

Parent Newsletter

Chapter 4: Areas of Polygons

Standards

Common Core:

6.G.1: Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

6.G.3: Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Students will...

Find areas of parallelograms.

Find areas of triangles.

Find areas of trapezoids.

Find areas of composite figures.

Draw polygons in the coordinate plane.

Find distances in the coordinate plane.

Solve real-life problems.

Key Terms

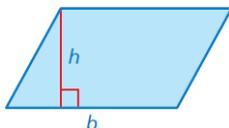
A **polygon** is a closed figure in a plane that is made up of three or more line segments that intersect only at their endpoints.

A **composite figure** is made up of triangles, squares, rectangles, and other two-dimensional figures.

Key Ideas

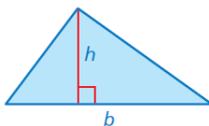
Area of a Parallelogram

- The area A of a parallelogram is the product of its base b and its height h .
- $A = bh$



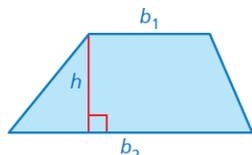
Area of a Triangle

- The area A of a triangle is one-half the product of its base b and its height h .
- $A = \frac{1}{2}bh$



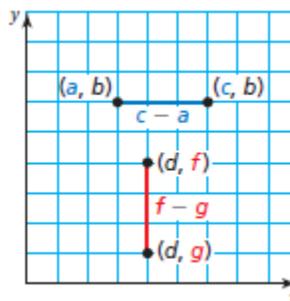
Area of a Trapezoid

- The area A of a trapezoid is one-half the product of its height h and the sum of its bases b_1 and b_2 .
- $A = \frac{1}{2}h(b_1 + b_2)$



Finding Distances in the First Quadrant

- You can find the length of a horizontal or vertical line segment in a coordinate plane by using the coordinates of the endpoints.
 - When the x -coordinates are the same, the vertical distance between the points is the difference of the y -coordinates.
 - When the y -coordinates are the same, the horizontal distance between the points is the difference of the x -coordinates.
- Be sure to subtract the lesser coordinate from the greater coordinate.



Reference Tools

A **Four Square** can be used to organize information about a topic. Write the topic in the middle of the four square. Then write concepts related to the topic in the four squares surrounding the topic. Any concept related to the topic can be used. Encourage your student to include concepts that will help them learn the topic. They can place their four squares on note cards to use as a quick study reference.

Words

The area A of a parallelogram is the product of its base b and its height h .

Algebra

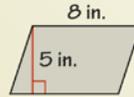
$$A = bh$$

Area of a parallelogram

Example

$$\begin{aligned} A &= bh \\ &= 8(5) \\ &= 40 \end{aligned}$$

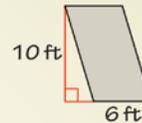
The area of the parallelogram is 40 square inches.



Example

$$\begin{aligned} A &= bh \\ &= 6(10) \\ &= 60 \end{aligned}$$

The area of the parallelogram is 60 square feet.



Quick Review

- The *height* of a parallelogram is the perpendicular distance from a base to the opposite side.
- The height of a parallelogram is NOT a side of the parallelogram, unless the figure is a rectangle or square.
- The *base* of a triangle can be any of its sides and the *height* of a triangle is the perpendicular distance from the base to the opposite vertex.
- The *height* of a trapezoid is the perpendicular distance between the parallel bases.

Games

- Math Card War
- Pick Your Polygon

These are available online in the *Game Closet* at www.bigideasmath.com.

Essential Questions

How can you derive a formula for the area of a parallelogram?

How can you derive a formula for the area of a triangle?

How can you derive a formula for the area of a trapezoid?

How can you find the lengths of line segments in a coordinate plane?

What's the Point?

The ability to find areas of polygons is very useful in real life for events like carpeting a room or finding the amount of material needed to build a bookshelf. Have your student figure out how many square feet of carpet they would need to buy to carpet their room.

The STEM Videos available online show ways to use mathematics in real-life situations. The Chapter 4: Golf Course Maintenance STEM Video is available online at www.bigideasmath.com.

