Geometry

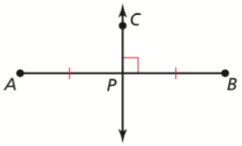
Name _____

Date _____ Period _____

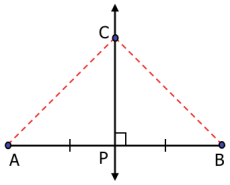
Chapter 6

Ch 6.1 Perpendicular and Angle Bisectors

Perpendicular Bisector: _____



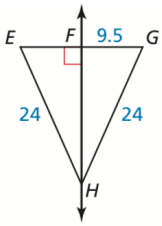
What is special about triangles ΔAPC and ΔBPC?



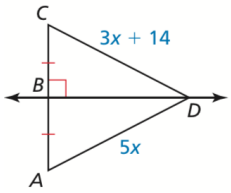
Perpendicular Bisector Theorem	

Converse of Perpendicular Bisector Theorem	

a) EG = FH =

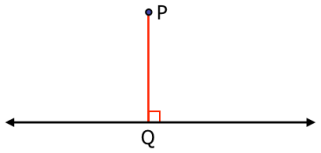


b) x = CD =

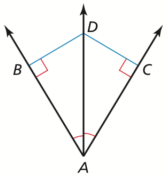


What is the distance from a point to a line? _____

_____



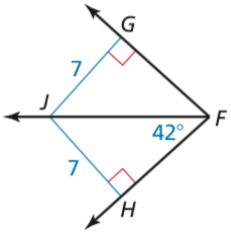
Angle Bisector: _____



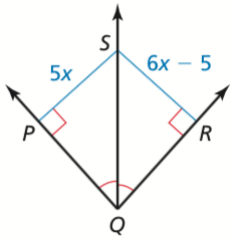
Angle Bisector Theorem	

Converse of the Angle Bisector Theorem	

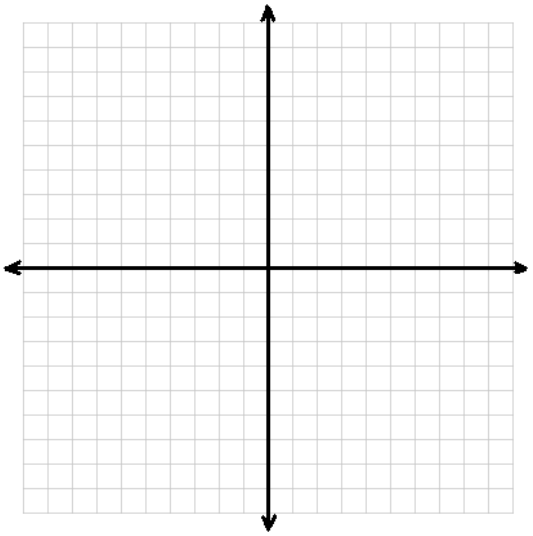
a) $\angle GFJ$ = GF =



b> x = PS =



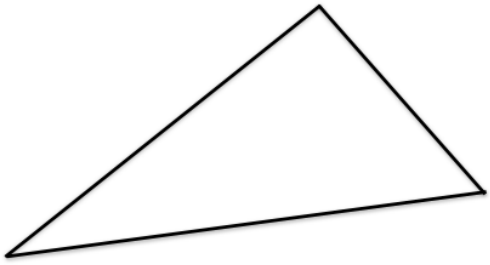
Practice:
Write an equation of the perpendicular bisector of the segment with endpoints P(-2, 3) and Q(4, 1).



Ch 6.2 Bisectors of Triangles

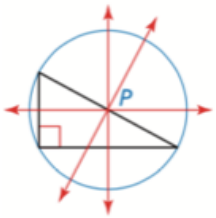
Perpendicular bisectors of a triangle intersect at the _____

Circumcenter is equidistant from all _____.

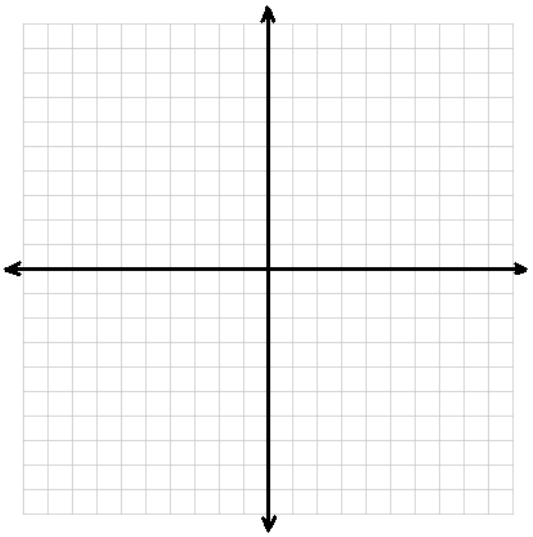


Circumcenter Theorem	

Locations of Circumcenter

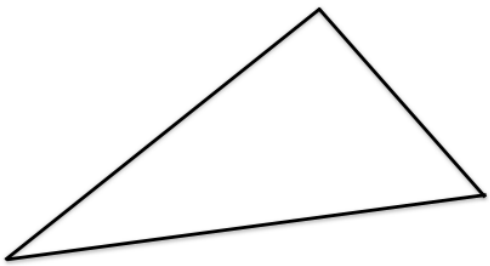


Practice:
Find the coordinate of the circumcenter of the triangle with the vertices:
O(0, -9), Y(0, 0), Z(8, 0)



Angle bisectors of a triangle intersect at the _____

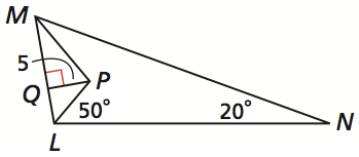
Incenter is equidistant from all _____.



