

TOPIC 5

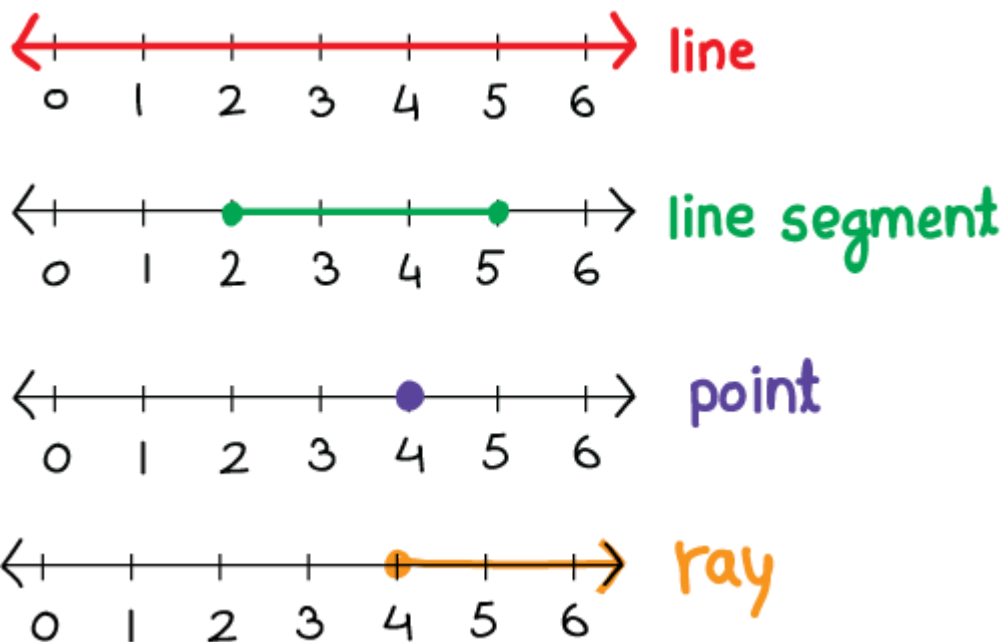
Quadrilaterals, Area, and Perimeter

OVERVIEW

Topic 5 focuses on attributes of two-dimensional figures, including points, lines, and quadrilaterals and understanding the concepts of area and perimeter.

QUADRILATERALS

Basic Geometric Figures Your child will define point, line, line segment, and ray and classify lines as parallel, intersecting, or perpendicular.



In these pictures of streets, the first picture shows parallel streets. The second picture shows intersecting streets. The third picture shows streets that intersect to form square angles, so they are perpendicular streets.



Quadrilaterals Your child will define and identify quadrilaterals, including parallelograms, rectangles, rhombuses, squares, and trapezoids. Knowing the definitions will help your child compare, classify, and draw quadrilaterals.

Parallelogram



Rectangle

A rectangle is a special parallelogram.



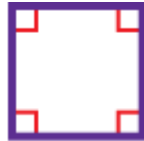
Rhombus

A rhombus is a special parallelogram.



Square

A square is a special parallelogram.



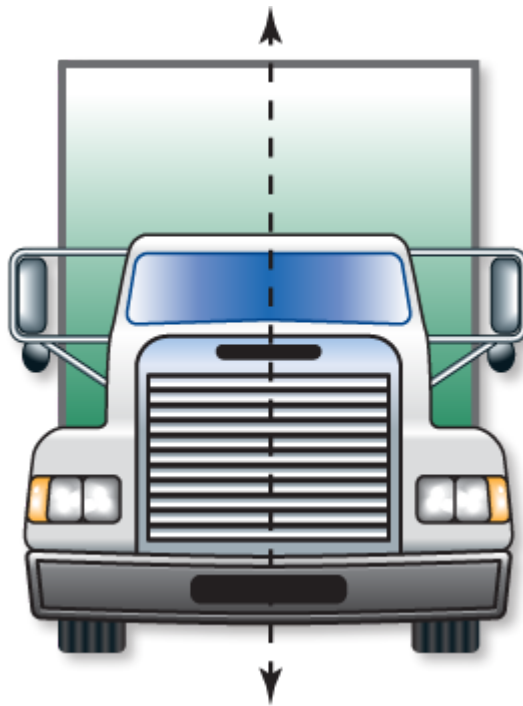
Trapezoid

A parallelogram is a special trapezoid.

