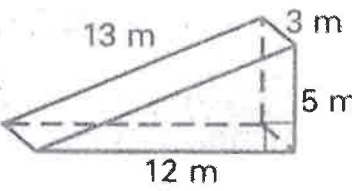


Objective: to apply volumes and surface areas of 3-D figures

Formulas:	Prism	$V = Bh$	Cone	$V = \frac{1}{3}\pi r^2 h$	$SA = \pi r^2 + \pi r l$
	Cylinder	$V = \pi r^2 h$	Sphere	$V = \frac{4}{3}\pi r^3$	$SA = 4\pi r^2$
	Pyramid	$V = \frac{1}{3}Bh$			

Examples: For each shape below, identify its surface area and volume.

1. 

Surface Area:

Triangle: $= \frac{1}{2}bh = \frac{1}{2} \cdot 12 \cdot 5 = 30 \text{ m}^2$
 $\times 2$
 60 m^2

bottom: $= bh = 12 \cdot 3 = 36 \text{ m}^2$

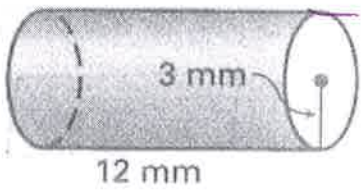
top: $= bh = 13 \cdot 3 = 39 \text{ m}^2$

side: $= bh = 3 \cdot 5 = 15 \text{ m}^2$

$60 + 36 + 39 + 15 = 150 \text{ m}^2$

Volume:

$V = B \cdot h$
 $= (\frac{1}{2}bh) \cdot h$
 $= (\frac{1}{2} \cdot 12 \cdot 5) \cdot 3$
 $= 90 \text{ m}^3$

2. 

Surface Area:

Circle: $= \pi r^2 = \pi (3)^2 = 9\pi$
 $\times 2$
 $18\pi \text{ mm}^2$

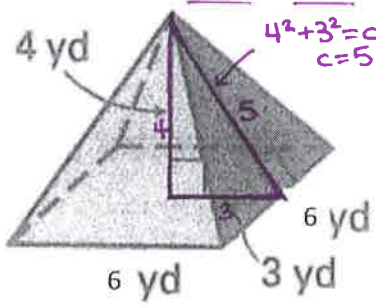
circumference: $= 2\pi r = 2\pi(3) = 6\pi$

Rectangle: $= bh = 12 \cdot 6\pi = 72\pi \text{ mm}^2$

$18\pi + 72\pi = 90\pi \text{ mm}^2$

Volume:

$V = B \cdot h$
 $= (\pi r^2) \cdot h$
 $= (\pi (3)^2) \cdot 12$
 $= 9\pi \cdot 12$
 $= 108\pi \text{ mm}^3$

3. 

Surface Area:

Triangle: $4^2 + 3^2 = c^2$
 $c = 5$
 $= \frac{1}{2}bh = \frac{1}{2} \cdot 6 \cdot 5 = 15$
 $\times 4$
 60 yd^2

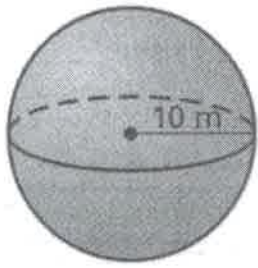
bottom: $= bh = 6 \cdot 6 = 36 \text{ yd}^2$

$60 + 36 = 96 \text{ yd}^2$

Volume:

$V = \frac{1}{3} \cdot B \cdot h$
 $= \frac{1}{3} \cdot (bh) \cdot h$
 $= \frac{1}{3} \cdot (6 \cdot 6) \cdot 4$
 $= 48 \text{ yd}^3$

4.



Surface Area:

$$SA = 4\pi r^2 = 4\pi(10)^2$$

$$= \boxed{400\pi \text{ m}^2}$$

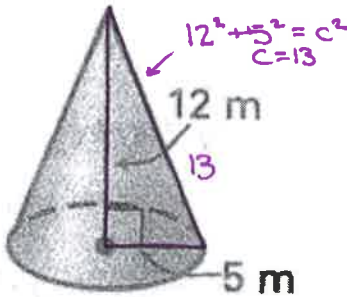
Volume:

$$V = \frac{4}{3}\pi r^3$$

$$= \frac{4}{3}\pi(10)^3$$

$$= \boxed{\frac{4000}{3}\pi \text{ m}^3}$$

5.



bottom

$$\pi r^2 = \pi(5)^2 = 25\pi \text{ m}^2$$

Sides

$$\pi r l = \pi \cdot 5 \cdot 13 = 65\pi \text{ m}^2$$

$$25\pi + 65\pi = \boxed{90\pi \text{ m}^2}$$

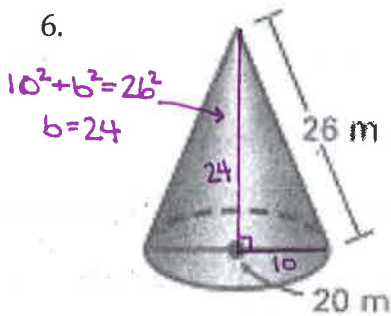
$$V = \frac{1}{3} \cdot B \cdot h$$

$$= \frac{1}{3} \cdot (\pi r^2) \cdot h$$

$$= \frac{1}{3} (\pi(5)^2) \cdot 12$$

$$= \boxed{100\pi \text{ m}^3}$$

6.



bottom

$$\pi r^2 = \pi(10)^2 = 100\pi \text{ m}^2$$

Sides

$$\pi r l = \pi \cdot 10 \cdot 26 = 260\pi \text{ m}^2$$

$$100\pi + 260\pi = \boxed{360\pi \text{ m}^2}$$

$$V = \frac{1}{3} \cdot B \cdot h$$

$$= \frac{1}{3} (\pi(10)^2) \cdot 24$$

$$= \boxed{800\pi \text{ m}^3}$$