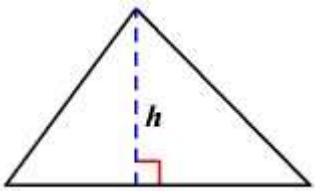
Sourav Kumar Biswas
Education for all
Since 2018

Area and Volume Formula

Area

Triangle

Area of any Triangle = ½ x base x height sq. unit

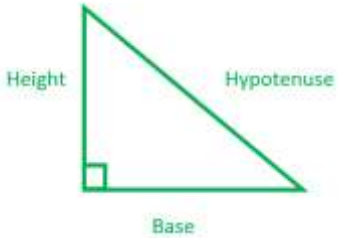


Area of triangle with sides a , b and c is $\sqrt{s\,(s-a)(s-b)(s-c)}$

Where s= a+b+c/2

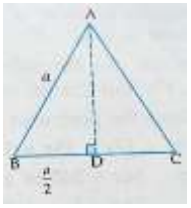
Perimeter of any Triangle = sum of the length of three sides

Right angle Triangle



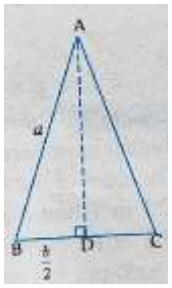
Area = ½ x Base x Height sq. unit

Equilateral Triangle



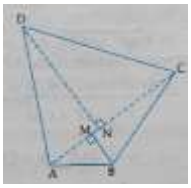
Height= $\sqrt{3}/2$ a unit
Area = $\sqrt{3}/4$ a^2 unit

Isosceles Triangle

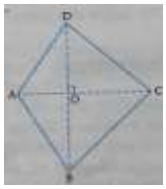


Height = $\frac{\sqrt{4a^2-b^2}}{2}$ unit
Area = $\frac{1}{2}$ b $\frac{\sqrt{4a^2-b^2}}{2}$ sq. unit

Quadrilateral



Area of any quadrilateral = ½ x One Diagonal x Sum of lengths of perpendiculars drawn on it from the remaining two vertices.



Area of a quadrilateral when diagonals of a quadrilateral intersect at right angles = 1/2 x Product of diagonals

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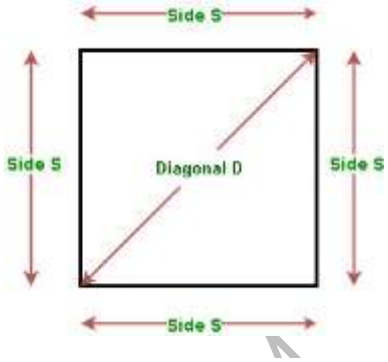
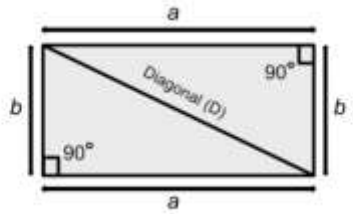
Square



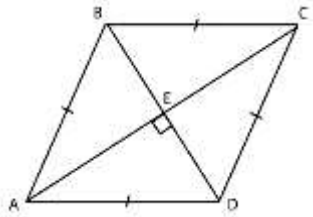
If,
Sides are s
Area = s^2 square unit
Perimeter = 4s unit
Length of the diagonal = $\sqrt{2}s$ unit

Rectangle



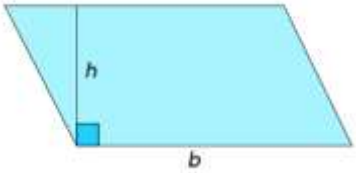
Length = a and Bredth =b
Area = ab square unit
Perimeter = 2(a+b) unit
Length of the diagonal= $\sqrt{a^2 + b^2}$

Rhombus



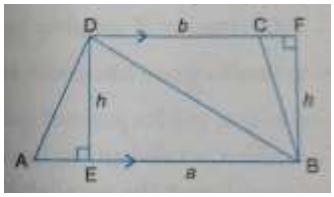
Area = ½ X product of diagonals
Perimeter= 4x side

Parallelogram



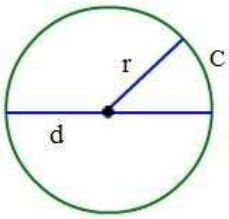
Area = Base x Height

Trapezium



Area= ½ of (Sum of parallel sides) x (distance between them)

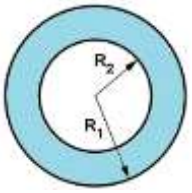
Circle



If,
r denotes the radius of the circle.
d indicates the diameter of the circle.
c indicates circumference of the circle.

