

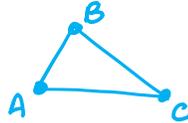
4.2 Classify Δ 's, 4.3 Angle Relationships in Δ 's, 4.9 Equilateral & Isosceles Δ 's



- 4.2 Target: Classify triangles by their angle measures and side lengths.
- 4.3 Target A: Find the measure of interior angles of a triangle.
- 4.9 Target A: Use Equilateral and Isosceles Theorems to solve algebraic problems.

Warm Up: What do you already know about triangles? (Think about... # of sides, # of angles, sum of the angles, types of triangles, etc.)

answers will vary, but students need to at least know that every Δ has 3 sides (segments) and 3 \angle 's



sides: $\overline{AB}, \overline{BC}, \overline{AC}$
 \angle 's: $\angle A, \angle B, \angle C$

□ Part 1: 4.2 Classifying Triangles by Angle Measures and Side Lengths

By Angles

Acute - all 3 \angle 's are btwn 0° and 90°

Equiangular - When all \angle 's are 60°

Obtuse - has 1 obtuse \angle

Right - has 1 right \angle

more specific than acute
 why do you think it only has 1 of each?

By Sides

Scalene - no sides are = in measure



Isosceles - two sides are = in measure

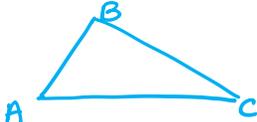


Equilateral - all 3 sides = in measure



*Remember: When you look at a figure, you cannot assume segments are \cong based on appearance... They must be marked \cong !

□ Part 2: 4.3 Triangle Sum Theorem: The sum of the angles measures of a triangle is 180°



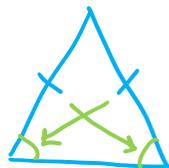
$m\angle A + m\angle B + m\angle C = 180^\circ$

□ Part 3: 4.9 Equilateral and Isosceles Triangle Theorems:

Isosceles Δ Thm:

□ If \triangle , then \triangle

□ If \triangle , then \triangle



Equilateral Δ Thm:

□ If \triangle , then \triangle

□ If \triangle , then \triangle



What can you conclude about the \angle 's in a Scalene Δ ? They are all different since all the sides are different.

□ Part 4: Putting it All Together!

1. Find the value of x and the measure of each angle. Classify the triangle by angles and sides.

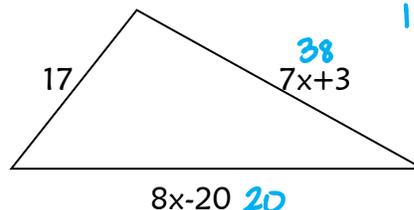
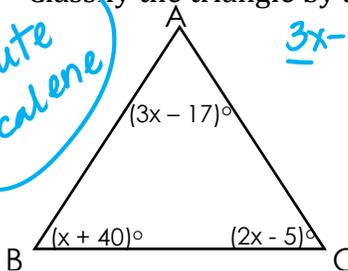
2. The perimeter of the triangle is 75. Classify the triangle by the number of sides.

$3x - 17 + 2x - 5 + x + 40 = 180$

$6x + 18 = 180$
 $6x = 162$
 $x = 27$
 $m\angle A = 64^\circ$
 $m\angle B = 67^\circ$
 $m\angle C = 49^\circ$

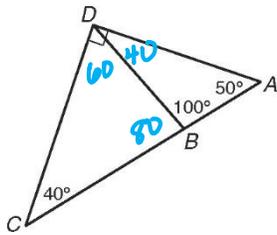
$7x + 3 + 8x - 20 + 17 = 75$
 $15x = 75$
 $x = 5$

