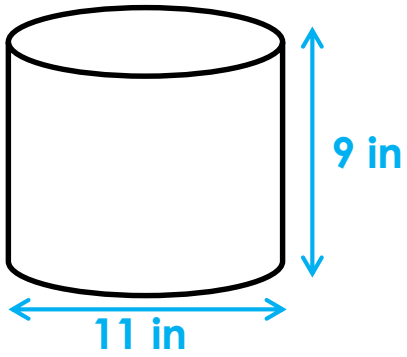
Warmup 3/(The # of points Tennessee was leading by before they almost blew it against Iowa)

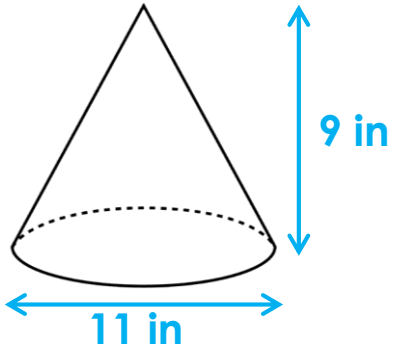
MAKE SURE YOU HAVE A WHITEBOARD!

Find the volume of each figure. Try to do it without looking at your notes, but you can look at them if you must.

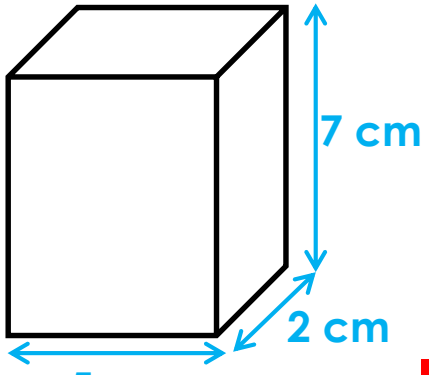
1a)



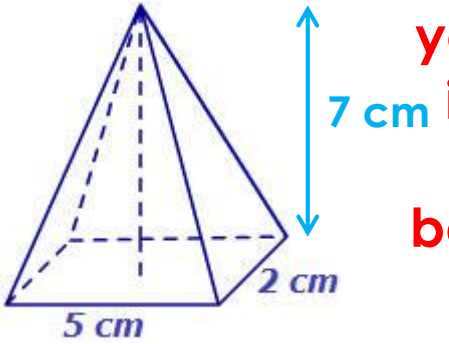
1b)



2a)



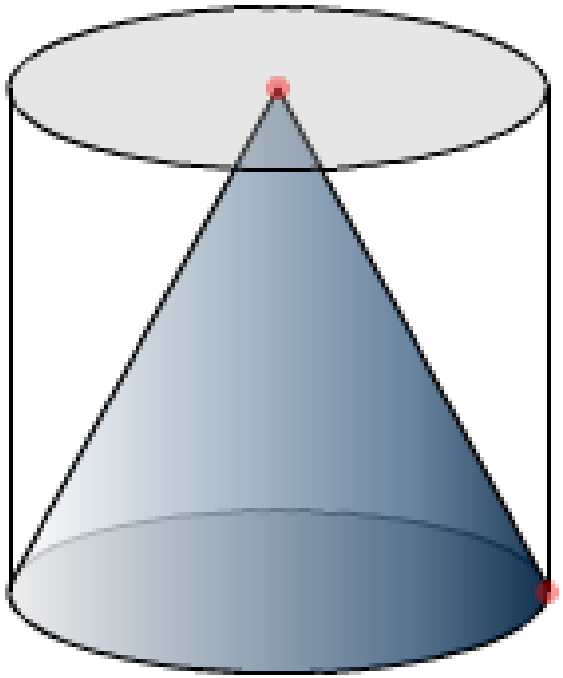
2b)



(You have not learned pyramids yet…however, see if you can guess how they work based on the other problems)

