

Mensuration and Volume and Surface Areas

Formulae

Surface Area and Volume of a Cone

Cone

Surface Area

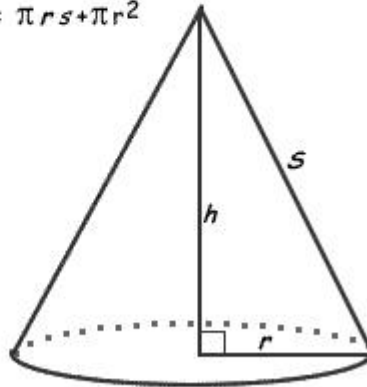
We will need to calculate the surface area of the cone and the base.

Area of the cone is $\pi r s$

Area of the base is πr^2

Therefore the Formula is:

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



Volume

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

Surface Area and Volume of a Cone.

Surface Area and Volume of a Cylinder

Cylinder

Surface Area

We will need to calculate the surface area of the top, base and sides.

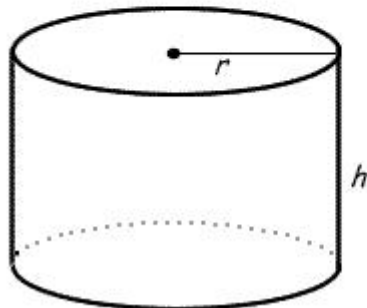
Area of the top is πr^2

Area of the bottom is πr^2

Area of the side is $2\pi r h$

Therefore the Formula is:

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



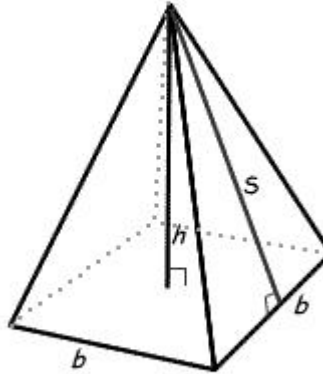
Volume

$$V = \pi r^2 h$$

Surface Area and Volume of a Square Based Pyramid

Surface Area

$$A = 2bs + b^2$$



Volume

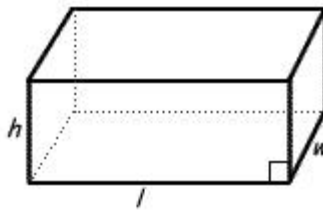
$$V = \frac{1}{3} b^2 h$$

Surface Area and Volume of a Rectangular Prism

Rectangular Prism

Surface Area

$$A = 2 (wh + lw + lh)$$



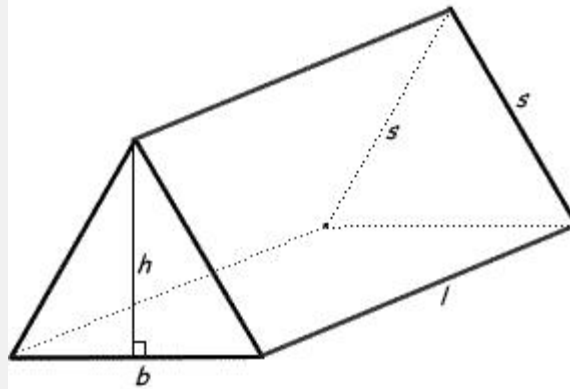
Volume

$$V = lwh$$

Surface Area and Volume of an Isosceles Triangular Prism

Isosceles Triangular Prism

Surface Area $A = bh + 2ls + lb$



Volume $V = \frac{1}{2} (bh) l$

Surface Area an

Area of a Circle Sector

Sector

Area

The area of a sector of a circle can be calculated by degrees or radians. $(\frac{\pi}{2} \text{ radians} = 90^\circ)$

A: Area r

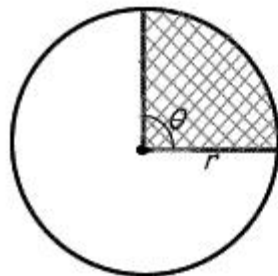
r: radius r

θ : central angle

Formula

$$\frac{\theta}{2} r^2 \text{ (in radians)}$$

$$\frac{\theta}{360} \pi r^2 \text{ (in degrees)}$$



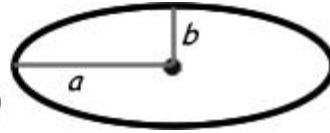
Sector is the shaded area

Area of a

Surface Area of An Ellipse

Ellipse

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



Step 9 of 9

Length of an Arc Formula

Length of an Arc Formula

$$\text{Length} = \frac{n^\circ}{360^\circ} \times 2\pi r$$

