

MATH 191 FUNDAMENTALS OF MATHEMATICS II
SECTION 10.5: QUADRILATERALS AND TRIANGLES
JANUARY 29, 2014

Preliminary Definition

A **plane shape** or **two-dimensional shape** is a flat shape that lies in a plane and is

Properties of Shapes

Some properties that matter when classifying shapes:

Some properties that *don't* matter when classifying shapes:

1. Sort the shapes given into the following categories. Some shapes might fit in multiple categories.

- Category 1: 4 sides, 4 right angles, all 4 sides the same length
- Category 2: 4 sides, 4 right angles
- Category 3: 4 sides, 4 right angles, opposite sides parallel
- Category 4: 4 sides, 4 right angles, opposite sides the same length
- Category 5: 4 sides, all the same length
- Category 6: 4 sides, all the same length, opposite sides parallel
- Category 7: 4 sides, all the same length, opposite angles the same size
- Category 8: 4 sides, opposite sides parallel
- Category 9: 4 sides, opposite sides same length
- Category 10: 4 sides, *at least* one pair parallel
- Category 11: 4 sides, *exactly* one pair parallel
- Category 12: 4 sides

2. Which categories have exactly the same shapes? Do you think there are other shapes that fit in one of those categories but not the other? What are the common names for the categories?

3. Which categories are subcategories of another category?

Quadrilaterals

A **quadrilateral** is

Some types of quadrilaterals:

- Square

- Rectangle

- Rhombus (Diamond)

- Parallelogram

- Trapezoid

Note: The previous activity shows that there are multiple ways to define some of these shapes. We can organize the hierarchy of how the different types of quadrilaterals are related using a **Venn Diagram**.

Triangles

A **triangle** is

We can categorize triangles by their _____ or their _____.

Categorized by _____:

- Acute triangle
- Obtuse triangle
- Right triangle

Categorized by _____:

- Equilateral triangle
- Isosceles triangle
- Scalene triangle

Polygons

A **polygon** is

The line segments making up the polygon are _____. The points where the line segments meet are called _____. A polygon is called _____ if all sides have _____ and all angles are _____.