Diameter of Circle = $D = 2 \times r$
Circumference of a Circle = $C = 2 \times \pi \times r$
Area = $A = \pi \times r^2$

Circular Ring



Area = π x $(r_2^2 - r_1^2)$

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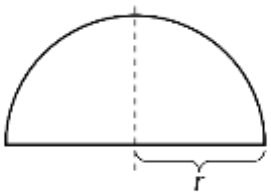
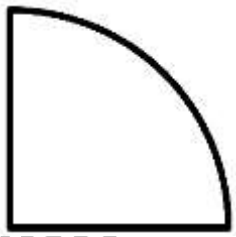
Semicircle

Perimeter= $(\pi + 2)r$
Area = $\frac{1}{2} \pi r^2$



Quarter Circle

Perimeter= $(\pi/2 + 2)r$
Area = $\frac{1}{4} \pi r^2$

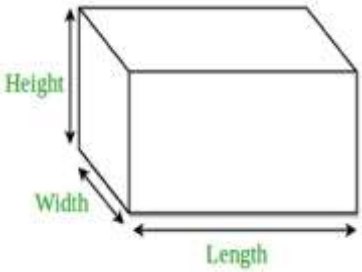


Volume

Cuboid

If, l= Length
b= breath
h= height

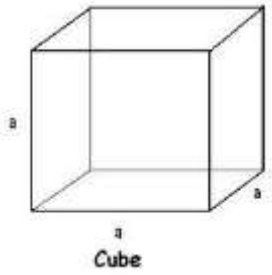
Surface area: 2(ib+bh+lh) sq unit
Lateral Surface Area: 2(l+b) x h sq unit
Volume: l x b x h cu unit
Length of Diagonal: $\sqrt{l^2 + b^2 + h^2}$ unit



Cube:

If the sides of a cube is 'a' then

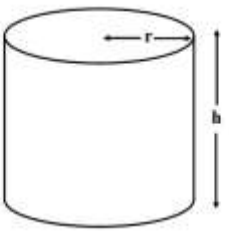
Total Surface Area: $6a^2$ sq unit
Lateral Surface Area: $4a^2$ sq unit
Volume: a^3 cubic unit
Length of Diagonal: $\sqrt{3}a$ unit



Solid Cylinder

If,
r= radius
h= height of solid cylinder

Curved Surface Area: $2\pi rh$
Total Surface Area: $2\pi r(r+h)$
Volume: $\pi r^2 h$



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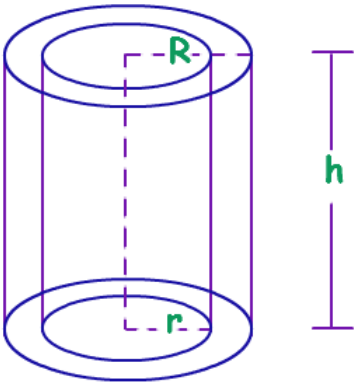
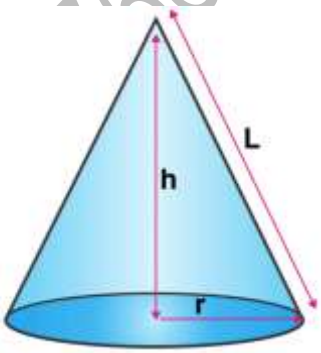
Hollow Cylinder



If,
R= Outer Radius
r= Internal Radius
h= height if cylinder

Thickness of Cylinder: R-r
Area of Cross Section: $\pi (R^2 - r^2)$
External Curved Surface Area: $2 \pi Rh$
Internal Curved Surface Area: $2 \pi rh$
Total Surface Area: $2\pi (Rh+rh+ R^2 - r^2)$
Volume: $\pi (R^2 - r^2)h$

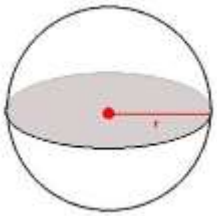
Hollow Cone



If,
r= Radius of the base of a cone
h= height of the cone
l= slant height of a cone

Slant height: $\sqrt{r^2 + h^2}$
Total Surface Area: πrl
Volume: $1/3\ \pi r^2 h$

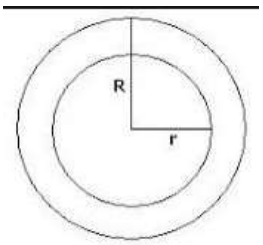
Sphere:



If
r= Radius of sphere

Volume: $4/3\ \pi r^3$

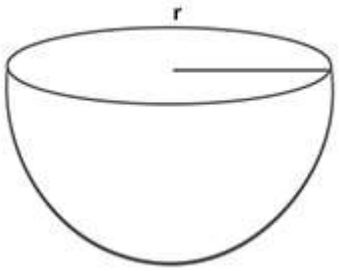
Spherical Shell



If,
R= Outer Radius
r= Internal Radius

Thickness of the shell: (R - r)
Volume of the shell: $4/3\ \pi (R^3 - r^3)$

Hemisphere



If
r= Radius of hemisphere

Curved Surface Area: $2\ \pi r^2$
Total Surface Area: $3\ \pi r^2$
Volume: $2/3\ \pi r^3$

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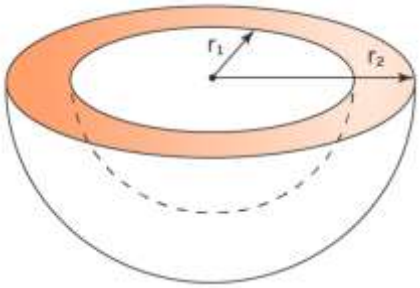
Hemispherical Shell



If
R= Outer Radius
r= Internal Radius

Thickness of the shell: (R - r)
Area of Base: $\pi (R^2 - r^2)$
External Curved Surface Area: $2 \pi R^2 h$
Internal Curved Surface Area: $2 \pi r^2 h$
Total Surface Area: $\pi (3R^2 + r^2)$
Volume: $2/3 \pi(R^3 - r^3)$

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