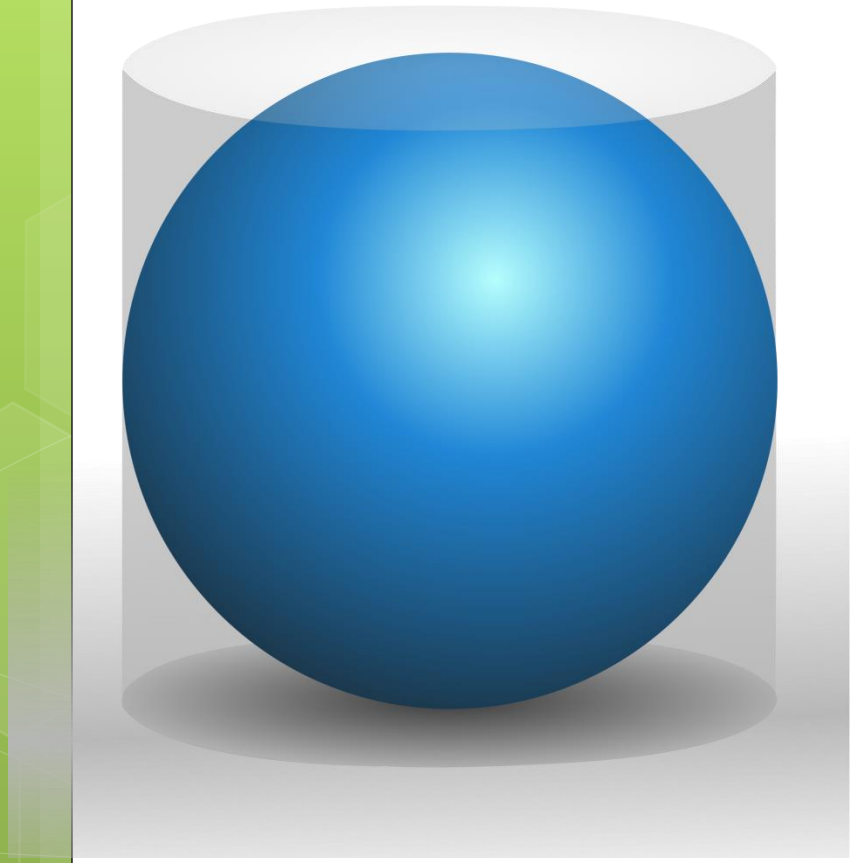
Table of Contents (2nd Semester)

We just learned….



- **The volume of a cone is 1/3 of the volume of the cylinder with the same base (radius) and height.**

What about a sphere???



- **The volume of a sphere is _____ of the volume of the cylinder with the same radius and height.**

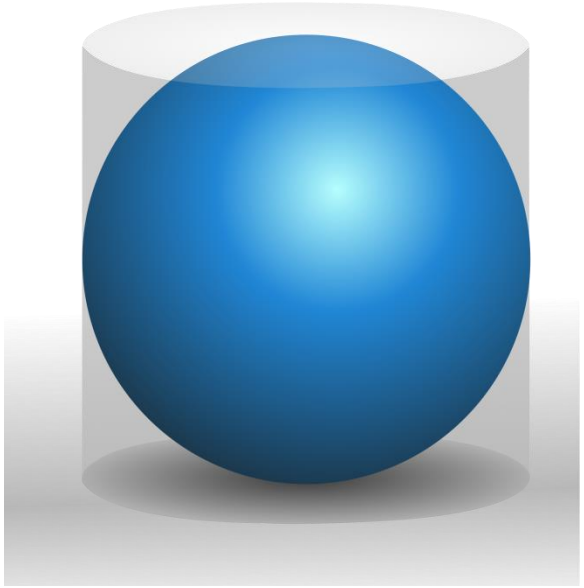
The answer…

- **The volume of a sphere is TWO-THIRDS of the volume of the cylinder with the same radius and height.**

Volume of a sphere

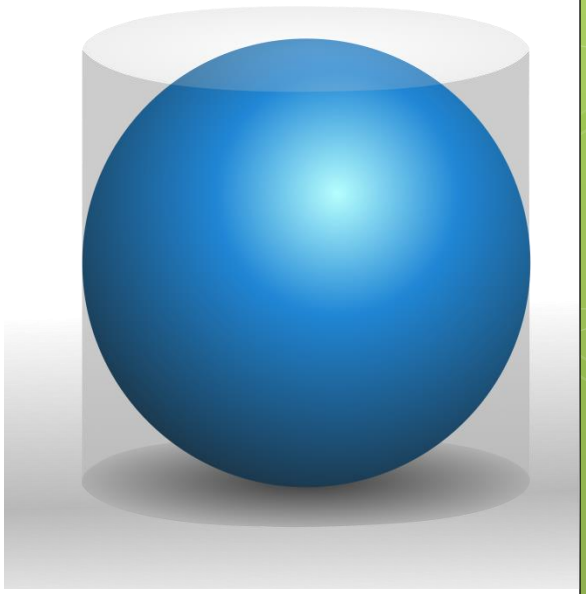
- $\boldsymbol{V(sphere) = \frac{2}{3}(\pi r^2 \cdot h)}$

