

# TOPIC 7

## Solve Area, Surface Area, and Volume Problems

In this topic, students begin by using formulas to find the area of different polygons. They then progress to learning about *nets*, which are patterns for three-dimensional figures, and the surface areas of those figures. The topic ends with a lesson on volume.

---

## CONNECT THE MATH

This topic focuses on the geometric figures. Students work with formulas to find the surface area and volume of *prisms* and *pyramids* with square or rectangular bases.

Look for prisms and pyramids in the real world—some examples are dice, shipping boxes, sheds, apartment buildings, hotels, and clock towers. Although most large buildings are shaped like prisms, many incorporate pyramidal elements.

Challenge your student to find as many of these objects as they can each day. Discuss reasons why knowing the surface area or volume might be useful.





---

## LESSON 7-1

### Find Areas of Parallelograms and Rhombuses

The formula for the area of a parallelogram,  $A = bh$ , can be derived from the formula for the area of a rectangle.

---

#### LESSON OBJECTIVES

- Use a formula to find the areas of parallelograms and rhombuses.
- Find the base or height of a parallelogram or rhombus when the area and the height or base are known.

---

#### HOW CAN YOU HELP WITH HOMEWORK

##### Review Lesson Content

Watch and share these video tutorials with your student:

- [What is the Formula for the Area of a Parallelogram?](#)
- [How Do You Find the Area of a Parallelogram?](#)

You can use these search terms and phrases to help your student find additional help online:

- area of parallelogram
- area of a rhombus
- find the base and height of a parallelogram

---

## LESSON 7-2

### Solve Triangle Area Problems

The formula for the area of a triangle,  $A = \frac{1}{2}bh$ , can be derived from the formula for the area of a parallelogram.

---

#### LESSON OBJECTIVES

- Find the areas of triangles, including right triangles.
  - Find the corresponding base or height of a triangle.
- 

#### HOW CAN YOU HELP WITH HOMEWORK

##### Review Lesson Content

Watch and share these video tutorials with your student:

- [What is the Formula for the Area of a Triangle?](#)
- [How Do You Find the Area of a Triangle?](#)

You can use these search terms and phrases to help your student find additional help online:

- finding the area of a triangle
  - formula for area of a triangle
- 

## LESSON 7-3

### Find Areas of Trapezoids and Kites

The areas of trapezoids and kites can be found by decomposing the trapezoids and

kites into shapes for which the area formulas are known.

---

## LESSON OBJECTIVES

- Find the areas of trapezoids.
  - Find the areas of kites.
- 

## HOW CAN YOU HELP WITH HOMEWORK

### Review Lesson Content

Watch and share these video tutorials with your student:

- [What is the Formula for the Area of a Trapezoid?](#)
- [How Do You Find the Area of a Trapezoid?](#)

### Review Key Vocabulary

Review key vocabulary from this lesson in your student's glossary:

- [kite](#)

You can use these search terms and phrases to help your student find additional help online:

- finding the area of a triangle
  - identifying a corresponding base and height of a triangle
- 

## LESSON 7-4

### Find Areas of Polygons

The areas of polygons, including polygons on the coordinate plane, can be found by composing or decomposing the polygons into shapes for which the area formulas are known.

---

## LESSON OBJECTIVES

- Find the areas of polygons by composing and decomposing shapes, including polygons on the coordinate plane.

---

## HOW CAN YOU HELP WITH HOMEWORK

### Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Find the Area of a Composite Figure?](#)
- [How Do You Find the Area of an Irregular Figure in the Coordinate Plane?](#)

You can use these search terms and phrases to help your student find additional help online:

- decomposing a polygon
- finding the area of a composite figure
- finding area in the coordinate plane

---

## LESSON 7-5

### Represent Solid Figures Using Nets

A solid figure (*polyhedron*) can be classified based on the number of bases, the shape of the base(s), and the shape of the other faces. A net can be used to represent a polyhedron.

---

## LESSON OBJECTIVES

- Classify solid figures.
  - Identify solid figures from nets.
  - Draw nets of solid figures.
- 

## HOW CAN YOU HELP WITH HOMEWORK

### Review Lesson Content

Watch and share these video tutorials with your student:

- [What Is a Net?](#)
- [How Do You Identify a Three-Dimensional Figure from a Net?](#)

### Review Key Vocabulary

Review key vocabulary from this lesson in your student's glossary:

- [base of a prism](#)
- [base of a pyramid](#)
- [edge of a three-dimensional figure](#)
- [face of a three-dimensional figure](#)
- [net](#)
- [polyhedron](#)
- [prism](#)
- [pyramid](#)
- [vertex of a three-dimensional figure](#)

You can use these search terms and phrases to help your student find additional help online:

- classifying solid figures
- identifying a solid from a net
- drawing a net



## LESSON 7-6

### Find Surface Areas of Prisms

The surface area of a prism is the sum of the areas of its faces.

---

#### LESSON OBJECTIVES

- Find the surface area of rectangular prisms, including cubes.
- 

#### HOW CAN YOU HELP WITH HOMEWORK

##### Review Lesson Content

Watch and share these video tutorials with your student:

- [What Is the Formula for the Surface Area of a Prism?](#)
- [How Do You Find the Surface Area of a Rectangular Prism Using a Net?](#)

You can use these search terms and phrases to help your student find additional help online:

- using the net of a prism to find surface area
  - finding surface area of a cube
  - finding surface area of a prism
- 

## LESSON 7-7

### Find Surface Areas of Pyramids

The surface area of a pyramid is the sum of the areas of its faces.

---

#### LESSON OBJECTIVES

- Find the surface areas of square and triangular pyramids.
- 

## HOW CAN YOU HELP WITH HOMEWORK

### Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Find the Lateral and Surface Areas of a Regular Pyramid?](#)
- [What Is the Formula for the Surface Area of a Regular Pyramid?](#)

You can use these search terms and phrases to help your student find additional help online:

- using the net of a pyramid to find surface area
  - finding surface area of a square pyramid
  - finding surface area of a rectangular pyramid
- 

## LESSON 7-8

### Find Volume with Fractional Edge Lengths

Unit cubes or formulas can be used to find the volume of rectangular prisms and cubes.

---

### LESSON OBJECTIVES

- Use cubes and a formula to find the volume of a rectangular prism or a cube with fractional edge lengths.
- 

## HOW CAN YOU HELP WITH HOMEWORK

### Review Lesson Content



Watch and share these video tutorials with your student:

- [How Do You Find the Volume of a Rectangular Prism?](#)
- [What Is the Formula for the Volume of a Rectangular Prism?](#)

You can use these search terms and phrases to help your student find additional help online:

- finding the volume of a prism with fractional edge lengths
- using the volume of a prism to find a missing edge length