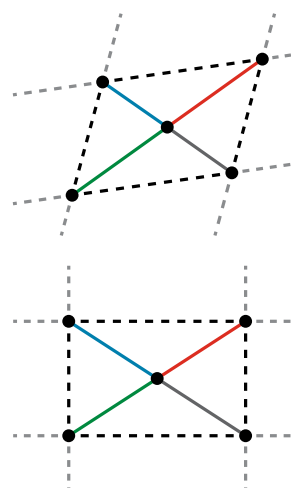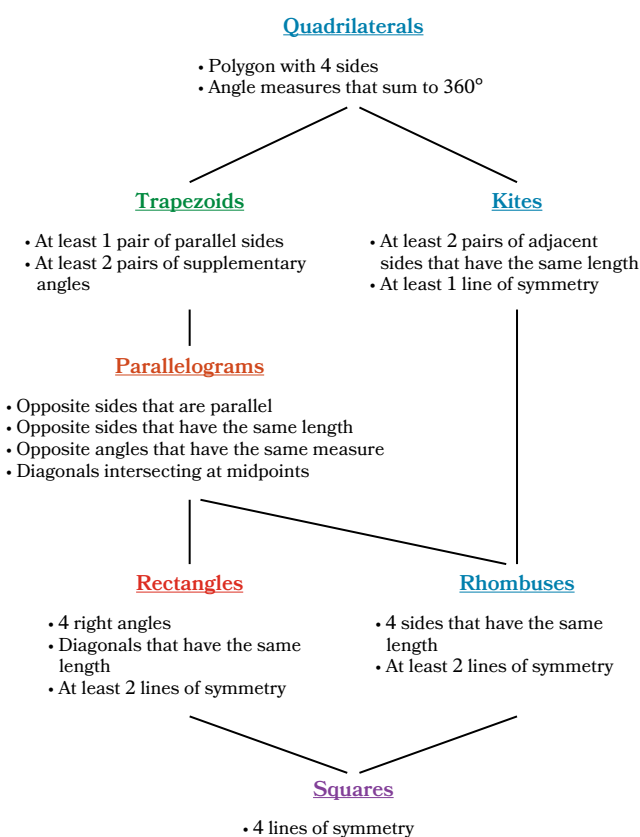# FAMILY MATH

Drawing, Analysis, and Classification of Two-Dimensional Figures

Dear Family,

Your student is learning to classify quadrilaterals by properties such as the number of angles or sides in the quadrilateral. They are organizing quadrilaterals such as kites, rectangles, and rhombuses into a hierarchy. In a hierarchy, all items share the properties of those above them. For example, all quadrilaterals have 4 sides, but only squares have 4 right angles, 4 sides of the same length, and 4 lines of symmetry.

Key Terms

kite

midpoint

plane

property

Quadrilaterals
- Polygon with 4 sides
- Angle measures that sum to 360°

Trapezoids
- At least 1 pair of parallel sides
- At least 2 pairs of supplementary angles

Kites
- At least 2 pairs of adjacent sides that have the same length
- At least 1 line of symmetry

Parallelograms
- Opposite sides that are parallel
- Opposite sides that have the same length
- Opposite angles that have the same measure
- Diagonals intersecting at midpoints

Rectangles
- 4 right angles
- Diagonals that have the same length
- At least 2 lines of symmetry

Rhombuses
- 4 sides that have the same length
- At least 2 lines of symmetry

Squares
- 4 lines of symmetry

This hierarchy helps students understand the properties of different figures. A property is something that is true of everything in a category.

A property of parallelograms is the diagonals intersect at their midpoints.

At-Home Activities

Quad Search

Walk through your home or neighborhood looking for different types of quadrilaterals. Invite your student to snap a picture or sketch the shapes you find, and label each by its most specific name. Discuss where you find each kind of quadrilateral in the hierarchy. "Why do you think this object is shaped like a rectangle? How would this object look differently if it did not have 4 right angles?" Consider encouraging your student to use the corner of a book to check for right angles on the quadrilateral to include it in the correct category.

Hierarchies at Home

Help your student think of ways to classify related objects in your home by using a hierarchy. Challenge your student to see how many levels of a hierarchy they can create. Remember that properties need to apply to all the items above each level in the hierarchy. For example, clothing can be organized into shirts, pants, socks, and hats. Each of these can be organized by other properties, such as whether the clothing has sleeves, is meant to be worn over or under other clothing, or is for formal or informal occasions.