- But…
- In a sphere, what is another way of saying the "height"?



Volume of a sphere

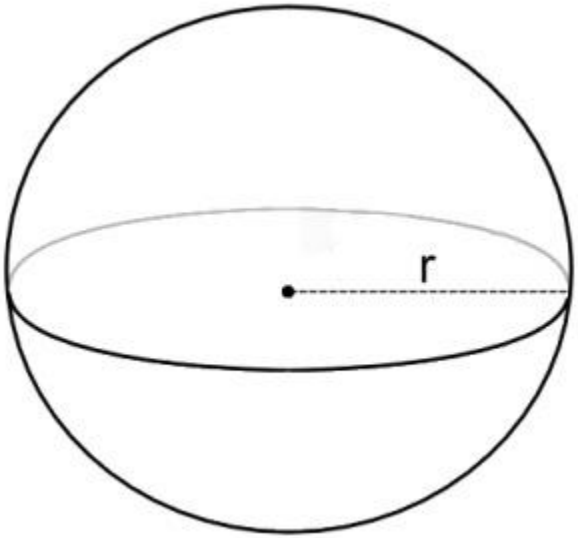
- "Height" of a sphere = diameter = 2•radius
- $V(sphere) = \frac{2}{3}(\pi r^2 \cdot h)$
- $V(sphere) = \frac{2}{3}(\pi r^2 \cdot 2r)$
- $V(sphere) = \frac{2}{3} \cdot 2 \cdot \pi r^2 \cdot r$
- $V(sphere) = \frac{4}{3}\pi r^3$



Volume of a sphere

Volume of a Sphere:

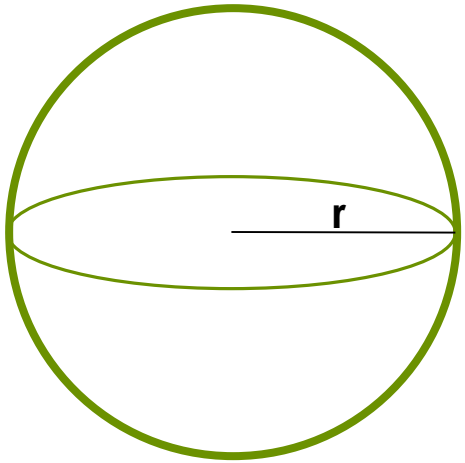
- $V = \frac{4}{3}\pi r^3$



Drawing a sphere

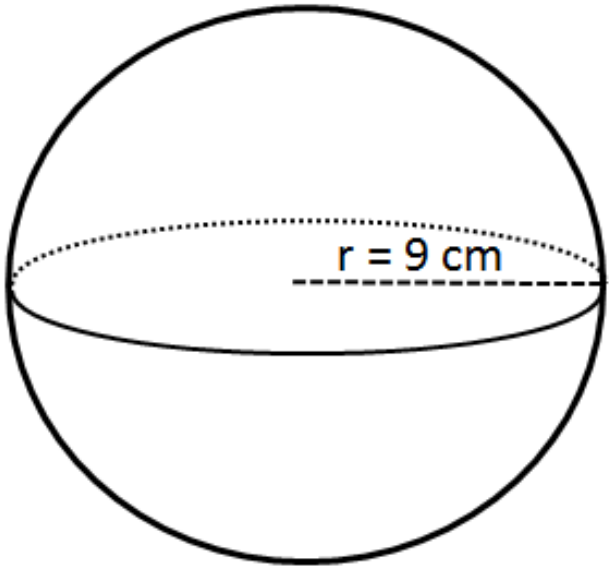
- It's hard to draw a sphere, because when you do, it just looks like a circle.