Acute Scalene



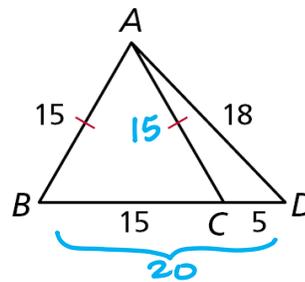
Scalene

3. Classify each triangle by its angle measures AND side lengths.



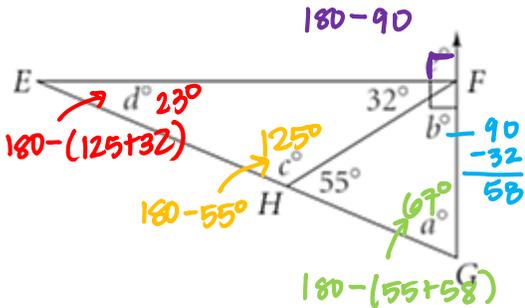
- a. $\triangle ABD$ obtuse + scalene
- b. $\triangle ADC$ right + scalene
- c. $\triangle BDC$ acute + scalene

4. Classify each triangle by its side lengths



- a. $\triangle ABD$ scalene
- b. $\triangle ADC$ scalene
- c. $\triangle ABC$ equilateral

5. Find the values of the variables. Classify each triangle by angles and sides.



$a = 67^\circ$ $b = 58^\circ$
 $d = 23^\circ$ $e = 90^\circ$

$c = 125^\circ$

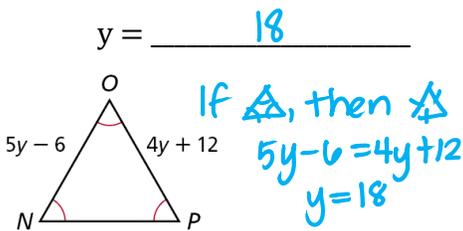
$\triangle FGH$: acute + scalene

$\triangle FEH$: obtuse + scalene

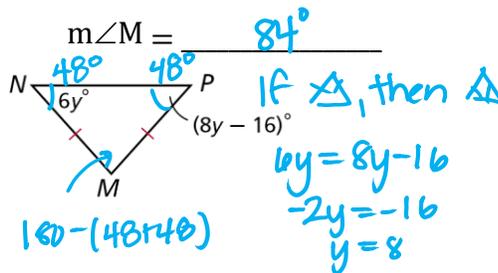
$\triangle EFG$: right + scalene

For 6-11, find the given value and classify the triangle by sides and angles.

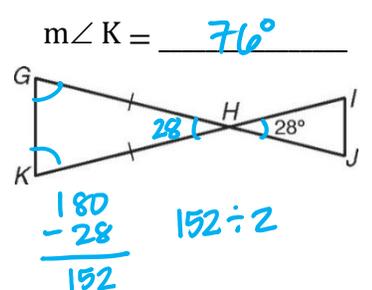
6. $\triangle NOP$ equiangular + equilateral



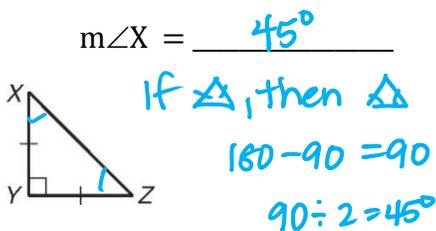
7. $\triangle NMP$ acute isosceles



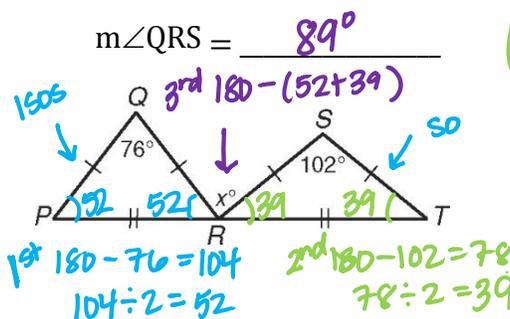
8. $\triangle GHK$ acute isosceles



9. $\triangle XYZ$ acute isosceles



10. $\triangle RST$ obtuse isosceles



11. $\triangle QPR$ equiangular equilateral

