

# MATH 8: Week of May 4

- Go through the slides (notes) and work through the examples on a separate piece of paper.
- Do the given practice problems (again, on a separate piece of paper).
- Check your answers with the key given (last slide).
- Take a photo or scan in your work and submit it in Google Classroom. If you have questions or would like feedback on your work, add that as a comment with your submitted work.
- The other option for turn in is to send it in on Monday when the new packet is available.
- Check your school email/google calendar for online help sessions via Zoom.

Day 1: Slides 2-5      Day 3: Slides 10-12  
Day 2: Slides 6-9      Day 4: Slides 13-16  
Answers on Slide 17

Day 1: Lesson 3-K

## Volume of Cylinders

**Target: Find the volume of cylinders and solve real-world problems involving cylinders.**

### Vocabulary

#### Volume

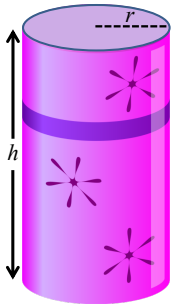
The number of cubic units needed to fill a 3-D figure.

#### Cylinder

A solid with two congruent and parallel bases that are circles.

## Volume of a Cylinder

The volume of a cylinder is equal to the product of the area of the base ( $B$ ) and the height ( $h$ ).

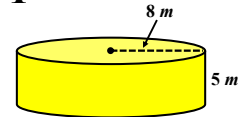


$$V = Bh$$

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

## Example 1

Find the volume of the cylinder.  
Use 3.14 as an approximation for  $\pi$ .



Write the volume formula for a cylinder.  $V = \pi r^2 h$

Substitute known values.  $V \approx (3.14)(8)^2(5)$

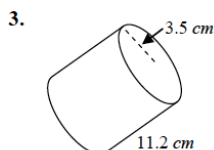
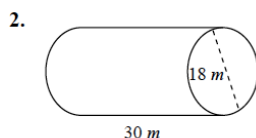
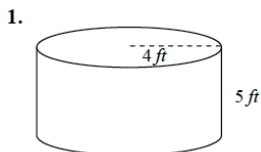
Find the value of the power.  $V \approx (3.14)(64)(5)$

Multiply.  $V \approx 1004.8$

The volume of the cylinder is about 1,004.8 cubic meters.

## L3-K Practice Problems:

Find the volume of each cylinder. Use 3.14 for  $\pi$ . Round answers to the nearest hundredth, if needed.



4. Sumo-Sumo Gas Company has a tanker-truck for hauling gasoline. The cylindrical tank has a diameter of 5.4 meters. The tank is 16 meters long. How many cubic meters of gas can the truck haul?

End Day 1

Day 2



## Good to Know!

The missing dimension of a cylinder can be found if the volume and one other measurement is provided.

1. Substitute all known values into the volume formula.
2. Use inverse operations to find the missing value.

## Example 2

The volume of cylindrical water cooler is 1,695.6 cubic inches. The cooler has a radius of 6 inches. Find the height of the cooler. Use 3.14 as an approximation for  $\pi$ .

Write the needed volume formula.

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

Substitute known values.

$$(1695.6) \approx (3.14)(6)^2 h$$

Find the value of the power.

$$1695.6 \approx (3.14)(36)h$$

Multiply.

$$\frac{1695.6}{113.04} \approx \frac{113.04h}{113.04}$$

Divide.

$$15 \approx h$$

The height of the water cooler is about 15 inches.

## Example 3

Find the radius of a cylinder with an approximate volume of 3,014.4 cubic inches and a height of 15 inches. Use 3.14 as an approximation for  $\pi$ .

Write the volume formula for a cylinder.

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

Substitute known values.

$$(3014.4) \approx (3.14)(r^2)(15)$$

Multiply.

$$\frac{3014.4}{47.1} \approx \frac{47.1r^2}{47.1}$$

Divide both sides of the equation by 47.1.

$$64 \approx r^2$$

Square root both sides of the equation.

$$\sqrt{64} = \sqrt{r^2}$$

Simplify.

$$8 = r$$

The radius of the cylinder is about 8 inches.

Only the positive root is appropriate in this situation.

## L3-K Practice Problems:

5. Rita has a circular hot tub. The hot tub has a circumference of 25.12 feet. It is 3.5 feet deep.

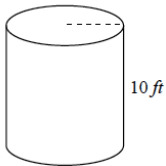
a. Find the radius of the hot tub. Use 3.14 for  $\pi$ .

b. How much water can the hot tub hold?

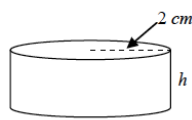
c. The hot tub manual recommends filling the hot tub to 80% of its full capacity. How much water should be in the hot tub in order to follow the recommendation?

Find each missing measure. Use 3.14 for  $\pi$ .

6. Volume =  $282.6 \text{ ft}^3$   
Radius = \_\_\_\_\_



7.  $V = 12.56 \text{ cm}^3$   
Height = \_\_\_\_\_



8. A cylindrical bucket can hold approximately  $301.44 \text{ in}^3$ . The height of the bucket is about 6 inches. What is the diameter of the bucket to the nearest inch?

