

# Section 7.0 – Geometry Intro

MPM1D

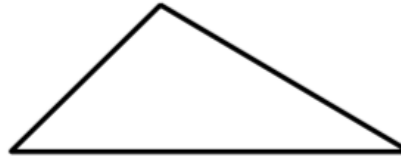
Jensen

## Part 1: Classifying Triangles

### Classify Using Side Lengths:

#### Scalene Triangle

- no equal sides or angles



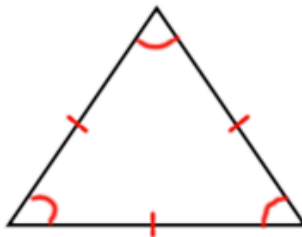
#### Isosceles Triangle

- 2 equal sides  
- 2 equal angles



#### Equilateral Triangle

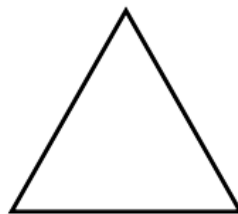
- 3 equal sides  
- 3 equal angles



### Classify Using Angle Measures:

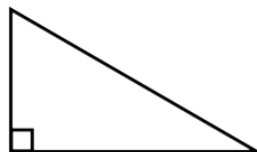
#### Acute Triangle

- 3 acute angles  
(less than 90 degrees)



#### Right Triangle

- one right angle  
(90 degrees)



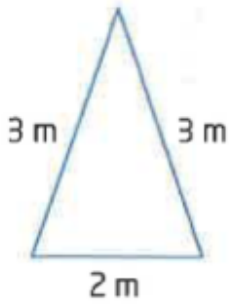
#### Obtuse Triangle

- one obtuse angle  
(between 90 and 180 degrees)

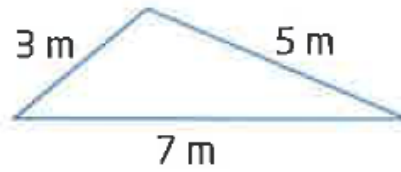


**Example 1:** Classify Each Triangle Using its Side Lengths

a)

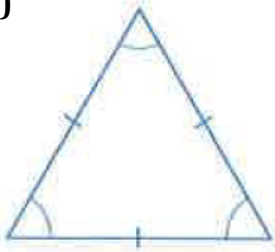


b)



**Example 2:** Classify Each Triangle in Two ways using its angle measures

a)



b)



**Part 2: Classifying Polygons**

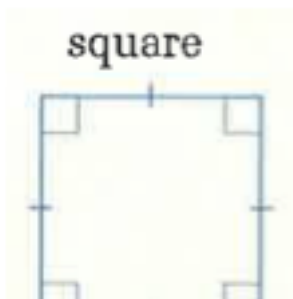
A **polygon** is a closed figure formed by three or more line segments.

A **regular polygon** has all sides equal and all angles equal.

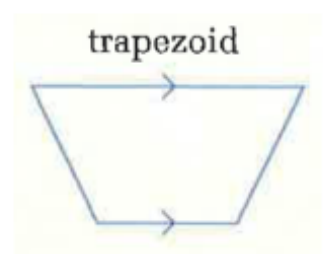
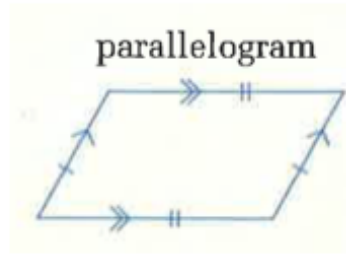
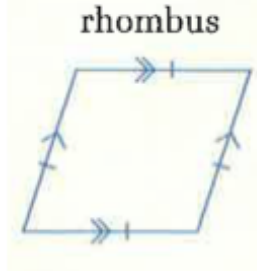
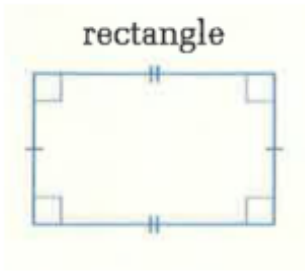
Some **quadrilaterals** have special names.

A **regular** quadrilateral is a square.

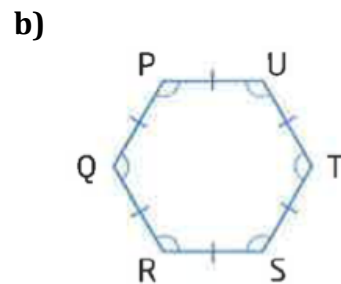
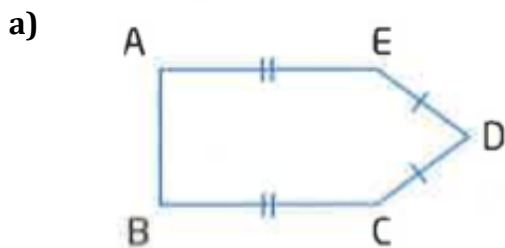
Number of Sides	Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon



