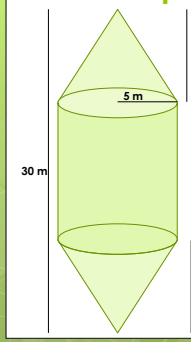
Warmup 4/5



Pair up with someone at your table. Each pair needs a whiteboard.

1) Find the volume.

Volume = cone + cylinder + cone

$\text{Volume} = \frac{1}{3}\pi r^2 h + \pi r^2 h + \frac{1}{3}\pi r^2 h$

$\text{Volume} = \frac{1}{3}\pi \cdot 5^2 \cdot 9 + \pi \cdot 5^2 \cdot 12 + \frac{1}{3}\pi \cdot 5^2 \cdot 9$

$\text{Volume} = \frac{1}{3}\pi \cdot 5^2 \cdot 9 + \pi \cdot 5^2 \cdot 12 + \frac{1}{3}\pi \cdot 5^2 \cdot 9$

$\text{Volume} = 75\pi + 300\pi + 75\pi$

$\text{Volume} = 450\pi$

$\text{Volume} \approx 1413.7\ m^3$

HW Answers: p.593,601,609

p. 593

1) 141.4 in^3
2) 103.4 m^3
3) 834.1 lb
(If you rounded before multiplying by 59, its 831.9 lb)
4) 2580.3 cm^3

p. 601

5) 102.6 in^3
6) 15.9 m^3
7) 1608.5 cm^3
8) 1338.3 cm^3

p. 609

2) 904.8 yd^3
7) Volume is 268.1 in^3
107.2 seconds
8) 658.5 ft^3

ALEKS DURING ENRICHMENT:

1st Period
Joseph Garces
Cortez Gonzalez
Nani Harvell
Connor Ickes - 17
May McDaniel
Hallie Pewitt
Josh Robertson

5th Period
Drew Bathon
Ana Boero
Troy Chumley
Makhyah Driver
Jahogany Ezelle
Camryn Oliver
Brieanna Owens
Caroline Price
Alexandra Suchet
Aza Thomas

6th Period
Axel Gallagher
Salma Kailani
Viggo Pile
Jackson Powell
Aubrey Wurth

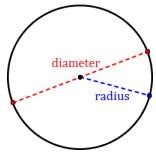
(All are 30 minutes)

FORMULAS REVIEW

Circles:

Circumference: $C = \pi d$ or $C = 2\pi r$

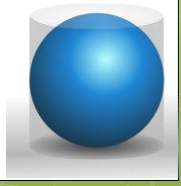
Area: $A = \pi r^2$



Volume of a sphere

The volume of a sphere is 2/3 of the cylinder it "fits" in.

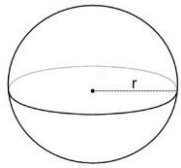
- $V(sphere) = \frac{2}{3}(\pi r^2 \cdot h)$
- $V(sphere) = \frac{2}{3}(\pi r^2 \cdot 2r)$
- $V(sphere) = \frac{4}{3}\pi r^3$



Spheres

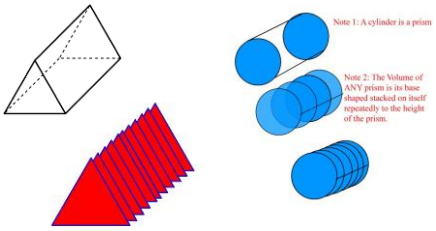
Spheres:

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



Prisms

Prisms have TWO bases that are connected by flat sides all around.



FORMULAS REVIEW

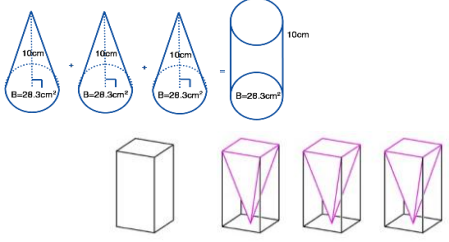
Prisms: Volume = (Area of base) x height

- Rectangular Prism: $V = (lw) \cdot h$
- Triangular Prism: $V = \left(\frac{1}{2}bh\right) \cdot h$
- Cylinder $V = (\pi r^2) \cdot h$

Pyramids/Cones

Pyramids & Cones have ONE base, and come to a point at the top.

3 pyramids = 1 prism. 3 cones = 1 cylinder.

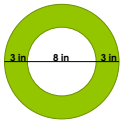


FORMULAS REVIEW

Cones/Pyramids: Volume = $\frac{1}{3} \cdot$ (Area of base) $\cdot$ height

- Rectangular Pyramid: $V = \frac{1}{3} \cdot (lw) \cdot h$
- Cone $V = \frac{1}{3} \cdot (\pi r^2) \cdot h$

Find the area of the shaded region.



Area = big circle – small circle
Diameter of big circle = 14, radius = 7
Diameter of small circle = 8, radius = 4

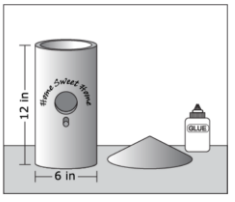
$A = \pi(7)^2 - \pi(4)^2$

$A = 49\pi - 16\pi$

$A = 33\pi$ (exact)

$A \approx 103.7\ in^2$ (rounded)

One winter, Mr. Rogers built a birdhouse in his backyard. Mr. Rogers finished the main part of the birdhouse before it began to snow, but not the roof. The main part of the birdhouse is a right circular cylinder with a inner diameter of 6 inches and a height of 12 inches.



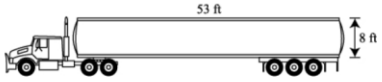
$V = \pi \cdot 3^2 \cdot 12$

$V \approx 339$

If the snow completely filled the main part of the birdhouse, what would be the approximate **volume**, in cubic inches, of the snow? (Round your answer to the nearest whole number.)

A 226
B 283
C 339
D 1357

A truck that carries gasoline is shown.



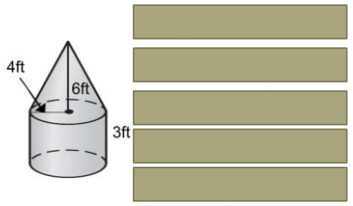
How much gasoline can the cylindrical tank hold?

(A) 212n ft^3
(B) 424n ft^3
(C) 848n ft^3
(D) 3392n ft^3

$V = \pi \cdot 4^2 \cdot 53$

$V = 848\pi$

- Find the volume of the figure. Leave your answer as an **exact** answer (leave π in it)



Working backwards…

- **Find the height of the cylinder.**

$V = 882\pi\ m^3$

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

$882\pi = \pi \cdot 7^2 \cdot h$

$882\pi = 49\pi \cdot h$

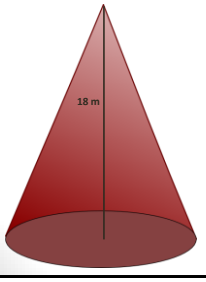
$882 = 49 \cdot h$

$18 = h$

Working backwards…

- **Find the radius of the cone.**

$V = 96\pi\ cm^3$



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

$96\pi = \frac{1}{3}\pi \cdot r^2 \cdot 18$

$96 = \frac{1}{3} \cdot r^2 \cdot 18$

$96 = 6 \cdot r^2$

$16 = r^2$

$4 = r$

Homework

- Volume Worksheet