EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

Students begin the final topic of Module 3 by discovering **pi** and how this constant value is used when calculating the **circumference** and area of a **circle**. As students become more comfortable working with circles, they apply their knowledge to calculate the areas of figures composed of circles, semicircles, quarter circles, and polygons. Later in the topic, students work with three-dimensional figures, extending the work of previous grades to calculate **volume** and **surface area** in various contexts. Students also apply their knowledge of equations to determine various dimensions of two- and three-dimensional figures in real-world situations.

You can expect to see homework that asks your child to do the following:

- Calculate circumference and area for different circular regions and regions composed of circles and polygons.
- Find the areas of shapes presented on a coordinate plane.
- Using **nets**, find the surface areas of three-dimensional figures.
- Draw the three-dimensional figure represented by a given net.
- Calculate the volume of a three-dimensional figure.

SAMPLE PROBLEMS *(From Lessons 20 and 22)*

1. Find the area of the figure formed by a rectangle with a semicircle on top (shown below). Use 3.14 for π.

The dimensions of the rectangle are 4 m by 5.5 m, and the radius of the semicircle is 2 m.

Area of the Rectangle:

$A = lw$

$A = (5.5 \text{ m})(4 \text{ m})$

$A = 22 \text{ m}^2$

Area of the Semicircle:

$A = \frac{1}{2}\pi r^2$

$A = \frac{1}{2}(3.14)(2 \text{ m})^2$

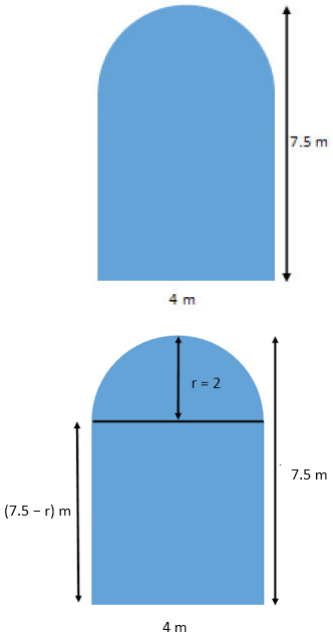
$A = 6.28 \text{ m}^2$

Area of the Entire Figure:

$A = 22 \text{ m}^2 + 6.28 \text{ m}^2$

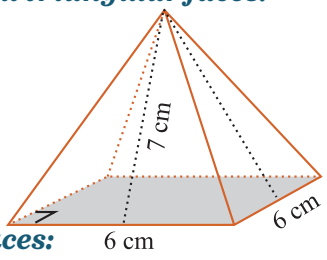
$A = 28.28 \text{ m}^2$

The area of the figure is 28.28 m².



2. The pyramid in the picture below has a square base, and its lateral faces are triangles that are exact copies of one another. Find the surface area of the pyramid.

The surface area of the pyramid consists of one square base and four lateral triangular faces.



Area of the Square Base:

$A = s^2$

$A = (6 \text{ cm})^2$

$A = 36 \text{ cm}^2$

Area of the Four Lateral Faces:

$A = 4\left(\frac{1}{2}bh\right)$

$A = 4\left(\frac{1}{2} \cdot 6 \text{ cm} \cdot 7 \text{ cm}\right)$

$A = 84 \text{ cm}^2$

Surface Area of the Pyramid:

$SA = 36 \text{ cm}^2 + 84 \text{ cm}^2$

$SA = 120 \text{ cm}^2$

The surface area of the pyramid is 120 cm².

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

You can help at home in many ways. Here is a tip to help you get started.

- Have your child identify various household items that represent circular regions (e.g., a round clock). Using a ruler, your child can measure the **diameter** or the **radius** of each item and then calculate both circumference and area. Your child can complete this same activity with rectangular prisms (e.g., a cereal box), measuring dimensions of each item to calculate the surface area and volume.

TERMS

Circle: The set of all points in the plane whose distance from the point C, the center, is equal to r, the radius. (Figure 1 and Figure 2)

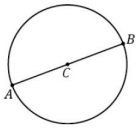


Figure 1

Circumference: The distance around a circle. The formula to calculate the circumference is $C = \pi d$, where C represents the circumference of the circle and d represents the diameter.

Diameter: The length across a circle from one side to the other passing through the center. For example, in Figure 1, the length of segment AB is the diameter of circle C.

Pi: The value of the ratio of a circle's circumference to its diameter, that is, $\pi = \dfrac{circumference}{diameter}$.

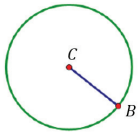


Figure 2

Radius: The length of any line segment connecting the center point of a circle to any point that lies on the circle. For example, in Figure 2, the length of segment CB is the radius of circle C.

Surface area: The total area that the surface (outside) of a three-dimensional object occupies, measured in square units.

Volume: The amount of space enclosed inside a three-dimensional object, such as a cube or a prism, measured in cubic units.

MODELS

Net for Three-Dimensional Figure