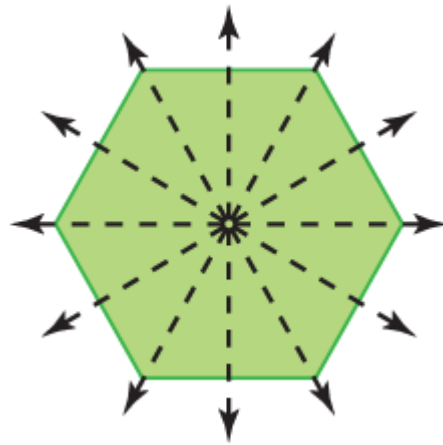


Symmetry Your child will apply understanding of geometric figures to recognize and draw lines of symmetry. A line of symmetry divides a figure into two parts that are mirror images of each other. If a figure can be folded along a line of symmetry to form two matching parts, it is said to be line symmetric.

A figure may have one line of symmetry.



Some figures have many lines of symmetry.



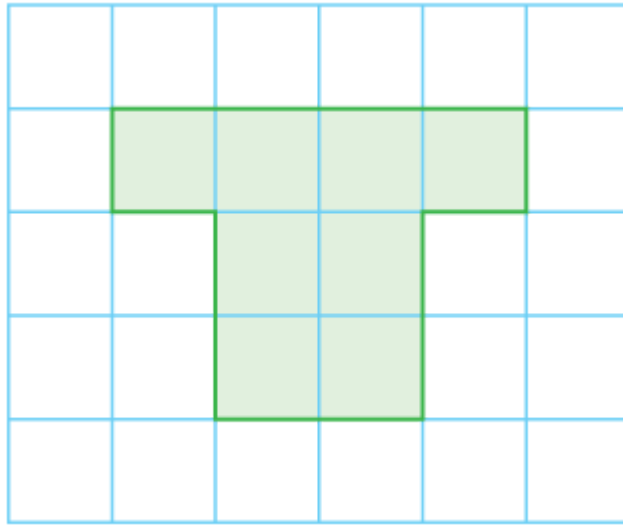
Some figures have no lines of symmetry. This figure is not line symmetric.



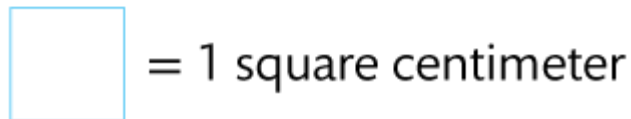
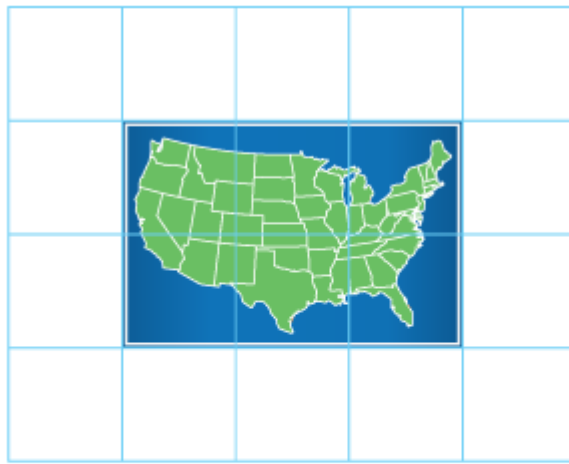
AREA

Unit Squares Your child will learn that the number of unit squares needed to cover a region with no gaps and no overlaps is a measure of the region's area. Your child will count unit squares to find the areas of a wide variety of figures.

Each square on the grid is 1 unit square. The figure covers 8 unit squares. So, the area of the figure is 8 unit squares.



Counting Unit Squares Your child will begin using square inches, square feet, square centimeters, and square meters to find the areas of squares and rectangles. The area of the sticker is 6 square centimeters.

