Name: _____

Directions: Please answer all questions and show ALL work for multi-step problems.

4.2 Classifying Triangles   1   2   3   4   5
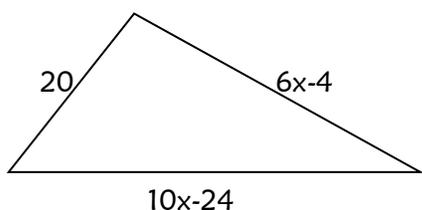
Learning Target 4.2: Classify a triangle by its sides and angles.

Determine if the statement is Sometimes, Always, or Never true.

_____1. An obtuse triangle has all obtuse angles.

_____2. An acute triangle has all acute angles.

_____3. The base of an isosceles triangle is congruent to the sides.

4. Classify the triangle as **Scalene, Isosceles, or Equilateral.**
   The perimeter of the triangle is 56.

20   6x-4

10x-24

5. Classify the triangle as **Obtuse, Acute, or Right**

$(x+100)°$

$(x^2+x)°$

$(3x+56)°$
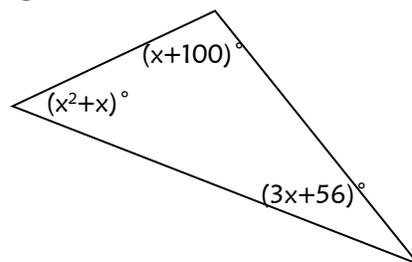
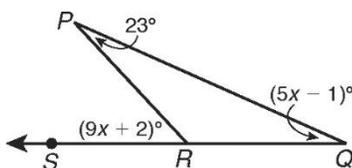## 4.3 Angle Relationships in Triangles   1   2   3   4   5

Learning Target 4.3.a: Use the Triangle Sum Thm. to find a missing angle in a triangle.
Learning Target 4.3.b: Use the Exterior Angle Thm. to find a missing angle in a triangle.
Learning Target 4.3.c: Apply the Third Angle Theorem to find angle measures.

1. Find x and m<PRS

P   23°

$(5x - 1)°$

$(9x + 2)°$

S   R   Q

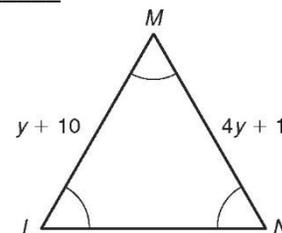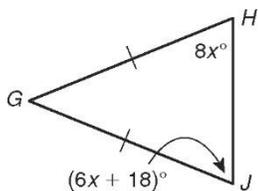## 4.9 Isosceles and Equilateral Triangles   1   2   3   4   5

Learning Target 4.9.a: Use the Isosceles Thrm to find missing angles/sides of triangle.
Learning Target 4.9.b: Use the Equilateral Thrm to find missing angles/sides of triangle.

1. M<G = _____

H

$8x°$

G

$(6x + 18)°$ J

2. MN = _____ $\angle L$ = _____

M

$y + 10$ $4y + 1$

L   N

Learning Target 5.2.a: Use Perp. And angle bisector thrm to solve missing parts of triangles.
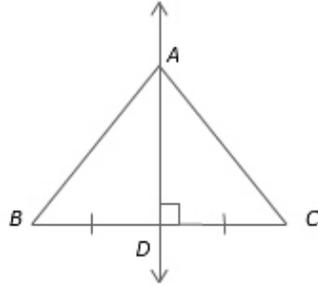
Perpendicular Bisectors:
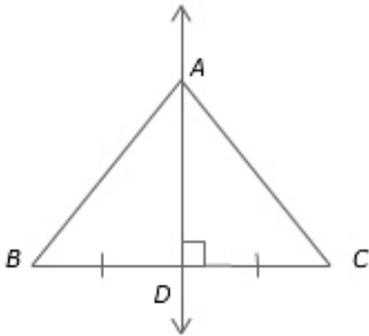*If a point is on the perpendicular bisector of a segment, then it is equidistant from the endpoints of the segment.*

Example 1:

Given AD is the perpendicular bisector of $\overline{BC}$, AB=12.4, AC=12.4, and DC=12.6, find BC.
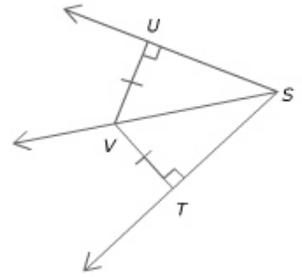
Angle Bisectors:
If a point is on the perpendicular bisector of an angle, then it is equidistant from the sides of the angles.

