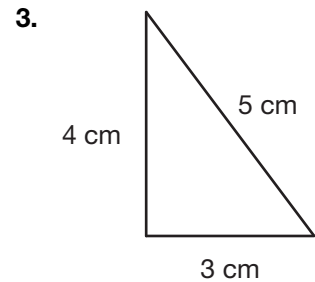
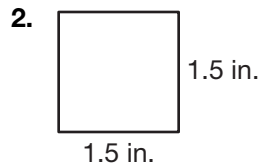
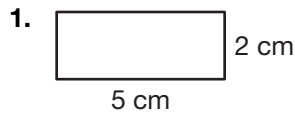


Assignment

Name _____ Date _____

Backyard Barbecue Introduction to Volume and Surface Area

Find the area of each figure.



2

Read the problem scenario below. Use the scenario to answer Questions 4 through 9.

You ask your landscaper to add a storage box in the shape of a rectangular prism to hold the barbecue supplies to your patio design.

4. How many measurements will you need to build your box?
5. What are the measurements you will need?
6. You tell your landscaper that you want the storage box to have a rectangular base with a width of 42 inches and a length of 6 feet. It will be 3 feet high. What should your units be in your calculation? Use complete sentences to explain your answer.
7. Find the volume of your box. Explain your answer by using a complete sentence.

2

8. You decide to cover the inside walls, top and floor of your box with 12 inch by 12 inch tiles to finish it. Tiles are sold 20 to a box. How many boxes will you need to purchase? Explain your work in complete sentences.

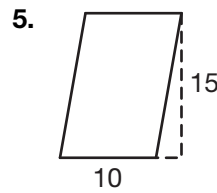
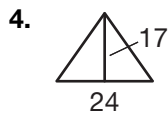
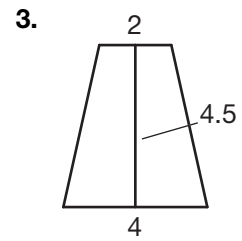
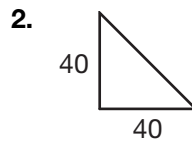
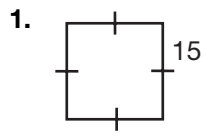
9. If a cube has a volume of 512 mm^3 , what would be the length of each edge?

Assignment

Name _____ Date _____

Turn Up the Volume Volume of a Prism

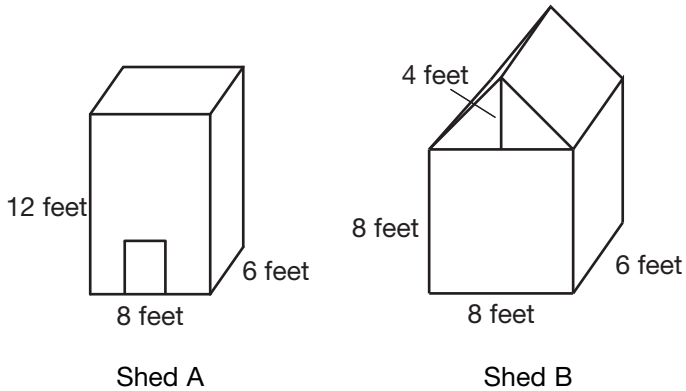
Find the area of each of the following figures. All measures are in centimeters.



2

Read the problem scenario below. Use the scenario to answer Questions 6 through 8.

You decide you want to continue your backyard improvements and decide to build a storage shed for all of your lawn equipment. You come up with a few different designs. You want to build the shed that gives you the most space inside.

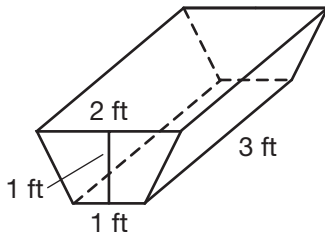


6. Find the volume of the Shed A. Explain your work in complete sentences.

7. Find the volume of Shed B. Explain your work in complete sentences.

8. Which shed should you build? Explain your answer using complete sentences.

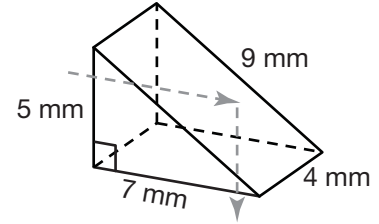
9. Your last project for the patio will be the flower box. How much soil will you need to order to fill the flower box?



Assignment

Name _____ Date _____

Bending Light Beams Surface Area of a Prism



2

1. What is the height of the prism?
2. What is the area of the base of the prism?
3. Write an expression for the total area of the bases. Then find this area.
4. Find the area of the lateral faces.
5. Write an expression to find the total surface area of the prism. Then find the surface area. Use a complete sentence to explain your answer.