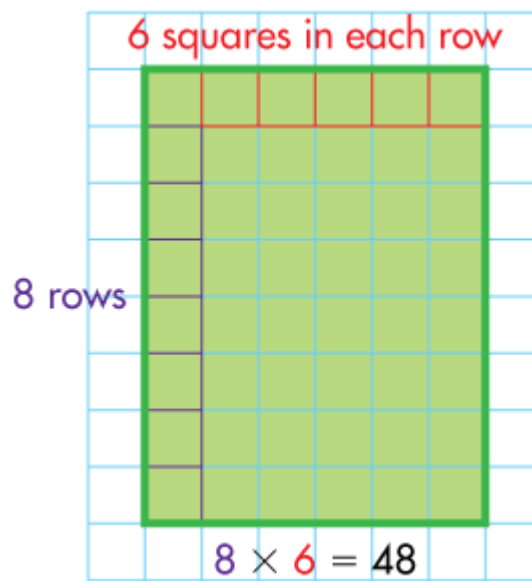


Multiply to Find Area Your child will learn that multiplying the side lengths of a rectangular figure results in the same area as counting unit squares to find the area.

Your child can find the area of this figure by counting squares. There are 48 unit squares.

Your child can also multiply the lengths of the two sides.

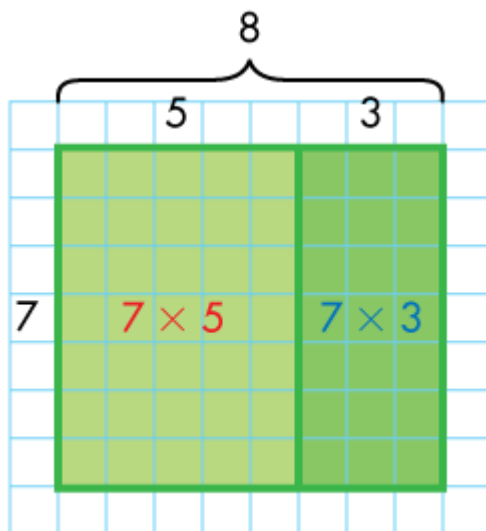
$$8 \times 6 = 48 \text{ unit squares}$$



Represent the Distributive Property Your child will use area models to represent the Distributive Property. This is similar to the way your child used arrays to learn new

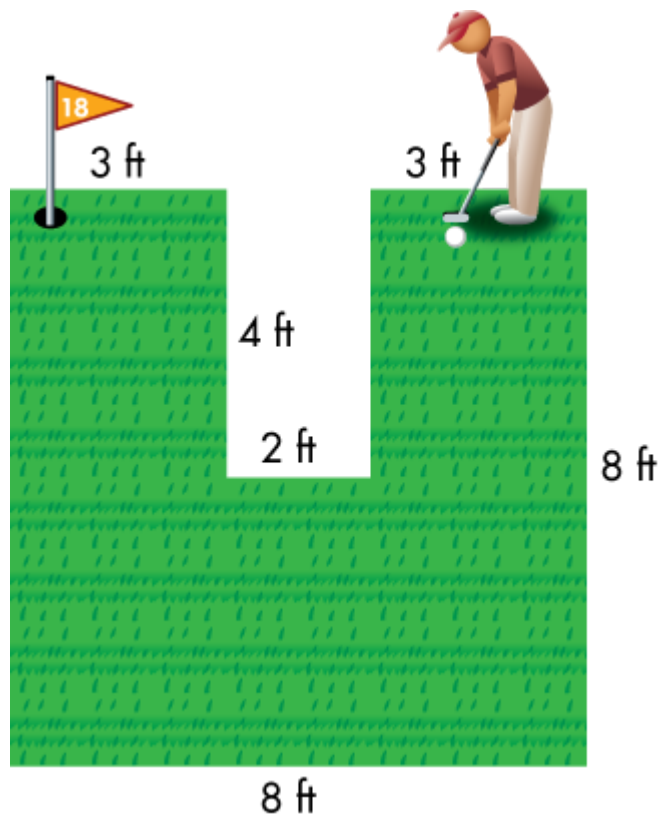
multiplication facts.

The area of this rectangle can be found by separating the 8-unit width into two parts. After finding the area of each part, the two areas can be added together to find the total area.

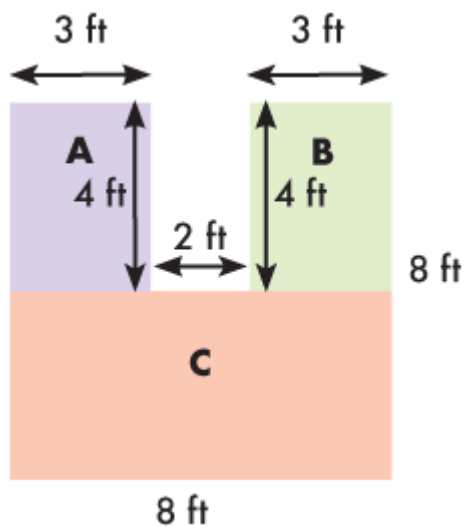


Decompose Figures Your child will learn that the area of an irregular figure can be found by breaking apart the figure into rectangular parts, finding the area of each part, and then adding the areas of the parts.

To find the area of the putting green, break the irregular figure into rectangles.



Find the area of each rectangle. Then, add the areas to find the area of the putting green.



Rectangle A = $3 \times 4 = 12$ square feet

Rectangle B = $3 \times 4 = 12$ square feet

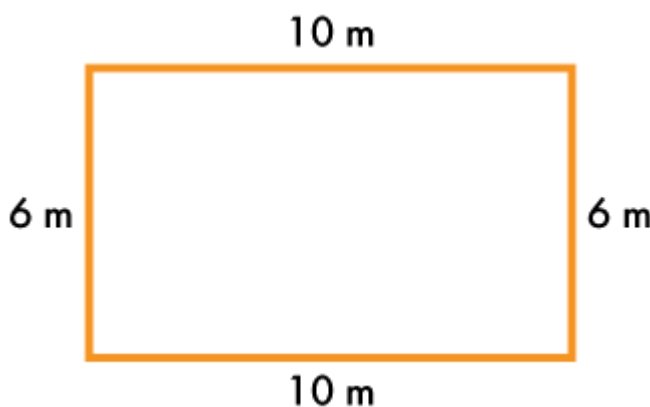
Rectangle C = $8 \times 4 = 32$ square feet

$12 + 12 + 32 = 56$

The area of the putting green is 56 square feet.

PERIMETER

Perimeter of Rectangles Your child will learn that perimeter is the distance around a figure and that the perimeter of rectangles can be found by adding side lengths or by using a formula.



Perimeter equals length plus length plus width plus width: $10 + 10 + 6 + 6$. The perimeter of the rectangle is 32 meters.

Problem Solving Your child will solve problems about area and perimeter and make models to solve real-world area and perimeter problems.

CONNECT THE MATH

You can connect the math in this topic to everyday experiences. Look for grids in your environment, such as tiled floors, game boards, or even tablecloths. “Block out” a grid that is no larger than 12 rows and 12 columns and have your child practice counting the unit squares and finding area. If you do projects, such as edging a garden plot or figuring out how much paint to get for a wall, enlist your child’s help in finding perimeter or area using a measuring tool such as a yardstick, meterstick, or measuring tape.

TOPIC 5 LESSONS

Lesson 5-1	<u>Points, Lines, and Rays</u>
Lesson 5-2	<u>Identify Quadrilaterals</u>
Lesson 5-3	<u>Compare and Draw Quadrilaterals</u>
Lesson 5-4	<u>Lines of Symmetry</u>
Lesson 5-5	<u>Cover Regions</u>
Lesson 5-6	<u>Area: Standard Units</u>
Lesson 5-7	<u>Connect Area to Multiplication</u>
Lesson 5-8	<u>Apply Properties: Area and the Distributive Property</u>
Lesson 5-9	<u>Apply Properties: Area of Irregular Figures</u>
Lesson 5-10	<u>Perimeter of Rectangles</u>
Lesson 5-11	<u>Apply Area and Perimeter</u>
Lesson 5-12	MATH THINKING AND REASONING <u>Apply Math to Real-World Contexts</u>