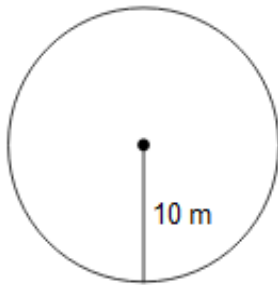


Warm Up: Find the Area of the circle

$$A = \pi r^2$$

1)

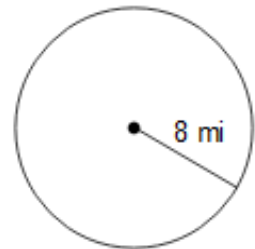


$$A = \pi (10)^2$$

$$100\pi \text{ m}^2$$

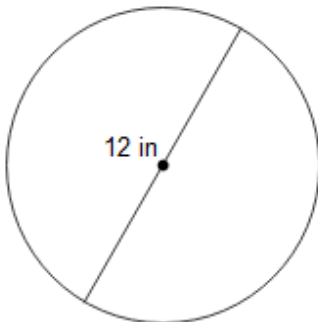
$$314.2 \text{ m}^2$$

2)



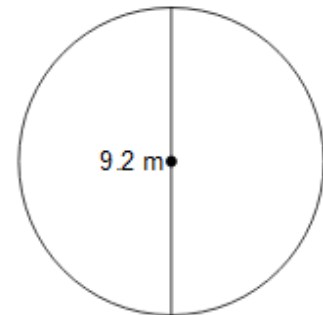
$$201.1 \text{ mi}^2$$

3)



$$113.1 \text{ in}^2$$

4)



$$66.5 \text{ m}^2$$

5) circumference = 59.7 cm

$$283.6 \text{ cm}^2$$

$$C = 2\pi r$$

$$\frac{59.7}{(2\pi)} = \frac{2\pi r}{2\pi}$$

$$r = 9.5$$

$$A = \pi r^2$$

$$A = \pi (9.5)^2$$

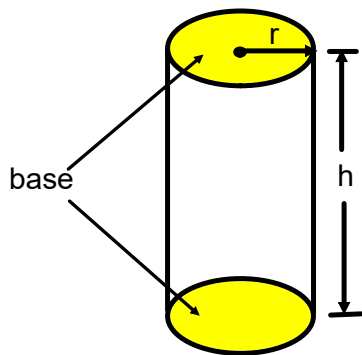
Learning Goal: Today I will practice how to find the volume of prisms and cylinders.

Success Criteria: I am able to find the volume of prisms and cylinders.

Volume

Prism
Cylinder
Pyramids
Cones
Spheres

Name

Volume of a Cylinder

- 2 congruent, parallel bases that are circles

r = radius of circle

h = height (distance between bases)

B = area of base

Volume $V = B \cdot h = \pi r^2 h$

Example:

A cylinder has a radius of 3 m and a height of 4 m. What is the volume of the cylinder?

$$V = \pi (3)^2 (4)$$

$$V = \pi (9) (4)$$

$$V = 36\pi \text{ m}^3$$

$$V = 113.1 \text{ m}^3$$

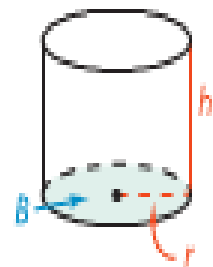
3

Take Note

Theorem 11-7 Volume of a Cylinder

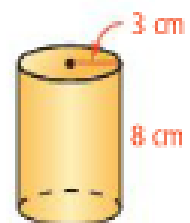
The volume of a cylinder is the product of the area of the base and the height of the cylinder.

$$V = Bh, \text{ or } V = \pi r^2 h$$

**Problem 3** Finding the Volume of a Cylinder

What is the volume of the cylinder in terms of π ?

$$\begin{aligned} V &= \pi r^2 h && \text{Use the formula for the volume of a cylinder.} \\ &= \pi(3)^2(8) && \text{Substitute 3 for } r \text{ and 8 for } h. \\ &= \pi(72) && \text{Simplify.} \end{aligned}$$



—The volume of the cylinder is $72\pi \text{ cm}^3$.

What is the radius of the cylinder in terms of π

Area of Circle? $\pi (2)^2 = 4\pi$

Height? (3)

