



MATH NEWS



Grade 5, Module 5, Topic D

5th Grade Math

Module 5: Addition and Multiplication with Volume and Area

Math Parent Letter

This document is created to give parents and students an understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is 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 Module 5, Topic D. In this topic students will analysis the properties and defining attributes of quadrilaterals.

Topic D: Drawing, Analysis, and Classification of Two-Dimensional Shapes

Things to Know!

Attribute/Property – a characteristic that describes something

Plane – flat surface that extends infinitely in all directions

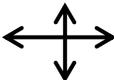
Polygon – closed two-dimensional figure made up of line segments

Line Segment – a straight path that connect two points

Quadrilateral – a polygon with four sides

Parallel – two lines in a plane that will never intersect 

Perpendicular – two lines are *perpendicular* if they intersect, and any

of the angles formed are 90° angles 

Diagonals – straight line joining two opposite corners (vertices) of a shape



Hierarchy – series of ordered grouping of shapes

OBJECTIVES OF TOPIC D

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

Focus Area– Topic D

Module 5: Addition and Multiplication with Volume and Area

Defining Quadrilaterals Based on Their Attributes

Words to Know:

Trapezoid



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

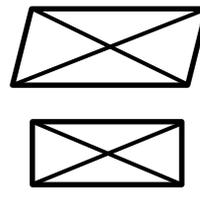
1. A quadrilateral with **only one pair** of opposite sides parallel
2. A quadrilateral with **at least one pair** of opposite sides parallel

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

Parallelogram



Attributes/Properties: a quadrilateral and opposite sides are parallel



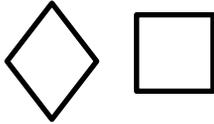
The diagonals of parallelograms **bisect** each other. **Bi**– means two and **sect** means cut, so **bisect** means to cut in two parts. These two parts are equal in length.

****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.

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.



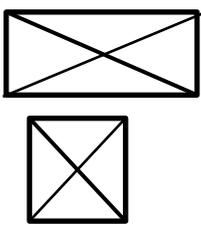
The diagonals of a rhombus **bisect** one another but because they bisect each other at 90° angles, we call these diagonals **perpendicular bisectors**.

Rectangle



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

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



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

Example Questions/Problem with Answers:

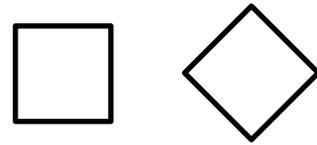
1. **When can a trapezoid also be called a rhombus?**
A trapezoid can be called a rhombus when all sides are equal in length.

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.

Square

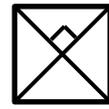


Attributes/Properties: a quadrilateral, 4 right angles, 4 sides of equal length, and opposite sides are parallel

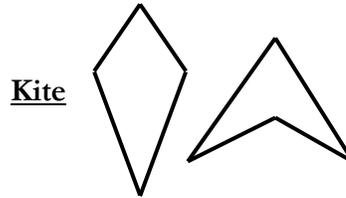
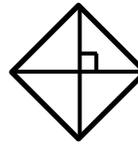
Since a square has 4 right angles, it can also be classified as a **rectangle**.

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**.

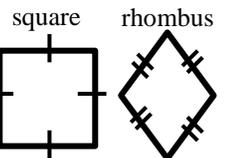
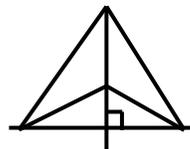


Kite

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 bisects the other.



Problems: Look at the two shapes. 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.