



MATH NEWS

Grade 5 | Module 5 | Topic D | Two Dimensional Shapes

Welcome

This document is created to give parents and students a better understanding of the math concepts found in the Eureka Math (© 2013 Common Core, Inc.) that is also posted in the Engage New York material taught in the classroom. Grade 5 Module 5 of Eureka Math (Engage New York) covers Addition and Multiplication with Volume and Area. This newsletter will discuss the analysis of the properties and defining attributes of quadrilaterals.

Objectives

- Draw trapezoids to clarify their attributes, and define trapezoids based on those attributes.
- Draw parallelograms, rectangles, kites, and squares to clarify their attributes, and define those two dimensional figures based on those individual attributes.
- Classify two-dimensional figures in a hierarchy based on properties.
- Draw and identify varied two-dimensional figures from given attributes.

Important Information

Things to Remember

Attribute/Property: A characteristic that describes something

Plane: Flat surface that extends infinitely in all directions

Polygon: Closed two-dimensional figure made up of line segments

Line Segment: A straight path that connects two points.

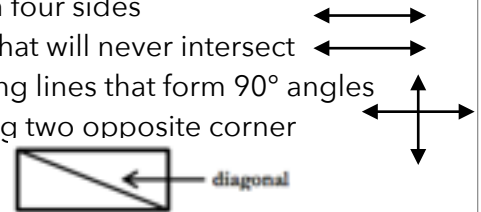
Examples:

Quadrilateral: A polygon with four sides

Parallel: Two lines in a plane that will never intersect

Perpendicular: Two intersecting lines that form 90° angles

Diagonals: Straight line joining two opposite corner (vertices) of a shape



Hierarchy: Series of ordered grouping of shapes

Defining Quadrilaterals Based on Their Attributes

Words to Know - Trapezoid



There are actually **two definitions** for a trapezoid:

1. A quadrilateral with **only one pair** of opposite sides parallel
2. A quadrilateral with **at least one pair** of opposite sides parallel

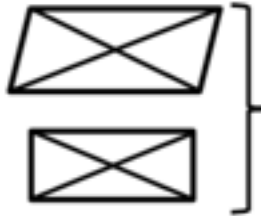
Most mathematicians and the Common Core Progression Document define a trapezoid using the second description which is the characteristics the students will use in this module when talking about the attributes of a trapezoid.

Words to Know - Parallelogram



Attributes/Properties: A quadrilateral and opposite sides are parallel.

(Cont.)



The diagonals of parallelograms **bisect** each other. **Bi** (two) , **sect** (cut), so **bisect** means to cut into two parts. These two parts are equal in length.

*Since a parallelogram has two pairs of parallel sides then it has at least one pair of parallel sides. Therefore, all parallelograms are also classified as trapezoids.

Example Questions with Answers

1. When can a quadrilateral be called a parallelogram?

A quadrilateral can be called a parallelogram when both pairs of opposite sides are parallel.

2. When can a trapezoid also be called a parallelogram?

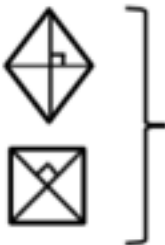
A trapezoid can be called a parallelogram when it has more than one pair of parallel sides.



Words to Know - Rhombus

Attributes/Properties: A quadrilateral, all sides are equal in length, and opposite sides are parallel.

The attributes indicate that a rhombus can also be classified as a parallelogram and all parallelograms are also classified as a trapezoid.

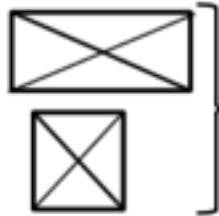


The diagonals of a rhombus **bisect** one another but because they bisect each other at 90° angles, we call these diagonals **perpendicular bisectors**.

Words to Know - Rectangle

Attributes/Properties: A quadrilateral, 4 right angles, and opposite sides are parallel.

Since opposite sides are parallel, we can classify the rectangle as a parallelogram and as a trapezoid.



The diagonals of a rectangle do **bisect** each other and the two parts are equal in length.

Example Questions/Problems with Answers

1. When can a trapezoid also be called a rhombus?

A trapezoid can be called a rhombus when all sides are equal in length.

2. When can a parallelogram also be called a rectangle?

A parallelogram can be called a rectangle when all angles measure 90° .

3. A rhombus has a perimeter of 100 cm. What is the length of each side?

Since all sides of a rhombus are equal in length, I divided 100 by 4 sides which gives me a length of 25 cm. So the length of each side of the rhombus is 25 centimeters.



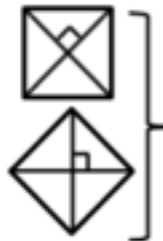
Words to Know - Square

Attributes/Properties: A quadrilateral, 4 right angles, 4 sides of equal length, and opposite sides are parallel.

Since a square has 4 right angles, it can also be classified as a **rectangle**.

Since a square has 4 sides of equal length, it can also be classified as a **rhombus**.

The opposite sides are parallel so a square can also be classified as a **parallelogram**. If it is classified as a parallelogram then it is also classified as a **trapezoid**.



The diagonals of a square **bisect** each other at 90° angles just like a rhombus. These diagonals are called **perpendicular bisectors**.

Words to Know - Kite

Attributes/Properties: A quadrilateral and adjacent sides or sides next to each other are equal.



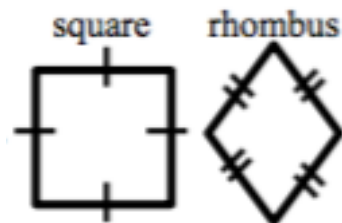
The diagonals of a kite may intersect outside, but they are still perpendicular. The diagonals are not the same length. Only one diagonal bisect the other.

Problems and Answers

Can these shapes be classified as a kite?

The specific name for each shape is a square and a rhombus.

Both have 4 equal sides. Therefore the adjacent sides are equal. So they can be classified as a kite.



Can a kite ever be a parallelogram?

Yes, since a square and a rhombus can be classified as a kite and these shapes do have opposite sides that are parallel, then a kite at times can be classified as a parallelogram.

District Mathematics Website

Be sure to visit our District 97 5th Grade Math Resources Website. It has a ton of resources that can further assist your 5th Grade Family! Some of the specific elements are detailed below.

Website: <http://op97mathgrade5.weebly.com/module-5.html>

Homework Helper

Would you like written homework help specific for each lesson in this Topic? Click below to access it!

Website: http://op97mathgrade5.weebly.com/uploads/2/2/9/1/22918938/homework_helper-grade_5_module_5.pdf

Video Help

Flipped learning is a great way to review topics that your student is learning in the classroom. The following are links to videos that give detailed explanations for each lesson in this topic.

Website: https://www.tes.com/lessons/wQKIG_SZQLbceA/video-help-module-5

Module 5 Parent Tips

Eureka Math has created a guide to this Module specifically for parents. Click below to access it!

Website: http://op97mathgrade5.weebly.com/uploads/2/2/9/1/22918938/eureka_math_module_5_parent_tip_sheet.pdf