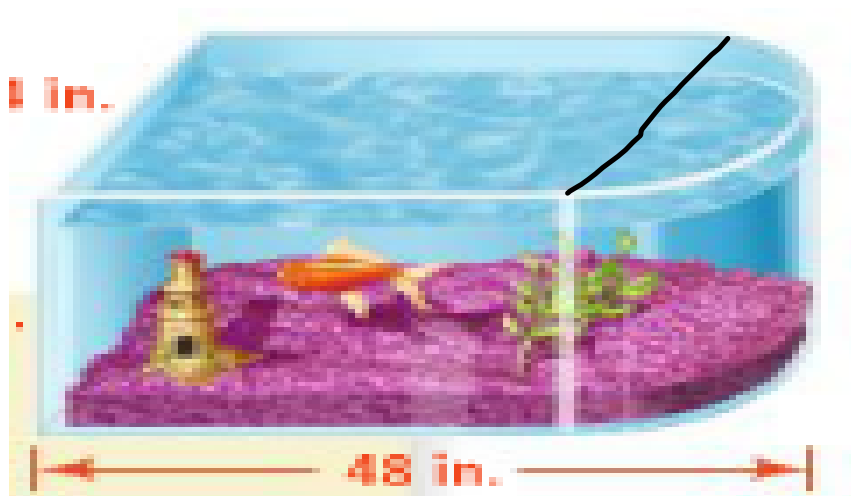
$$V = 4\pi(3)$$

$$V = 12\pi$$



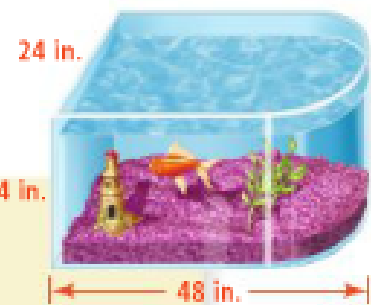
A composite space figure is a three-dimensional figure that is the combination of two or more simpler figures. You can find the volume of a composite space figure by adding the volumes of the figures that are combined.

What two figures do you see?



Problem 4 Finding Volume of a Composite Figure

What is the approximate volume of the bullnose aquarium to the nearest cubic inch?



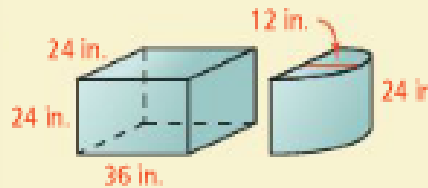
Think

The length of the prism is the total length minus the radius of the cylinder. The radius of the cylinder is half the width of the prism.

Find the volume of the prism and the half cylinder.

Add the two volumes together.

Write

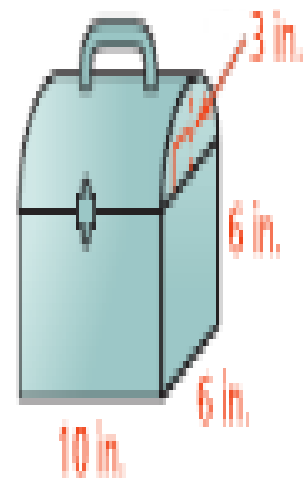


$$\begin{aligned}
 V_1 &= Bh \\
 &= (24 \cdot 36)(24) \\
 &= 20,736
 \end{aligned}$$

$$\begin{aligned}
 V_2 &= \frac{1}{2}\pi r^2 h \\
 &= \frac{1}{2}\pi(12)^2(24) \\
 &\approx 5429
 \end{aligned}$$

$$\begin{aligned}
 20,736 + 5429 &= 26,165 \\
 \text{The approximate volume of the aquarium is } &26,165 \text{ in.}^3.
 \end{aligned}$$

4. What is the approximate volume of the lunch box shown at the right? Round to the nearest cubic inch.



What two figures do you see?

$$V = 10(6)(6)$$

$$V = 360 \text{ in}^3$$

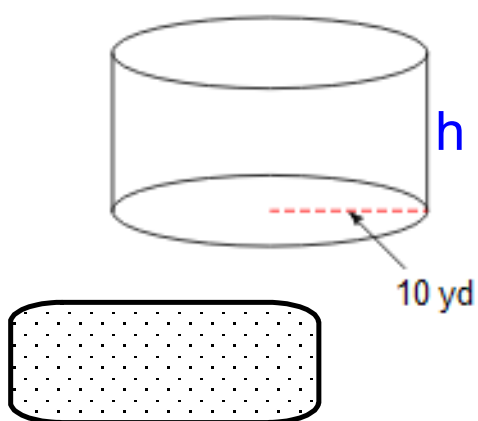
$$V = \frac{1}{2} \pi r^2 h$$

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

$$V = 141.4 \text{ in}^3$$

$$V = 360 + 141.4$$

$$501.4 \text{ in}^3$$



Find the height of the cylinder.

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

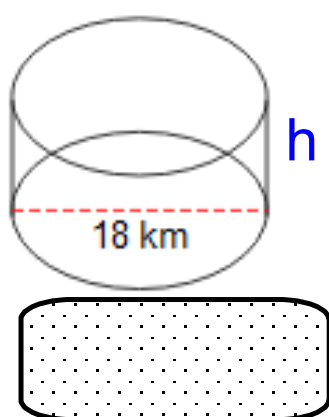
$$1884.96 = V$$

$$1884.96 = \pi (10)^2 h$$

$$\frac{1884.96}{100\pi} = \frac{100\pi h}{100\pi}$$

$$h = 6 \text{ yd}$$

2)



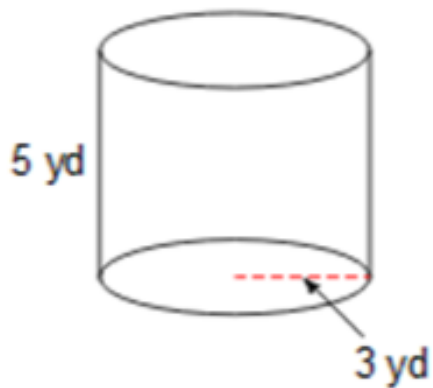
Find the height of the cylinder.