- One way around this is to draw in the circle around the middle (like the "Equator")



Find the volume:

- Round to the nearest tenth.



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

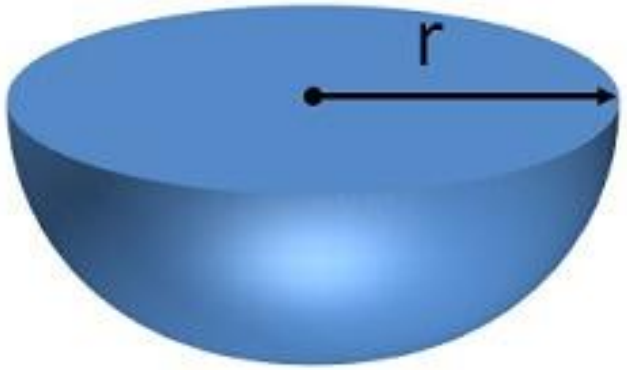
$$V = \frac{4}{3}\pi (9)^3$$

$$V = 972\pi \; cm^3$$

$$V \approx 3053.6 \; cm^3$$

Question…

- What is a half of a sphere called???
- **A hemisphere**



- To find the area of a hemisphere, just use the formula for sphere, then divide it by 2.
- (Or you can use the formula $\boldsymbol{V = \frac{2}{3}\pi r^3}$)

Add p.609 to the homework…

SHOW ALL WORK ON A SEPARATE SHEET OF PAPER!!!

- p. 593 (1 – 4)
- p. 601 (5 – 8)
- **p.609 (2, 7, 8)**

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

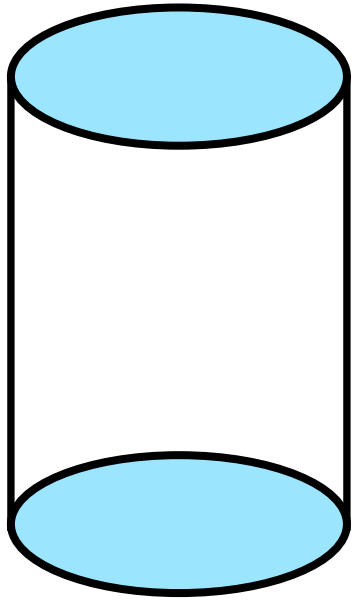
5) 102.6 in^3
6) 15.9 m^3
7) 1608.5 cm^3
8) 1338.3 cm^3

p. 609

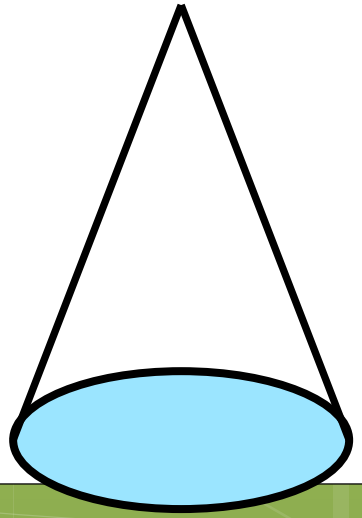
2) 904.8 yd^3
7) Volume is 268.1 in^3
107.2 seconds
8) 658.5 ft^3

