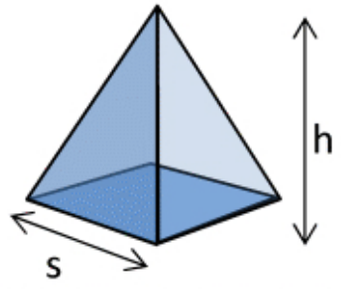
Surface area $= \sqrt{3}b^2$



SQUARE PYRAMID

Volume $= {}^1/_3\,s^2h$

Surface area $= s^2 + 2sh$

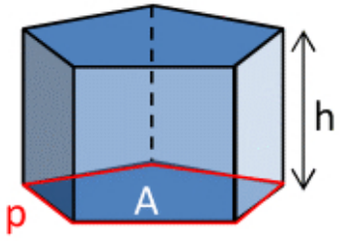


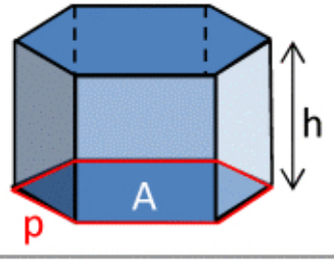
PRISMS

Volume of any prism $= Ah$

Surface area of a closed prism $= 2A + (h \times p)$

where A = base area, h = height, p = base perimeter

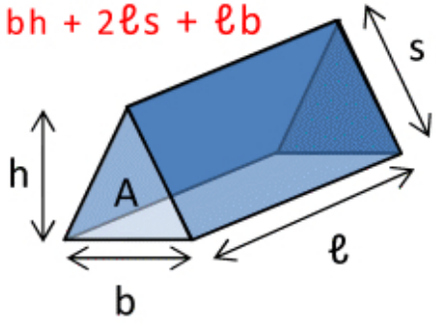




TRIANGULAR PRISM

Volume $= A\ell$ or $\frac{1}{2}\,bh\ell$

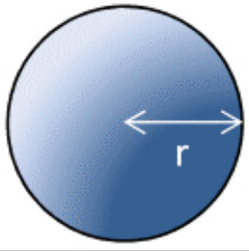
Surface area $= bh + 2\ell s + \ell b$



SPHERES

Volume $= {}^4/_3\,\pi r^3$

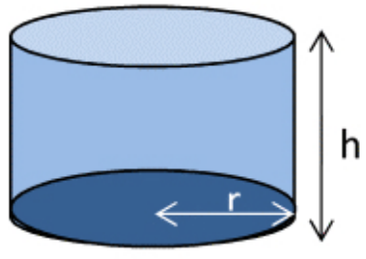
Surface area $= 4\pi r^2$



RIGHT CYLINDER

Volume $= \pi r^2 h$

Surface area $= 2\pi r\,(r + h)$



RIGHT CIRCULAR CONE

Volume $= {}^1/_3\,\pi r^2 h$

Surface area $= \pi r\,(r + s)$