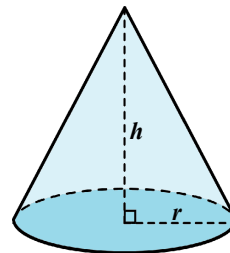
End Day 2

## Day 3: Lesson 3-L

## Volume of Cones

Target: Find the volume of cones. Solve real-world problems involving cones.

The volume of a cone is equal to one-third of the product of the area of the base ( $B$ ) and the height ( $h$ ).

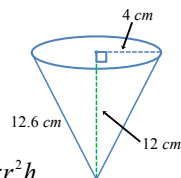


$$V = \frac{1}{3} Bh \text{ or } V = \frac{Bh}{3}$$

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

## Example 1

Find the volume of the cone. Use 3.14 as an approximation for  $\pi$ .



Write the volume formula for a cone.

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

Substitute known values.

$$V \approx \frac{1}{3} (3.14) (4)^2 (12)$$

Find the value of the power.

$$V \approx \frac{1}{3} (3.14) (16) (12)$$

Multiply.

$$V \approx 200.96$$

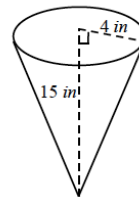
The volume of the cone is about  $200.96 \text{ cm}^3$ .

## Day 3

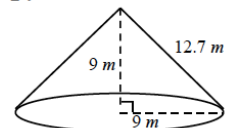
## L3-L Practice Problems:

Find the volume of each cone. Use 3.14 for  $\pi$ .

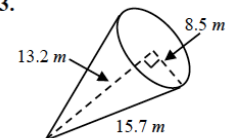
1.



2.



3.



End Day 3

Day 4

## Example 2



Chantel helped with her sister's party. Each child received a party hat full of treats. Each hat had a volume of 65.94 cubic inches. The radius of each hat was 3 inches. About how tall was each party hat?

Write the volume formula for a cone.

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

Substitute all known values for the variables.

$$65.94 \approx \frac{1}{3}(3.14)(3)^2 h$$

Find the value of the power & multiply.

$$\frac{65.94}{9.42} \approx \frac{9.42h}{9.42}$$

Divide both sides of the equation by 9.42.

$$7 \approx h$$

Each party hat was about 7 inches tall.

## Example 3

A cone-shaped popcorn container holds 314 cubic inches of popped corn. The container is 12 inches tall. Find the radius of the conical container. Use 3.14 as an approximation for  $\pi$ .

Write the volume formula for a cone.

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

Substitute all known values for the variables.

$$314 \approx \frac{1}{3}(3.14)r^2(12)$$

Multiply, then divide both sides by 12.56.

$$\frac{314}{12.56} \approx \frac{12.56r^2}{12.56}$$

Square root both sides of the equation.

$$25 \approx r^2$$

$$\sqrt{25} \approx \sqrt{r^2}$$

The radius of the popcorn container is about 5 inches.

$$5 \approx r$$

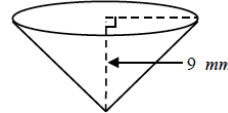
### L3-L Practice Problems:

- A cone has a radius of 3 yards and height of 3.5 yards.
  - Find the volume of the cone.
  - Find the volume of a cylinder with the same radius and height as the cone.
- A snow cone cup is 12 cm tall and has a diameter of 8 cm. Find the volume of flavored ice that can be held inside the snow cone cup.
- A cement truck malfunctioned causing all of the cement to be dumped all at one time. The pile of cement was in the shape of a cone. It had a radius of 12 feet and a height of 2 feet. How much cement spilled?

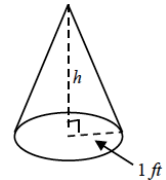
### L3-L Practice Problems:

Find each missing measure. Use 3.14 for  $\pi$ .

- Volume  $\approx 602.88 \text{ mm}^3$   
Radius = \_\_\_\_\_



- Volume =  $15.7 \text{ ft}^3$   
Height of the cone = \_\_\_\_\_



- A conveyor belt dumps gravel into conical piles. Kevin measured the height of one pile of gravel. It was  $10\frac{1}{2}$  feet tall. The volume of the pile was 77 cubic feet. Find the diameter of the pile of gravel. Round the answer to the nearest hundredth.

End Day 4

## Answer Page

gravel pile is about 5.3 feet.

- The diameter of the
- Height = 15 ft
- Radius = 8 mm
- 301.44 ft<sup>3</sup>
- 200.96 cm<sup>3</sup>
- 98.91 yd<sup>3</sup>
- 32.97 yd<sup>3</sup>

- The diameter of the bucket is 8 inches.
- The diameter of the
- Height = 1 cm
- Radius = 3 ft
- 140.672 ft<sup>3</sup>
- 175.84 ft<sup>3</sup>
- radius = 4 ft

- 251.2 ft<sup>3</sup>
- 7,630.2 m<sup>3</sup>
- 430.81 cm<sup>3</sup>
- 366.25 m<sup>3</sup>

- 251.2 m<sup>3</sup>
- 763.02 m<sup>3</sup>
- 998.206 m<sup>3</sup>

**MATH 8: FINAL SLIDE for this week!**