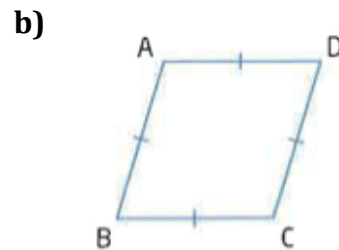
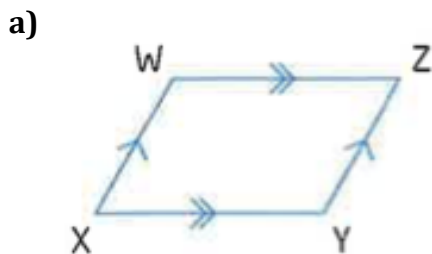
An **irregular** quadrilateral may be a **rectangle**, **rhombus**, **parallelogram**, or **trapezoid**



**Example 3:** Classify each polygon according to its number of sides and whether it is regular or irregular.



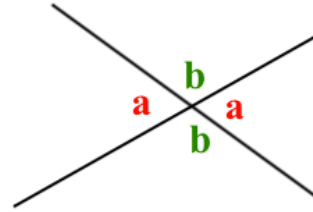
**Example 4:** Classify each quadrilateral



### Part 3: Angle Properties

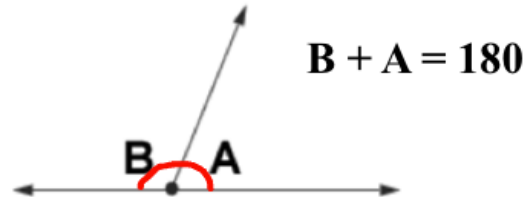
#### **Opposite Angles:**

- When 2 angles intersect, the opposite angles are equal.



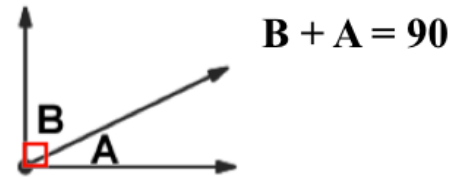
#### **Supplementary Angles:**

- angles that add to 180 degrees  
- angles on a straight line are supplementary



#### **Complementary Angles:**

- angles that add to 90 degrees

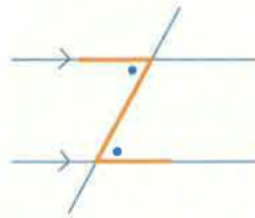


### Part 4: Parallel Line Theorems

When a transversal crosses parallel lines, many pairs of angles are related...

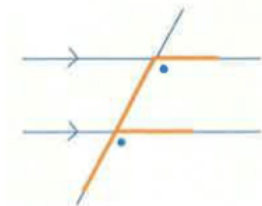
**Alternate Interior Angles** are equal

- Z pattern



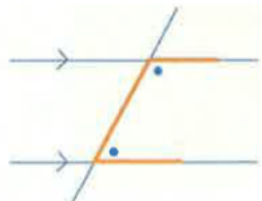
**Corresponding Angles** are equal

- F pattern



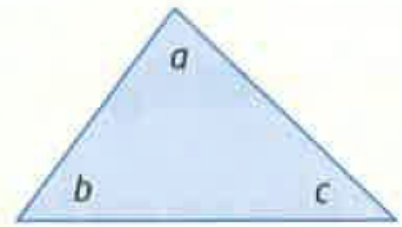
**Co-Interior Angles** add to 180

- C pattern



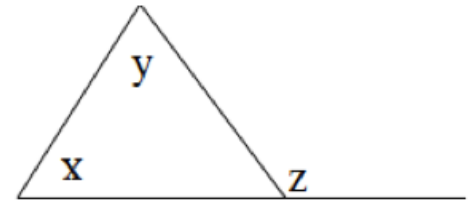
## Part 6: Triangle Theorems

The sum of the **interior angles** of a triangle is **180** degrees.



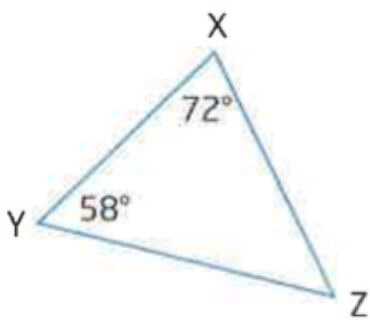
$$a + b + c = 180^\circ$$

The **exterior angle** is equal to the sum of the 2 opposite interior angles.

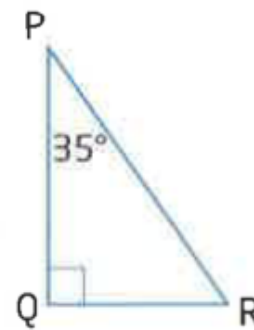


**Example 5:** Find the measure of the third angle in each triangle...

a)

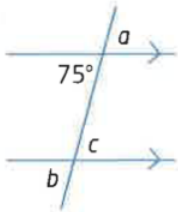


b)



**Example 6:** Find the measure of the angles  $a$ ,  $b$ , and  $c$ . Give reasons for your answers...

a)



b)

