

Outcome 3B Review

Level 2

The formula for determining the surface area of a cylinder is $2\pi r^2 + 2\pi rh$ where r is the radius of the circle and h is the height of the cylinder.

Example: Determine the surface area of the cylinder

The radius is 4 cm and the height is 12 cm

$$2\pi r^2 + 2\pi rh$$

$$2\pi(4)^2 + 2\pi(4)(12)$$

$$2\pi(16) + 96\pi$$

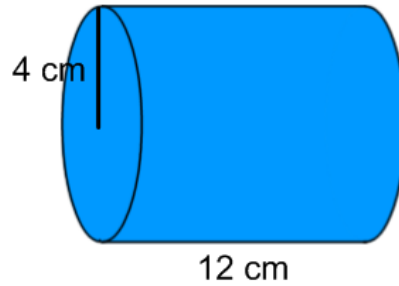
$$32\pi + 96\pi$$

(use either the π button on your calculator or 3.14. Answers will vary slightly)

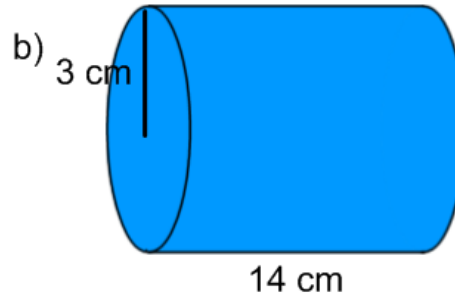
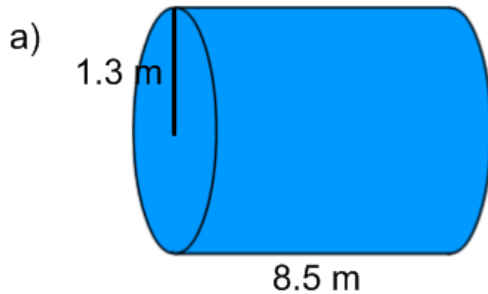
$$100.5309649 + 301.5928947 \quad (\text{this answer used the } \pi \text{ button on the calculator})$$

$$402.1238596$$

$$\text{Or } 402.12 \text{ cm}^2$$



Practice: Determine the surface area of the cylinders

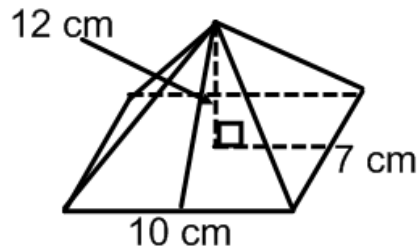


The volume of a right pyramid is $\frac{1}{3}lwh$

Example:

Determine the volume of the following:

The length is 10 cm, the width is 7cm, and
The height is 12 cm.



$$V = \frac{1}{3}lwh$$

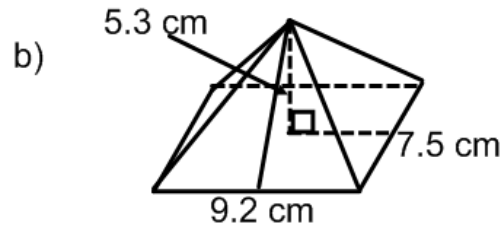
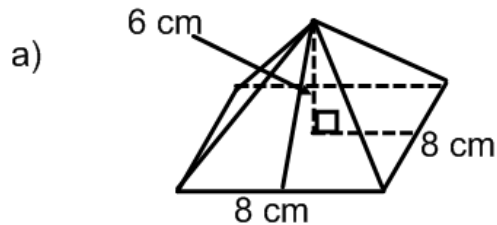
$$V = \frac{1}{3}(10)(7)(12)$$

$$V = \frac{1}{3}(840) \quad \text{At this point you can just divide 840 by 3 to get your answer.}$$

$$V = 280\text{cm}^3$$

Practice:

Determine the volume of the following:

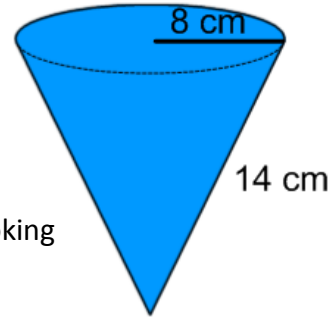


Level 3

The formula to determine the volume of a cone is $V = \frac{1}{3}\pi r^2 h$ where r is the radius of the circle and h is the height of the cone.

Example: Determine the volume of the cone

The radius is 8 cm, but the height that we need is NOT 14 cm. The 14 cm is the slant height. We need to use Pythagorean theorem to determine the height of the cone. The hypotenuse of the right triangle is 14 cm, one leg is 8 cm and the missing side is what we are looking for.



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

$$8^2 + b^2 = 14^2$$

$$64 + b^2 = 196$$

$$b^2 = 132 \quad \text{Subtract } 196 - 64$$

$$b = \sqrt{132} \quad \text{Take the square root to solve for } b$$

$$b = 11.5$$

Now we know the height is 11.5 cm and we can find the volume

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

$$V = \frac{1}{3}\pi(8)^2(11.5)$$

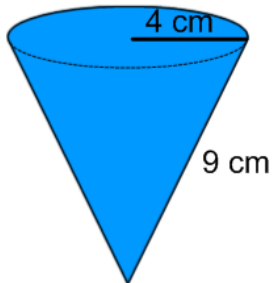
$$V = \frac{1}{3}\pi(64)(11.5) \quad \text{At this point you can use the } \pi \text{ button on your calculator or use } 3.14. \text{ Answers will vary.}$$

$$V = \frac{1}{3}(2312.212193) \quad \text{In this one the } \pi \text{ button on the calculator was used.}$$

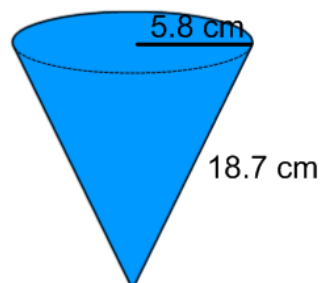
$$V = 770.74\text{cm}^3$$

Practice: Determine the volume of the cones

a)



b)

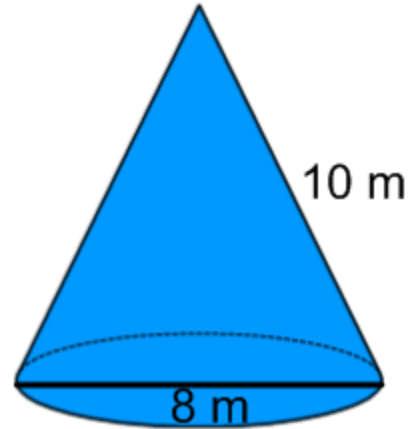


The formula to determine the surface area of a cone is $\pi rs + \pi r^2$ where r is the radius of the circle and s is the slant height of the cone.

Example: Determine the surface area of the following cone

The diameter is given as 8 m, to determine the radius you need to divide the diameter by 2. The radius is 4m and the slant height is 10m.

$$\begin{aligned} &\pi rs + \pi r^2 \\ &\pi(4)(10) + \pi(4)^2 \\ &\pi(40) + \pi(16) \\ &125.6637061 + 50.26548246 \\ &175.93 \text{ m}^2 \end{aligned}$$



How would this change if there was no floor of the cone?

You would not have to find the surface area of the circle; you would only find πrs

The surface area would then be 125.66 m².

- Practice:**
- i) Determine the surface area of the following cones
 - ii) Determine the surface area of the following cones if there is no "floor" to the cone.

