

## VOLUME AND SURFACE AREA (P1)

### Formulas

#### 1. CUBOID

Let length =  $l$ , breadth =  $b$  and height =  $h$  units. Then

- i. **Volume** =  $(l \times b \times h)$  cubic units.
- ii. **Surface area** =  $2(lb + bh + lh)$  sq. units.
- iii. **Diagonal** =  $\sqrt{l^2 + b^2 + h^2}$  units.

#### 2. CUBE

Let each edge of a cube be of length  $a$ . Then,

- i. **Volume** =  $a^3$  cubic units.
- ii. **Surface area** =  $6a^2$  sq. units.
- iii. **Diagonal** =  $\sqrt{3}a$  units.

#### 3. CYLINDER

Let radius of base =  $r$  and Height (or length) =  $h$ . Then,

- i. **Volume** =  $(\pi r^2 h)$  cubic units.
- ii. **Curved surface area** =  $(2\pi rh)$  sq. units.
- iii. **Total surface area** =  $2\pi r(h + r)$  sq. units.

#### 4. CONE

Let radius of base =  $r$  and Height =  $h$ . Then,

- i. **Slant height**,  $l = \sqrt{h^2 + r^2}$  units.
- ii. **Volume** =  $\left(\frac{1}{3}\pi r^2 h\right)$  cubic units.
- iii. **Curved surface area** =  $(\pi rl)$  sq. units.
- iv. **Total surface area** =  $(\pi rl + \pi r^2)$  sq. units.

#### 5. SPHERE

Let the radius of the sphere be  $r$ . Then,

- i. **Volume** =  $\left(\frac{4}{3}\pi r^3\right)$  cubic units.
- ii. **Surface area** =  $(4\pi r^2)$  sq. units.

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#### 6. HEMISPHERE

Let the radius of a hemisphere be  $r$ . Then,

- i. **Volume** =  $\left(\frac{2}{3}\pi r^3\right)$  cubic units.
- ii. **Curved surface area** =  $(2\pi r^2)$  sq. units.
- iii. **Total surface area** =  $(3\pi r^2)$  sq. units.