

Directions: Please fill in all missing vocabulary and special rules. Please answer all questions and show ALL work for multi-step problems.



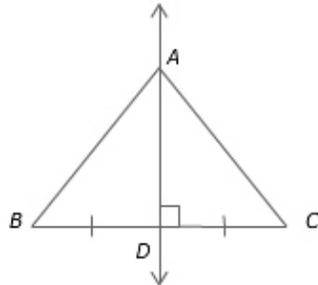
5.1 Perpendicular and Angle Bisectors

Perpendicular Bisectors:

If a point is on the perpendicular bisector of a segment, then it is equidistant from the endpoints of the segment.

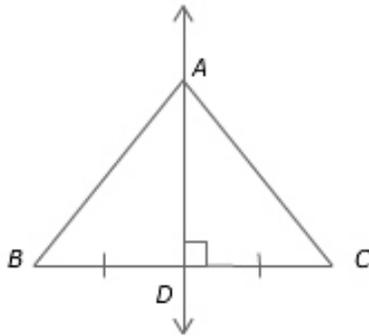
Example 1:

Given \overline{AD} is the perpendicular bisector of \overline{BC} , $AB=12.4$, $AC=12.4$, and $DC=12.6$, find BC .



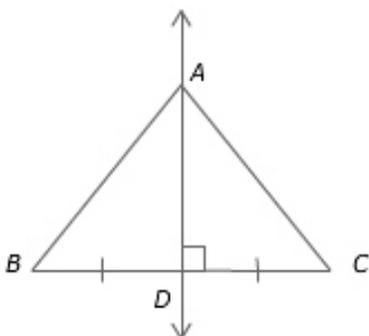
Example 3:

Given \overline{AD} is the \perp bisector of \overline{BC} , $BD= 3a - 1$
 $AB = 2a + 7$, and $AC = 6a - 21$, identify AC .



Example 5:

Given \overline{AD} is the perpendicular bisector of \overline{BC} , $AB = a^2 + 3a$ and $AC = 8a + 24$. Find AC .

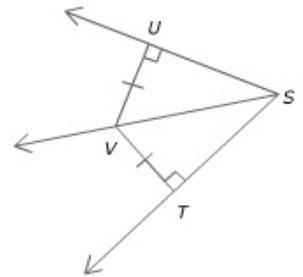


Angle Bisectors:

If a point is on the perpendicular bisector of an angle, then it is equidistant from the sides of the angles.

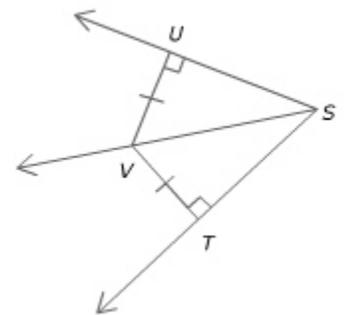
Example 2:

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



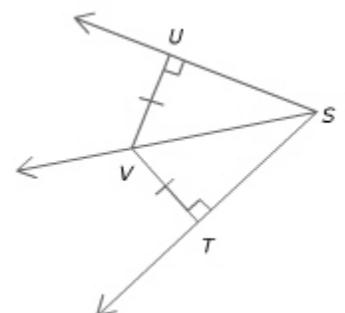
Example 4:

Given $m\angle USV = (2x + 17)^\circ$ and
 $m\angle VST = (5x - 10)^\circ$, find the $m\angle UVT$.



Example 6:

Given that $m\angle USV = (2x^2 - 10)^\circ$ and
 $m\angle VST = (x^2 + 26)^\circ$, find the $m\angle UST$.



5.2-5.3 Points of Concurrency

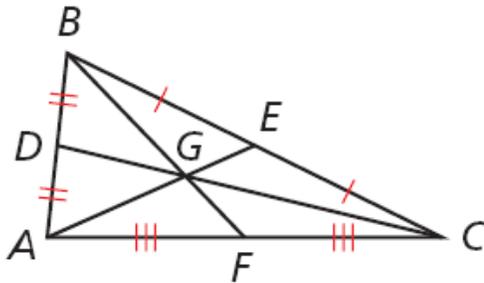
The point of concurrency is the point where three or more lines meet.

The **centroid** is formed by the _____ of the triangle. Another name for the centroid is the **center of gravity**.

Special Rule:

Example 1: In $\triangle ABC$, $AE = 12$, $DG = 7$, and $BG = 9$. Find all possible side lengths.

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



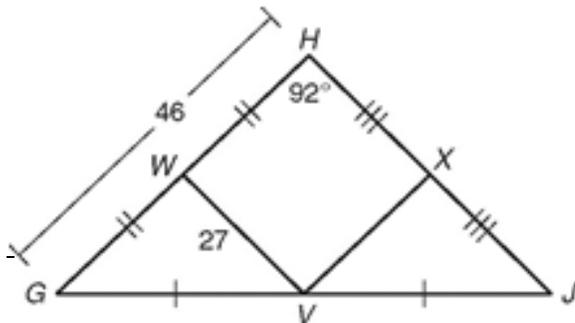
Example 3: What is an altitude? Draw a picture and explain in words.

5.4 Midsegment Theorem

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: $m\angle VXJ =$ _____

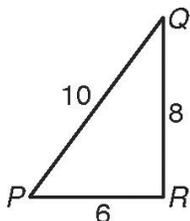
Example 4: $XJ =$ _____

5.5 Inequalities in One Triangle

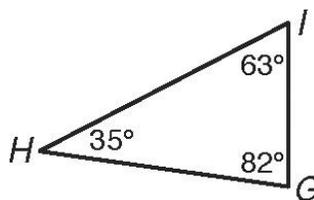
Angle-Side Relationships in \triangle 's:

If two sides of a triangle are not congruent, then the angles across from those sides are _____, and the larger angle is _____ the longer side.

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 ?

5.6 Inequalities in Two Triangles

Hinge Theorem:

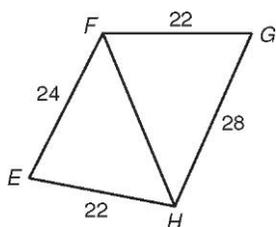
If 2 sides of one triangle are congruent to 2 sides of another triangle and the included angles are not congruent, then _____.

Converse of the Hinge Theorem

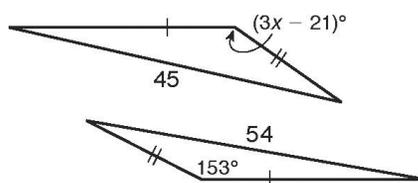
If 2 sides of one triangle are congruent to 2 sides of another triangle and the third sides are not congruent, then _____.

Example 1: Compare the given measures.

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



Example 2: Find the range of values for x .



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