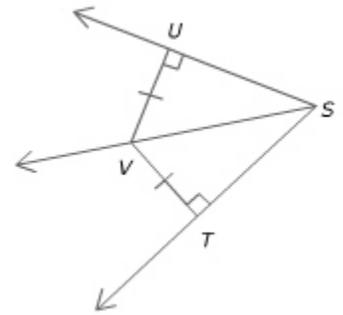Example 2:

Given $m\angle TSV = 32°$, find $m\angle UST$.

Example 3:

Given AD is the ⊥ bisector of $\overline{BC}$, BD= 3a -1

AB = 2a + 7, and AC = 6a – 21, identify AC.

Example 4:

Given $m\angle USV = (2x + 17)°$ and

$m\angle VST = (5x - 10)°$, find the $m\angle UVT$.

5.2–5.3 Median/Altitude   1   2   3   4   5

Learning Target 5.2.a: Use definition of medians and altitudes to solve missing parts of triangles.
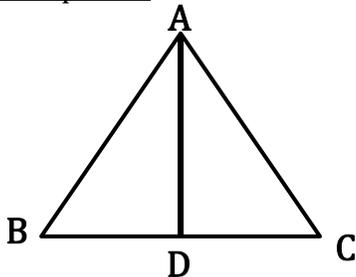
Example 1: What is a median?
Draw a picture and explain in words.

Example 2: What is an altitude?
Draw a picture and explain in words.

Example 3: Given $\overline{AD}$ is an altitude and $m\angle ADB = x^2 + 54$, find x.
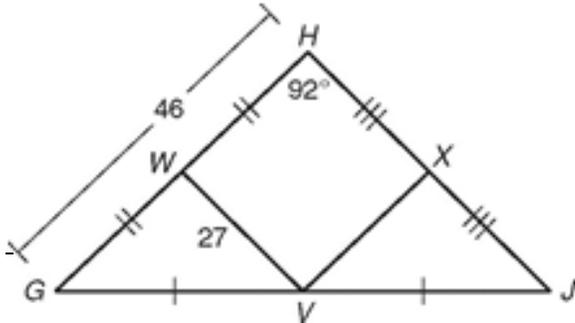
Triangle Midsegment Theorem:

A **midsegment** of a triangle is _____ to a side of the triangle, and its length is _____ the length of that side.

Example 1: Use the diagram below to answer Examples 1-4.

Example 1: $VX=$ _____

Example 2: $HJ=$ _____

Example 3: $m\angle VXJ=$ _____

Example 4: $XJ=$ _____

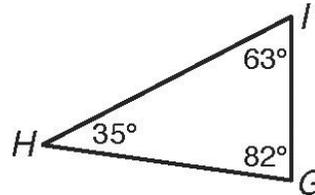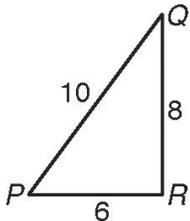## Angle-Side Relationships in △'s:

The angle across from the smallest side of the triangle is going to be the _____ angle measure.
The angle across from the longest side of the triangle is going to be the _____ angle measure.

Example 1: Name the angles in order
from smallest to largest.

Example 2: Name the sides in order
from smallest to largest.

Triangle Inequality Theorem:

The sum of any two _____ lengths of a triangle is _____ than the _____side length.

Directions: For examples 1 and 2, tell whether a triangle can have sides with the given lengths. Explain.

Example 1:
8, 15, 25

Example 2:
3, 10, 12

Example 3:
If a $= 12$ and b $= 37$,
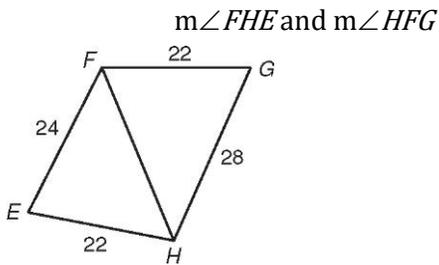what are the possible
lengths for side c?

Hinge Theorem:

If 2 sides of one triangle are congruent to 2 sides of another triangle and the included angles are not congruent, then <u>the longer third side is across from the larger angle.</u>
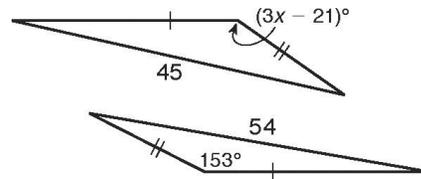
Converse of the Hinge Theorem

If 2 sides of one triangle are congruent to 2 sides of another triangle and the third sides are not congruent, then <u>the larger angle is across from the longest side.</u>

Example 1: Compare the given measures.   Example 2: Find the range of values for x.

$m\angle FHE$ and $m\angle HFG$

F ——22—— G
24
28
E
22   H

$(3x - 21)°$
45
54
153°

To prepare for the test, please review all note sheets, homework & in-class assignments! Good Luck!