Sorting Triangles and Quadrilaterals

GOAL Sort and classify triangles and quadrilaterals by geometric properties related to symmetry, angles, and sides.

You will need
- square dot paper
- a ruler
- scissors
- a transparent mirror
- a protractor

Explore the Math

In a **Venn diagram**, shapes in each circle have a common property. Shapes in the overlap have both properties. Shapes outside the circles have neither property.

? **How can you classify triangles and quadrilaterals by sorting?**

A. Draw and cut out ten triangles on square dot paper for these conditions.
- at least two right triangles, three acute triangles, and two obtuse triangles
- at least two equilateral triangles, two isosceles triangles, and two scalene triangles

B. Sort your triangles for this Venn diagram. How are the triangles in the overlap different from the triangles that are not in either circle?

Exactly two equal angles

Line symmetry
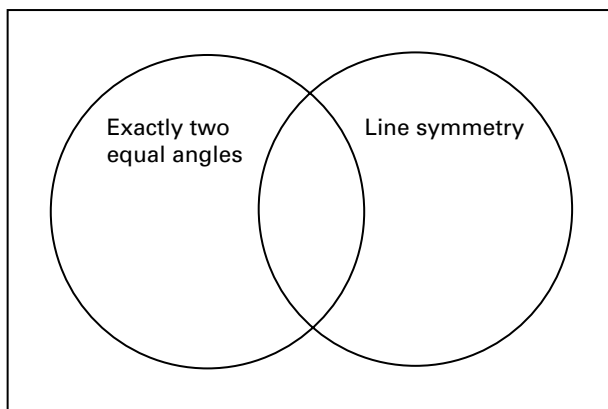
C. Make up your own sorting rules and draw a Venn diagram to repeat step B. Include a sorting rule related to sides.

D. Draw and cut out ten quadrilaterals on square dot paper for these conditions.
- at least two parallelograms, two squares, two rectangles, two rhombi, and two quadrilaterals with four sides of unequal lengths

E. Draw a Venn diagram with the circles labelled: *Opposite sides equal and parallel* and *All right angles*. Sort your quadrilaterals. How are the quadrilaterals in the overlap different from the quadrilaterals that are not in either circle?

F. Draw your own Venn diagram to repeat step B. Include symmetry in a sorting rule.

Reflecting

1. Describe how using a Venn diagram can help you classify triangles and quadrilaterals by properties related to symmetry, angles, or sides.