DIFFERENCE BETWEEN CYLINDERS & CONES

- Cylinders go from **CIRCLE** to **CIRCLE.**

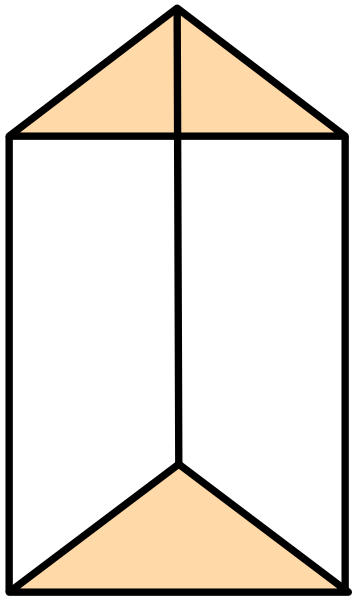


- Cones go from a **CIRCLE** to a **POINT.**

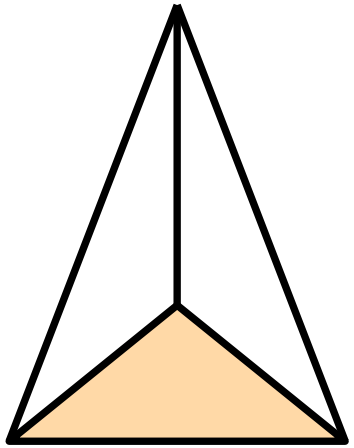


DIFFERENCE BETWEEN PRISMS & PYRAMIDS

- Prisms go from **BASE** to **BASE.**

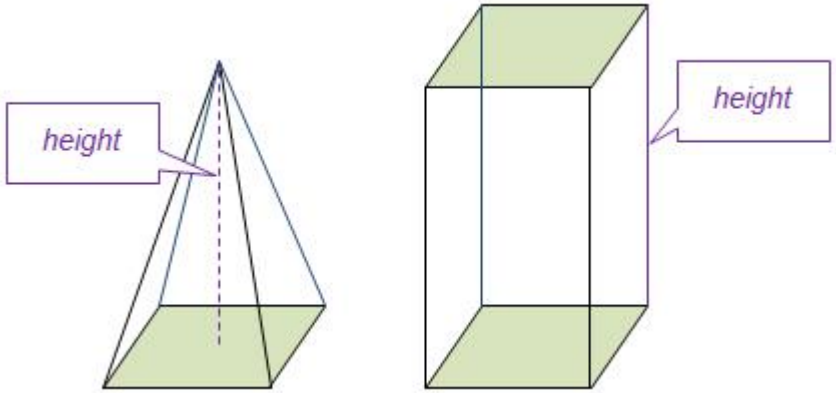


- Pyramids go from a **BASE** to a **POINT.**



Pyramids

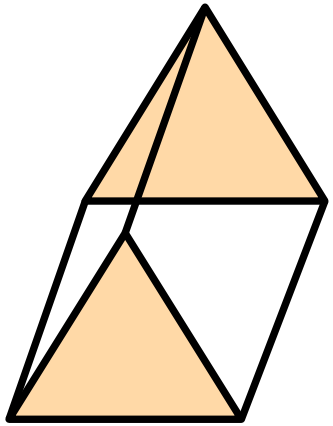
- The same thing happens with rectangular prisms and pyramids.



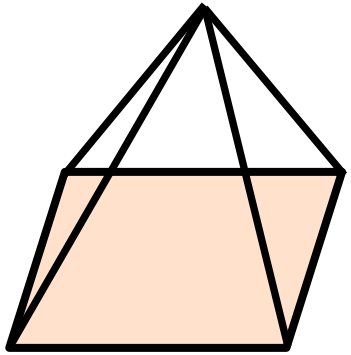
Any pyramid: Volume is 1/3 of the prism with the same base and height

Rectangular or Square Pyramid: $V = \frac{lwh}{3}$

Which shape is it???

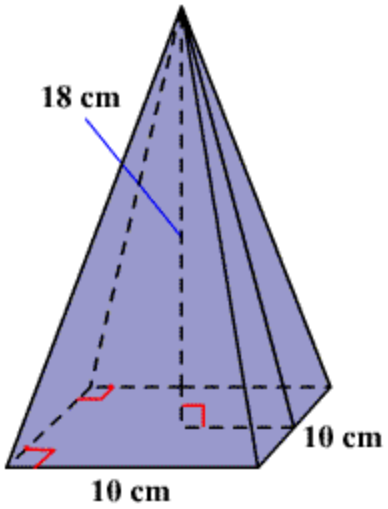


Triangluar Prism
(Area of triangle times height of prism)



Square Pyramid
(Area of square times height of pyramid)

Find the volume:



$$\text{Volume} = \frac{lwh}{3}$$

$$\text{Volume} = \frac{10 \cdot 10 \cdot 18}{3}$$

$$\text{Volume} = 600\ cm^3$$

REMEMBER, PYRAMIDS ARE JUST LIKE CONES

Cone = 1/3 of a cylinder
Pyramid = 1/3 of a prism

WHITEBOARDS!!!

Find the volume: