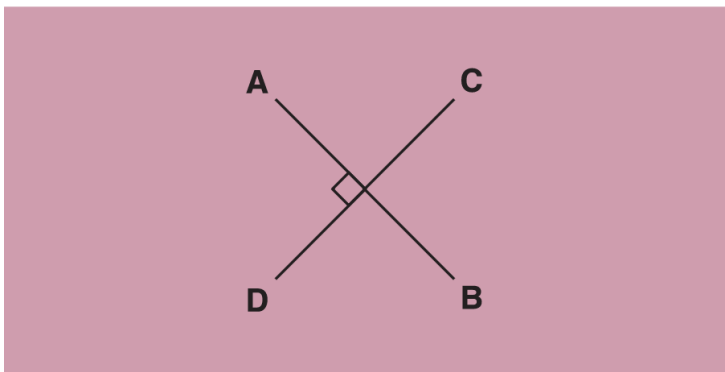


Home Connection

In third grade, students classified triangles and quadrilaterals by the number of equal sides, equal angles, and the presence of right angles. In this chapter students will identify and draw parallel and perpendicular lines. They will use that knowledge to classify quadrilaterals based on the number of parallel sides, as well as the number of equal sides and right angles. Students will also identify and draw lines of symmetry in a figure.

Perpendicular and Parallel Lines

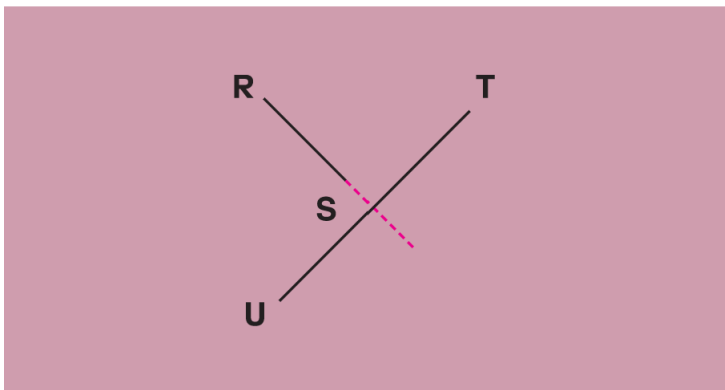
Perpendicular lines are straight lines that intersect at right angles. Right angles in this chapter will be marked with a small square to show that the lines are perpendicular to each other. All four angles formed at the intersection are right angles, but only one is marked.



The symbol for “is perpendicular to” is \perp .

We can write AB is perpendicular to CD using this symbol. $AB \perp CD$

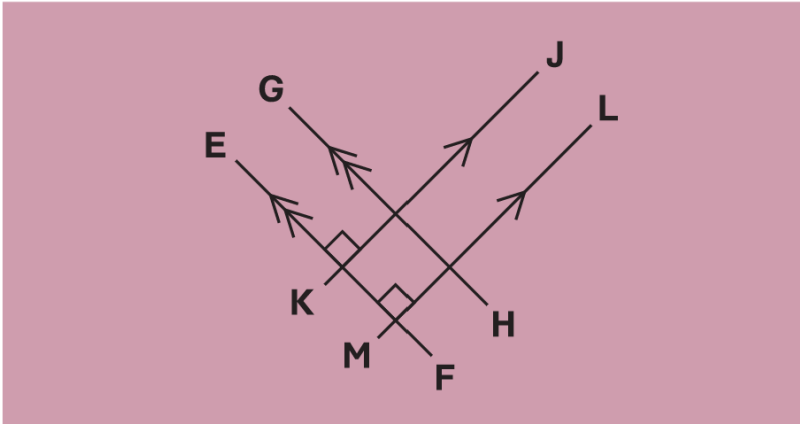
Because lines extend indefinitely, their intersections may not be shown, but they do intersect somewhere. For examples, if we extend RS it will intersect TU at a right angle, thus RS is perpendicular to TU.



Two lines are parallel to each other if they do not intersect. One way to determine if they are parallel is to find out if they are both perpendicular to a third line. This idea is also used to draw a line that is

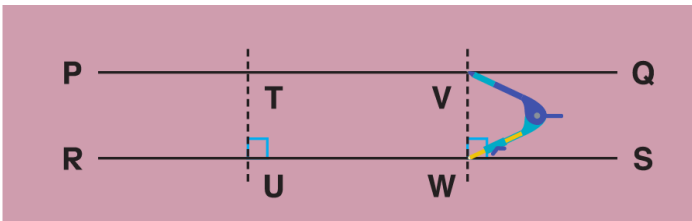
parallel to a given line. Students will learn that perpendicular lines are used to determine parallel lines: two lines that are both perpendicular to the same line are parallel lines.

