M8 - 7.1 - Quadrilateral Volume Notes
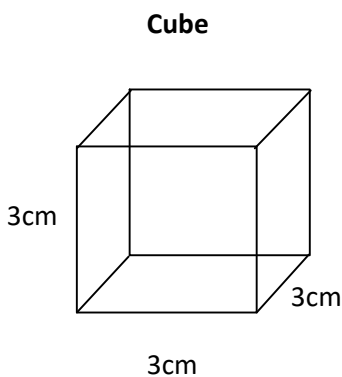
Volume: equal to the area of the base time height: "$V = (area\ of\ base) \times (height)$".
The base must be the same as the top.

Cube

Volume

3cm

3cm

3cm

$V = (area\ of\ base) \times (height)$
$V = (l \times w) \times (h)$
$V = lwh$

$V = lwh$
$V = 3 \times 3 \times 3$

$V = 27cm^3$

If Area of Base Given

3cm

$A_b = 9\ cm^2$

$V = (area\ of\ base) \times (height)$
$V = (9) \times (3)$
$V = 27\ cm^3$

Rectangular Prism

Volume

3cm

Base

4cm

2cm
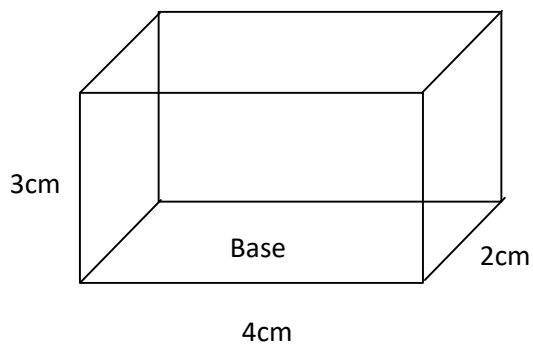
$V = (area\ of\ base) \times (height)$
$V = (l \times w) \times (h)$
$V = lwh$

$V = lwh$
$V = 4 \times 2 \times 3$
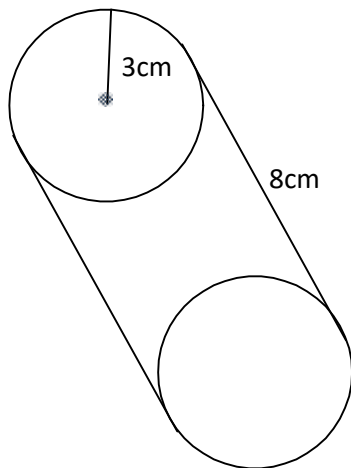
$V = 24cm^3$

Notice: the formula for the volume of a cube and a rectangular prism is just: $V = lwh$.

M8 - 7.2 - Cylinder/Triangular Prism Volume Notes

Volume: equal to the area of the base times the height: "$V = (area\ of\ base) \times (height)$". The base must be the same as the top.

Cylinder

Volume

$V = (area\ of\ base) \times (height)$
$V = (\pi r^2) \times (h)$
$V = \pi r^2 h$
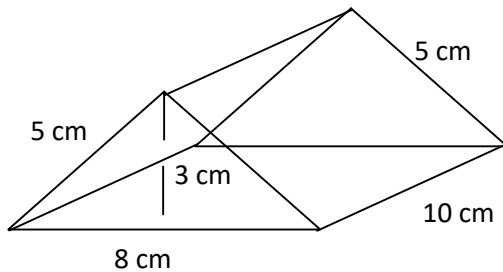
$V = \pi r^2 h$
$V = (3.14)(3)^2(8)$

$V = 226.19 cm^3$

Triangular Prism

Volume

$V = (area\ of\ base) \times (height)$
$V = \left(\dfrac{b \times h}{2}\right) \times (H)$
$V = \dfrac{bh}{2} \times H$

$V = \dfrac{bh}{2} \times H$
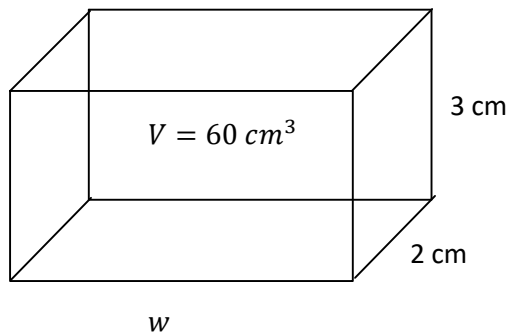$V = \dfrac{(8)(3)}{2} \times (10)$

$V = 120 cm^3$

Notice: the volume is calculated by finding the area of the base of the triangular prism using the height of the triangle, h, multiplied by the height of the prism, H.
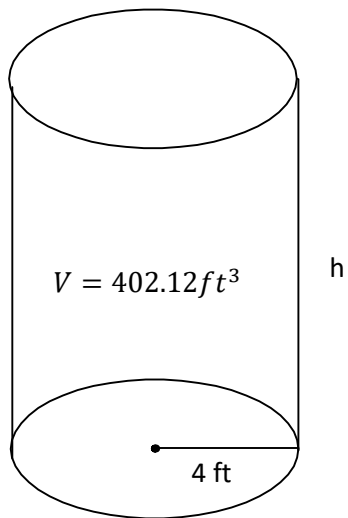
M8 - 7.3 - Rectangular Prism Missing Length Notes

Find the missing length for the shapes below.

$V = 60 \, cm^3$

3 cm

2 cm

w

$$V = l \times w \times h$$
$$60 = 2 \times w \times 3$$
$$60 = 6 \times w$$
$$\frac{60}{6} = \frac{6 \times w}{6}$$
$$10 = w$$

$$w = 10 \, cm$$

$V = 402.12 ft^3$

h

4 ft

$$V = \pi r^2 h$$
$$402.12 = \pi (4)^2 h$$
$$402.12 = 50.27h$$
$$\frac{402.12}{50.27} = \frac{50.27h}{50.27}$$
$$8 = h$$

$$h = 8 ft$$