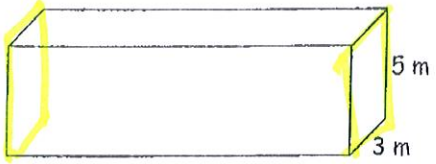
Name: Key Units: _____

Volume of Prisms and Cylinders Worksheet

1.)



Area of Base:

$A = l \cdot w$

$A = 5 \cdot 3$

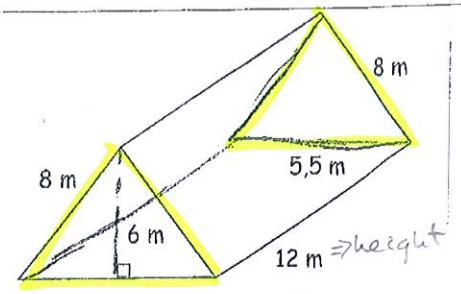
$A = 15\ m^2$

Volume:

$V = 15(14.5)$

$= 217.5\ m^3$

2.)



Area of Base:

$A = \frac{1}{2} \cdot b \cdot h$

$A = \frac{1}{2}(5.5)6$

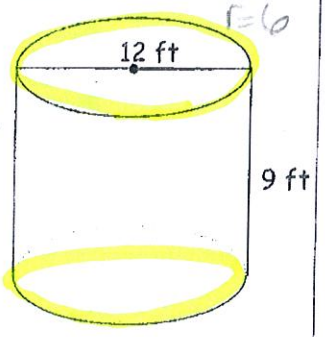
$A = 16.5\ m^2$

Volume:

$V = 16.5(12)$

$V = 198\ m^3$

3.)



Area of Base:

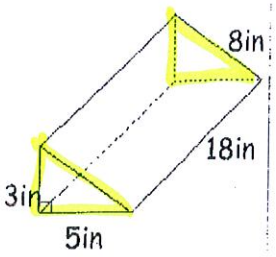
$A = \pi 6^2 = 113.1\ ft^2$

Volume:

$V = 113.1(9)$

$V = 1017.9\ ft^3$

4.)



Area of Base:

$A = \frac{1}{2} b h$

$= \frac{1}{2} \cdot 5 \cdot 3$

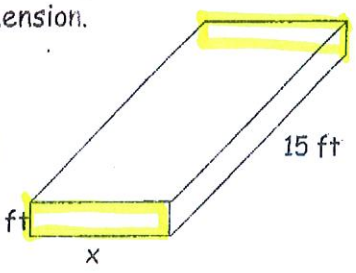
$= 7.5\ in^2$

Volume:

$V = (7.5)(18)$

$V = 135\ in^3$

5.) If the volume of the figure below is $135 ft^3$, find the missing dimension.



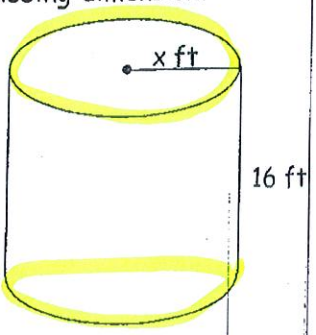
$V = l \cdot w \cdot h$

$135 = (1.5)(x)(15)$

$135 = 22.5x$

$x = 6$ feet

6.) If the volume of the figure below is $4{,}069.44\ ft^3$, find the missing dimension.



$V = \pi r^2 h$

$\frac{4{,}069.44}{16\pi} = \frac{\pi x^2 (16)}{16\pi}$

$\sqrt{80.96} = \sqrt{x^2}$

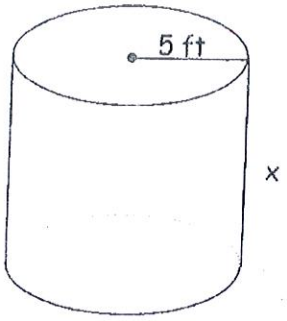
$x \approx 9\ ft$

7.) If the volume of the figure below is $902.75 ft^3$, find the missing dimension.

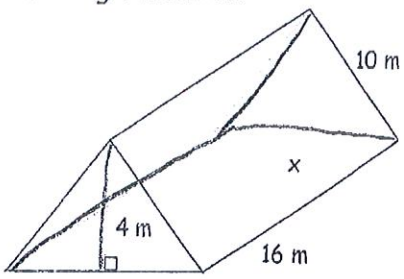
$V = \pi r^2 h$

$\frac{902.75}{25\pi} = \frac{\pi 5^2 x}{25\pi}$

$x = 11.49 ft$



8.) If the volume of the figure below is $224 m^3$, find the missing dimension.



$V = (\frac{1}{2}bh)h$

$224 = \frac{1}{2}(x)(4)(16)$

$\frac{224}{32} = \frac{32x}{32}$

$x = 7 m$

9.) Cameron makes a glass cylinder that has a diameter of 6 in. and a height of 5 in. for a friend. He wants to send it to his friend in a box that is 6 x 6 x 5. He wants to put the cylinder in a box and wrap it with packing foam. How much packing foam does Cameron need?

Cylinder

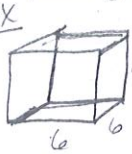
$d = 6$ $r = 3$ $h = 5$

$V = \pi r^2 h$

$V = \pi 3^2 (5)$

$V = 45\pi in^3$

Box



$V = l \cdot w \cdot h$

$V = 6 \cdot 6 \cdot 5$

$V = 180 in^3$

Packing Foam

$180 - 45\pi = 38.63 in^3$

10.) The radius of a cylinder is 3 m and the height is 4 m. $r = 3$ $h = 4$

a.) What is the volume of the cylinder?

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

$V = 113.1 m^3$

b.) If you double the radius, what is the new volume? $r = 6$

$V = \pi 6^2 (4)$

$V = 452.39 m^3$

c.) How do these two volumes compare? Why do you think this happens?

The volume with the new radius is 4 times the volume of the old radius. The volume of a cylinder is directly proportional to the square of the radius.