

FORMULAS FROM GEOMETRY

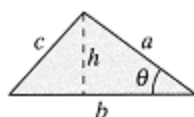
Triangle

$$h = a \sin \theta$$

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

(Law of Cosines)

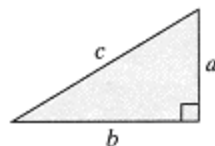
$$c^2 = a^2 + b^2 - 2ab \cos \theta$$



Right Triangle

(Pythagorean Theorem)

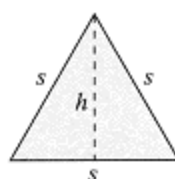
$$c^2 = a^2 + b^2$$



Equilateral Triangle

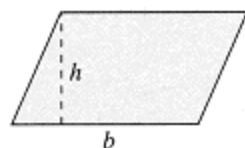
$$h = \frac{\sqrt{3}s}{2}$$

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



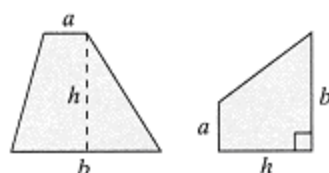
Parallelogram

$$\text{Area} = bh$$



Trapezoid

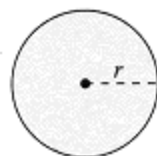
$$\text{Area} = \frac{h}{2}(a + b)$$



Circle

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

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

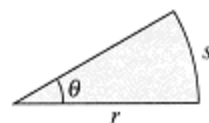


Sector of Circle

(θ in radians)

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

$$s = r\theta$$



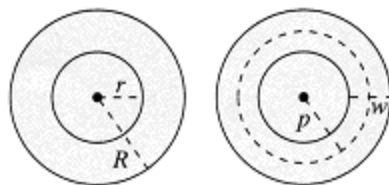
Circular Ring

(p = average radius,

w = width of ring)

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

$$= 2\pi pw$$



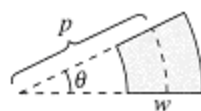
Sector of Circular Ring

(p = average radius,

w = width of ring,

θ in radians)

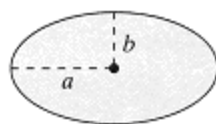
$$\text{Area} = \theta pw$$



Ellipse

$$\text{Area} = \pi ab$$

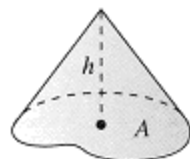
$$\text{Circumference} \approx 2\pi \sqrt{\frac{a^2 + b^2}{2}}$$



Cone

(A = area of base)

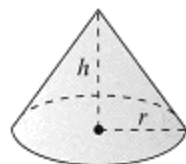
$$\text{Volume} = \frac{Ah}{3}$$



Right Circular Cone

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

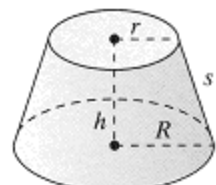
$$\text{Lateral Surface Area} = \pi r \sqrt{r^2 + h^2}$$



Frustum of Right Circular Cone

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

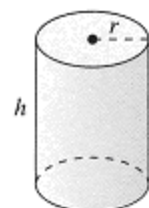
$$\text{Lateral Surface Area} = \pi s(R + r)$$



Right Circular Cylinder

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

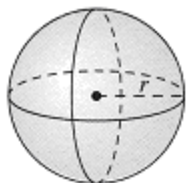
$$\text{Lateral Surface Area} = 2\pi rh$$



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)

$$A = B \sec \theta$$