Read the problem scenario below. Use the scenario to answer Questions 6 through 9.

You are to design a new rectangular box that is to have a volume of 24 cubic inches.

6. What are the different dimensions your box could be? Find the surface area of each box.

Length (inches)	Width (inches)	Height (inches)	Volume (cubic inches)	Surface Area (square inches)

-
7. Describe the box with the most surface area.

 8. Describe the box with the least surface area.

 9. Why do you think a manufacturer might be interested in these differences?

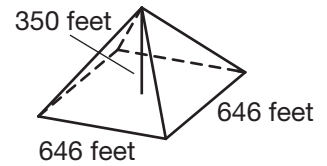
2

Assignment

Name _____ Date _____

Modern Day Pyramids Volume of a Pyramid

The Luxor Hotel in Las Vegas is a replica of Khafre Pyramid at Giza, one of the seven wonders of the world. The Luxor's base measures 646 feet by 646 feet, and it is 350 feet tall.



1. Find the total volume of the Luxor Hotel. Explain your work in complete sentences.

2. The Khafre Pyramid has a volume of 2,226,450 cubic meters. If its base is 215 meters by 215 meters, what is its height?

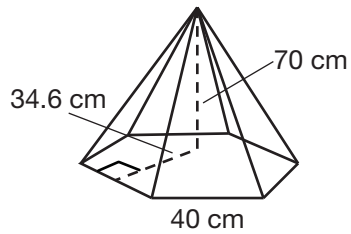
3. Find the volume of the combined solid figure, where the base is a cube with an edge of 10 feet and the height of the roof is also 10 feet.

2

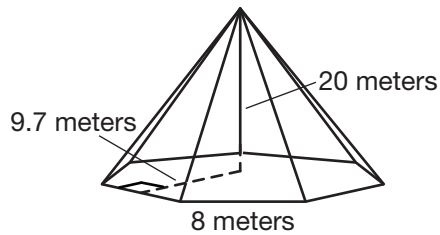
- If the bases of 2 pyramids have the same area and they are the same height, are the pyramids congruent? Use complete sentences in your answer.
- What have you noticed about the faces of regular pyramids? (The examples you have seen on the previous page are all regular pyramids.)

Find the volume of each pyramid.

6.



7.



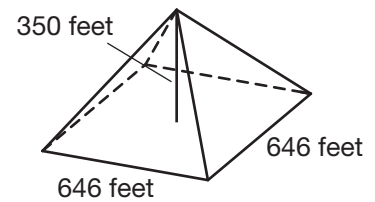
Assignment

Name _____ Date _____

Soundproofing Surface Area of a Pyramid

In the last section, you found the volume of the Luxor Hotel. Find the total surface area of the hotel. For Questions 1 through 3, include the surface area of the base. Round your answers to the nearest tenth if necessary.

1. Find the slant height of the lateral face.

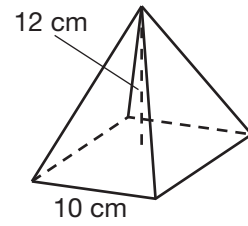


2. Find the area of the base.

3. Find the total surface area of the pyramid.

2

The figure at the right is a right pyramid with a square base.



4. Find the slant height ℓ .

5. Find the lateral area.

2

6. Find the total surface area.

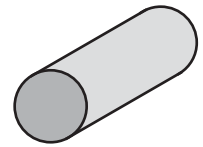
7. Find the volume of the pyramid.

Assignment

Name _____ Date _____

Making Concrete Stronger Volume and Surface Area of a Cylinder

Read the problem scenario below. Use the scenario to answer Questions 1 through 3.

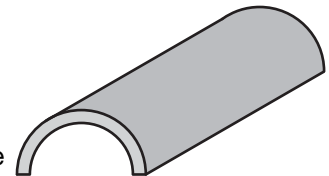


Quality control is very important when working with concrete. Samples are taken from each batch of concrete and tested. The samples are cylinders that are 18 inches high and 8 inches in diameter. Use 3.14 for π and round your answer to the nearest tenth if necessary.

1. Find the area of the base of the sample.
2. Find the volume of the sample.
3. Find the surface area of the sample.

Read the problem scenario below. Use the scenario to answer Questions 4 and 5.

A tunnel is to be built. The opening of the tunnel will be a semi circle with an opening 30 feet high and will be 1200 feet long. What is the approximate volume of dirt to be displaced in order to build the tunnel? Use 3.14 for π and round your answers to the nearest tenth if necessary.



4. Find the area of the base.
5. Find the volume of the dirt. Then find the approximate volume of dirt to be displaced to build the tunnel.

-
6. Your municipality is replacing the storage tanks in the community. In which plan is the total capacity greater?

