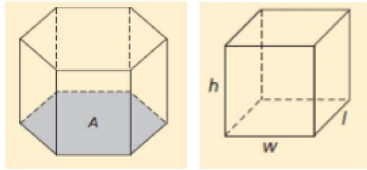
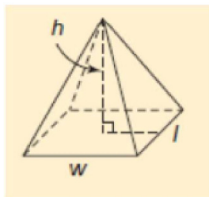


**Lesson Four – Volumes of Right Pyramids and Right Cones**



**Volume of a Right Prism**  
 $V = \text{base area} \times \text{height}$   
 $V = lwh$

← rect prism

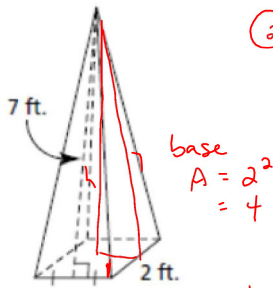


**Volume of a Right Pyramid**  
 $V = \frac{1}{3}(\text{base area})(\text{height})$

$V = \frac{Bh}{3}$

**Example 1**

Calculate the volume of this right square pyramid to the nearest cubic foot.



②  $V = \frac{Bh}{3}$

$V = \frac{(4)(6.92...)}{3}$   
 $V = 9.2376...$

∴ Volume is 9 ft<sup>3</sup>

① Determine the height



$a^2 + b^2 = c^2$

$h^2 + 1^2 = 7^2$

$h^2 = 48$

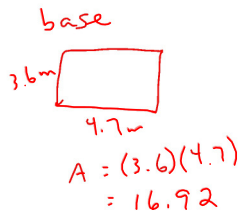
$h = \sqrt{48}$

∴ height is  $\sqrt{48}$

or 6.92...

**Example 2**

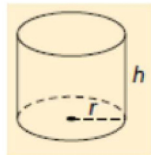
Determine the volume of a right rectangular pyramid with base dimensions 3.6 m by 4.7 m and a perpendicular height 6.9 m. Answer to the nearest tenth of a cubic metre.



$$V = \frac{Bh}{3}$$

$$= \frac{(16.92)(6.9)}{3}$$

$$= 38.9 \text{ m}^3$$



**Volume of a Right Cylinder**

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

Where  $r$  is the radius of the circle and  $h$  is the height of the cylinder

**Example 3**

The volume of a cylinder is 150 cm<sup>3</sup>. If the height is 10 cm, what is the radius rounded to the nearest unit.

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

$$150 = \pi r^2 (10)$$

$$\frac{150}{(10\pi)} = r^2$$

$$4.7746... = r^2$$

$$r = 2.185...$$

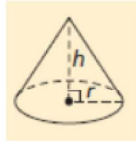
$\therefore$  the radius is 2cm

# Volume of Pyramids and Cones.notebook

MAAPC20S

Measurement

Lesson 4



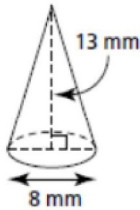
## Volume of a Right Cone

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

Where  $r$  is the radius of the circle, and  $h$  is the height of the cone

### Example 4

Determine the volume of this cone to the nearest cubic millimeter.



$$d = 8 \\ \therefore r = 4$$

$$V = \frac{\pi r^2 h}{3} \\ = \frac{\pi (4)^2 (13)}{3} \\ = 217.817... \\ \therefore \text{volume is } 218 \text{ mm}^3$$

### Example 5

A cone has a height of 8 m and a volume of  $300 \text{ m}^3$ . Determine the radius of the base of the cone to the nearest metre.

$$V = \frac{\pi r^2 h}{3} \\ (3) 300 = \frac{\pi r^2 (8)}{3} \quad (\div 3)$$

$$900 = 8\pi r^2$$

$$\frac{900}{8\pi} = r^2$$

$$35.809... = r^2$$

$$5.984... = r$$

$$\therefore \text{radius is } 6 \text{ m}$$

**Assignment:** Pg 42; 8 b, 9 b, 10, 11, 14, 18 (c,d)