

CA Lesson 2 Notes

$$\text{Area of a rectangle} = (\text{length})(\text{width}) = (\text{base})(\text{height})$$

$$\text{Area of a triangle} = \frac{1}{2}(\text{base})(\text{height})$$

*Note: the height must be perpendicular to the base*

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*Cylinder:* a geometric solid determined by two parallel planes and a closed surface between them

*Right cylinder:* a cylinder with bases (in the parallel planes) perpendicular to the surface

*Oblique cylinder:* a cylinder with bases (in the parallel planes) not perpendicular to the surface

Cylinder include any 3-dimensional object with parallel bases and a closed surface. Prisms are cylinder with bases that are polygons (made of line segments).

$$\text{Volume of a cylinder} = (\text{Area of base})(\text{height})$$

*Lateral surface area:* the area of all shapes excluding the bases

*Total surface area (surface area):* the area of all shapes (ie. the sum of the areas of the bases and the lateral area)

$$\text{Lateral surface area} = (\text{perimeter})(\text{height})$$

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*Note: Cones and pyramids have one base and come to a point – the vertex.*

### **Volume of a cone or pyramid**

$$= \frac{1}{3}(\text{Area of base})(\text{height})$$

*Slant height:* (on a circular cone: the distance from the vertex to a point on the circle the forms the base)

(on a regular pyramid: the distance from the vertex to the midpoint of an edge of the base)

$$\text{Lateral area of a circular cone} = \pi r \ell$$

Where  $r$  represents the radius of the base, and  $\ell$  represents the slant height

### **Lateral area of a regular pyramid**

$$= \text{sum of triangles}$$

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*Sphere: the set of points in space equidistant from a given point*

$$\text{Surface area of a sphere} = 4 \pi r^2$$

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