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

Individual Paper to be handed in.

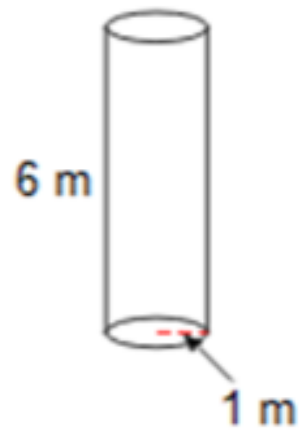
Find the volume. Round to the nearest hundredth.

1)



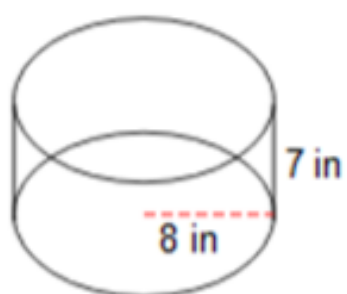
141.37 yd³

2)

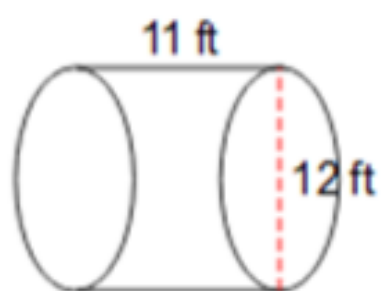


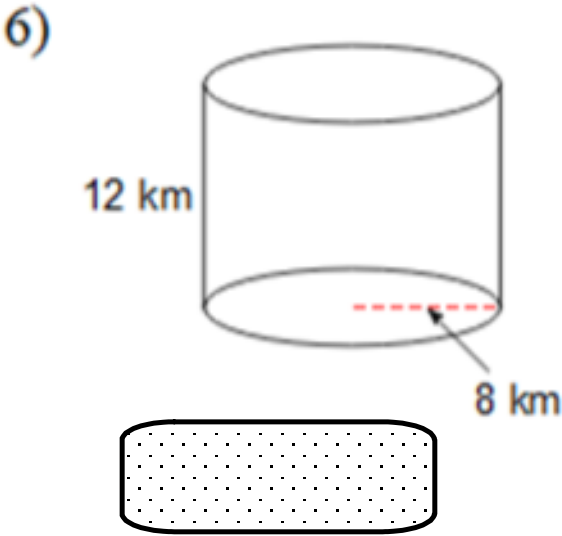
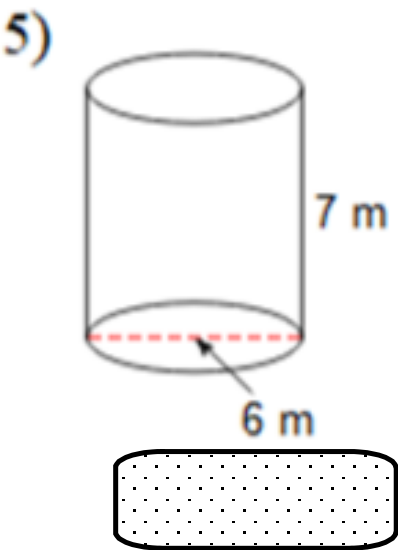
18.85 m³

3)

 1407.43 in^3

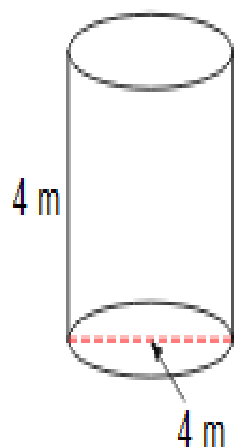
4)

 1244.07 ft^3



Find the volume. Leave your answer in terms of π

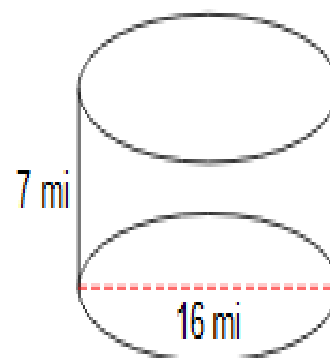
7)



$$16\pi \text{ m}^3$$

$$V = \pi (2)^2 (4)$$
$$16\pi \text{ m}^3$$

8)



$$448\pi \text{ mi}^3$$