Plan 1: Install one cylindrical tank that is 150 feet tall and has a radius of 50 feet.

Plan 2: Install two cylindrical tanks that are 75 feet tall. One cylindrical tank has a radius of 30 feet and one tank has a radius of 25 feet.

Use 3.14 for π and round your answers to the nearest tenth if necessary. Use a complete sentence in your answer.

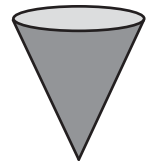
Assignment

Name _____ Date _____

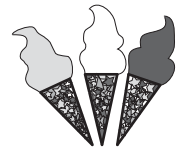
Sand Piles Volume and Surface Area of a Cone

Calculate the volume of each cone. Use 3.14 for π and round your answers to the nearest hundredth if necessary.

1. A traffic cone has a radius of 9 inches. The height of the cone is 30 inches.
2. The base of a funnel used to change the oil in a car has a circumference that is 60 centimeters. The height of this funnel is 25 centimeters.

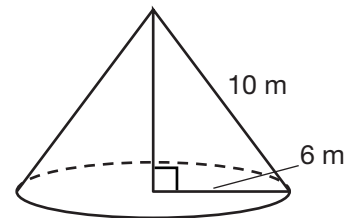


3. A mini ice cream cone has a diameter of 3.5 centimeters and a height of 6 centimeters. Calculate its volume.



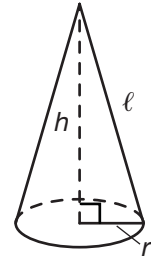
Use the cone at the right to answer Questions 4 through 6.

4. Find the height of the given cone. Show your work. Use complete sentences in your answer.
5. Find the lateral area of the cone. Use 3.14 for π .



6. Find the total surface area of the cone. Use 3.14 for π .

Use the figure at the right to answer Questions 7 and 8. Use 3.14 for π and round your answers to the nearest hundredth if necessary.



7. $h =$

$r = 7$ units

$l = 25$ units

Lateral Area =

Total Surface Area =

Volume =

8. $h = 5$ units

$r = 12$ units

$l =$

Lateral Area =

Total Surface Area =

Volume =

2

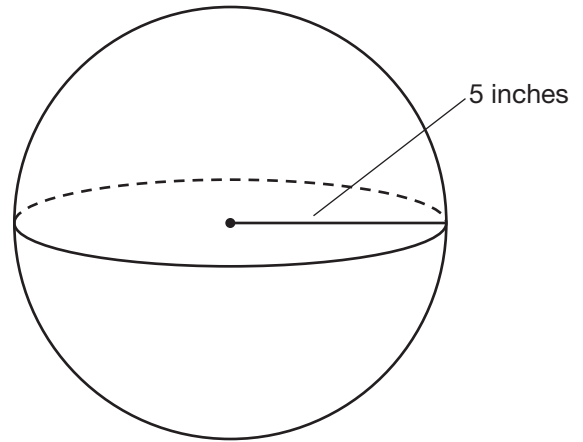
Assignment

Name _____ Date _____

Ball Bearings and Motion Volume and Surface Area of a Sphere

For each Question, use 3.14 for π and round your answer to the nearest hundredth if necessary.

1. Find the surface area of the given ball.



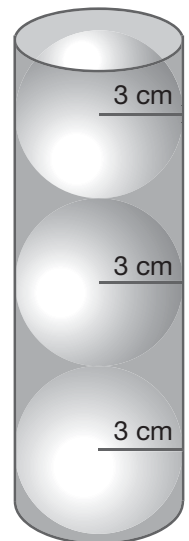
2. Find the volume of the ball.

3. A can holds 3 tennis balls as shown in the figure. The radius of each tennis ball is 3 centimeters.

a. What is the volume of a single tennis ball?

b. What is the total volume all 3 tennis balls take up?

c. Can you determine the height of the can? Use complete sentences to explain your answer.



- d. What is the volume of the can? Use 3.14 for π .
- e. What is the volume of the can not taken up by the tennis balls?
4. A can holds 3 tennis balls as shown in the figure. The radius of each tennis ball is r centimeters.
- a. What is the volume of each tennis ball? Use 3.14 for π and round your answer to the nearest hundredth if necessary.
- b. What is the total volume all 3 tennis balls take up?
- c. Can you determine the height of the can? Use complete sentences to explain your answer.
- d. What is the volume of the can? Use 3.14 for π .
- e. What is the volume of the can not taken up by the tennis balls?
5. A new umbrella design was created in the shape of a hemisphere with a special plastic coating on the material to better repel water. The diameter of the umbrella is about 1 yard. Because the umbrella is still in its beginning stages, the manufacturer only produces 200 of them to be sold in select markets. How much of the specially coated material must be produced for the manufacture of these umbrellas?

