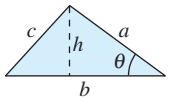
FORMULAS FROM GEOMETRY

Triangle

$h = a \sin \theta$

$\text{Area} = \frac{1}{2}bh$



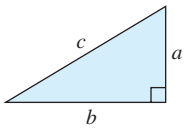
(Law of Cosines)

$c^2 = a^2 + b^2 - 2ab \cos \theta$

Right Triangle

(Pythagorean Theorem)

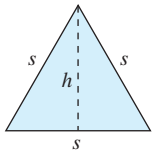
$c^2 = a^2 + b^2$



Equilateral Triangle

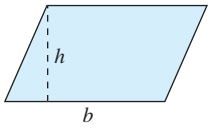
$h = \frac{\sqrt{3}s}{2}$

$\text{Area} = \frac{\sqrt{3}s^2}{4}$



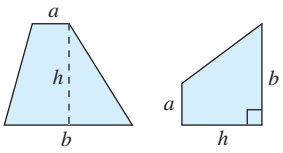
Parallelogram

$\text{Area} = bh$



Trapezoid

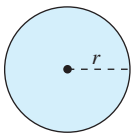
$\text{Area} = \frac{h}{2}(a + b)$



Circle

$\text{Area} = \pi r^2$

$\text{Circumference} = 2\pi r$

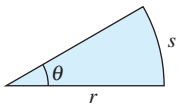


Sector of Circle

(θ in radians)

$\text{Area} = \frac{\theta r^2}{2}$

$s = r\theta$

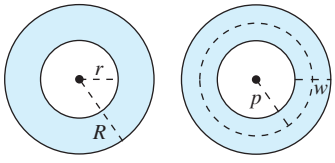


Circular Ring

(p = average radius,
w = width of ring)

$\text{Area} = \pi(R^2 - r^2)$

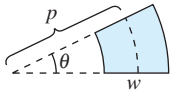
$= 2\pi pw$



Sector of Circular Ring

(p = average radius,
w = width of ring,
θ in radians)

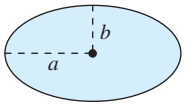
$\text{Area} = \theta pw$



Ellipse

$\text{Area} = \pi ab$

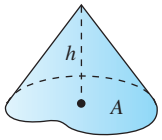
$\text{Circumference} \approx 2\pi\sqrt{\frac{a^2 + b^2}{2}}$



Cone

(A = area of base)

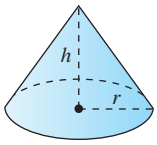
$\text{Volume} = \frac{Ah}{3}$



Right Circular Cone

$\text{Volume} = \frac{\pi r^2 h}{3}$

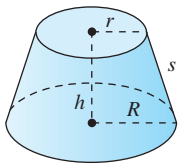
$\text{Lateral Surface Area} = \pi r\sqrt{r^2 + h^2}$



Frustum of Right Circular Cone

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

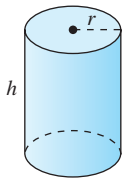
$\text{Lateral Surface Area} = \pi s(R + r)$



Right Circular Cylinder

$\text{Volume} = \pi r^2 h$

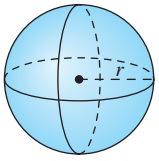
$\text{Lateral Surface Area} = 2\pi rh$



Sphere

$\text{Volume} = \frac{4}{3}\pi r^3$

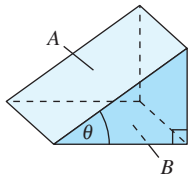
$\text{Surface Area} = 4\pi r^2$



Wedge

(A = area of upper face,
B = area of base)

$A = B \sec \theta$



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