Parallel lines are marked by arrowheads to show which pairs of lines are parallel. Each set of parallel lines has the same number of arrowheads.



The symbol for “is parallel to” is \parallel . $EF \parallel GH$ means that Line EF is parallel to Line GH.

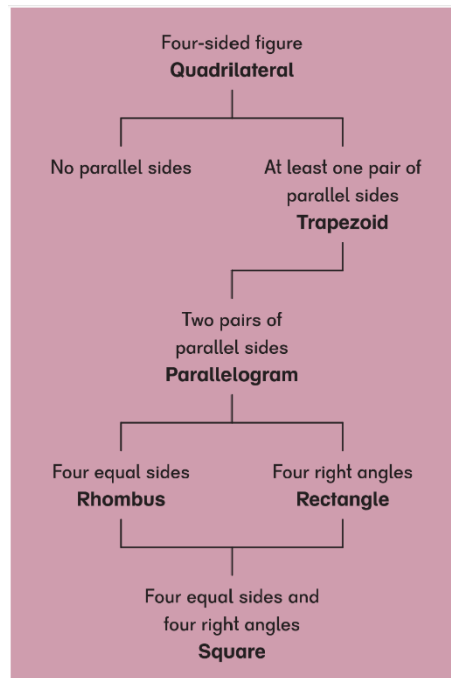
To determine if lines are parallel or perpendicular, students will also use set squares and/ or compasses. Because parallel lines are always the same distance from each other, students can measure the perpendicular distance between the two lines at two different sets of points. If two different sets of points are the same distance apart, the two lines are parallel.



Quadrilaterals

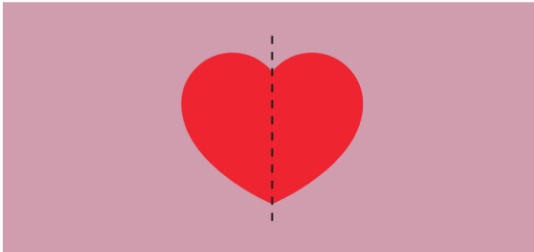
Students will learn to classify quadrilaterals by the number of parallel sides and right angles.

Students will begin to understand the hierarchical relationships in terms of properties of angles and sides.

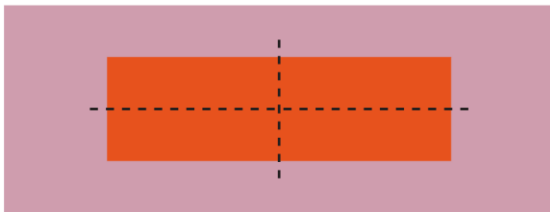


Symmetrical Figures

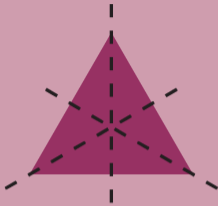
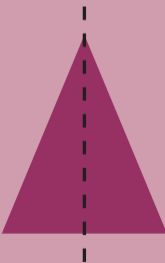
Figures that can be divided into 2 identical halves that reflect each other are symmetrical figures.



Some figures have multiple lines of symmetry:



Students will also be able to identify lines of symmetry of quadrilaterals and of equilateral and isosceles triangles.

<p>An equilateral triangle is a triangle with 3 sides all the same length. It has 3 lines of symmetry.</p>	 An equilateral triangle is shown in a dark purple color. Three dashed lines represent its lines of symmetry: one vertical line from the top vertex to the midpoint of the base, and two diagonal lines from each of the other two vertices to the midpoints of their opposite sides.
<p>An isosceles triangle has 2 sides that are the same length. It has only one line of symmetry.</p>	 An isosceles triangle is shown in a dark purple color. A single vertical dashed line represents its line of symmetry, extending from the top vertex to the midpoint of the base.

What Can We Do At Home?

Grid Symmetry Drawing

Materials:

- 1-2 copies of the grid paper attached to this document
- Pencil or colored pencils (depending on how complicated you want to get)

1. Shade in a shape on the grid paper. You may use just a pencil, or if you want to make it more challenging, use two or three different colors.
2. Draw a dotted line on one end of your shape to indicate the line of symmetry.
3. Have your child create a mirrored image on the other side of the line of symmetry.
4. You can repeat this activity with more intricate shapes and colors as needed.