Incenter Theorem	

Practice:
MP and LP are angle bisectors of ΔLMN. Find each measure.

1) the distance from P to MN

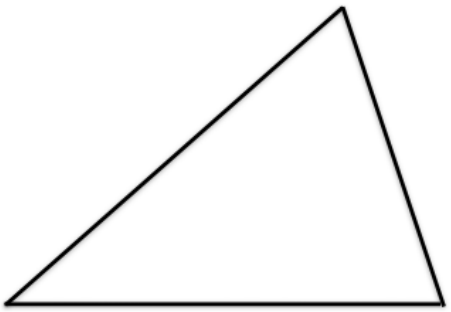


2) $m\angle PMN$ =

Ch 6.3 Medians and Altitudes of Triangles

Median: _____

The three medians of a triangle meet at the _____.

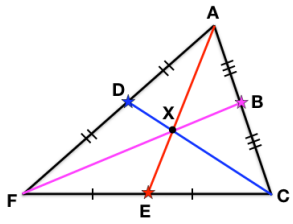


Centroid Theorem	

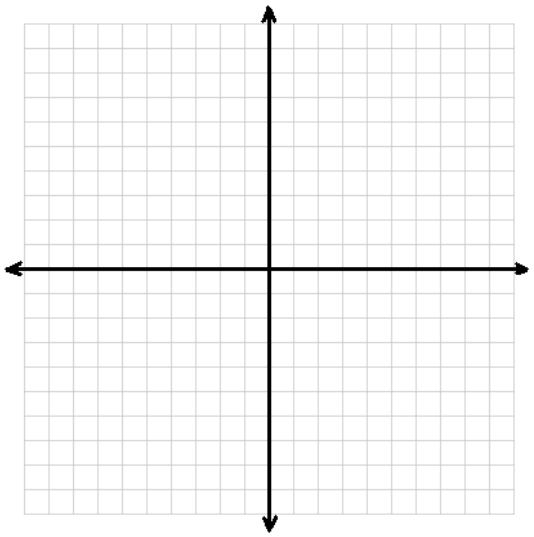
Practice:
If DC = 21 and XE = 4, solve for the following lengths.

CX =

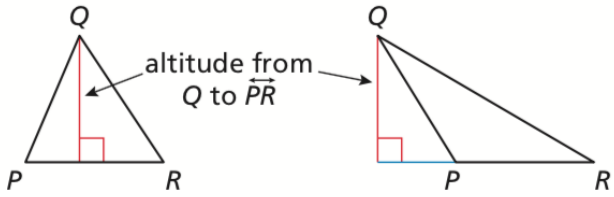
AE =



Practice:
Find the coordinates of the centroid of ΔRST with vertices R(2, 1), S(5, 8), T(8, 3).

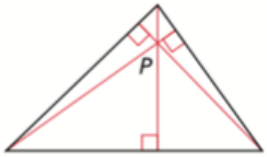


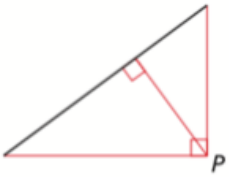
Altitude of a triangle is _____

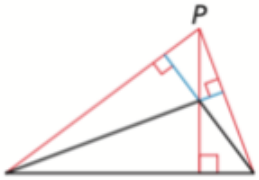


The three altitudes meet at the _____.

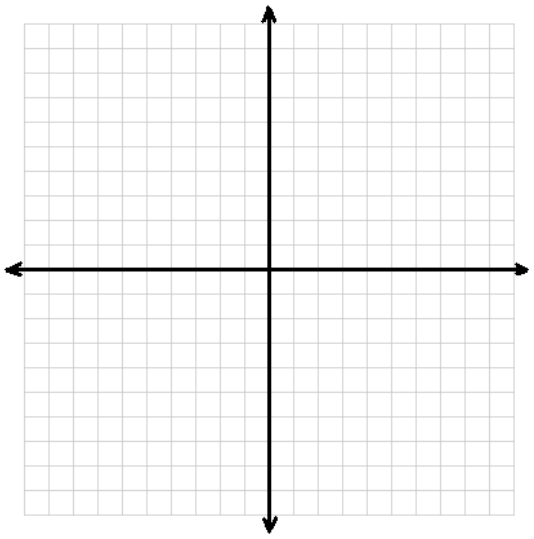
Locations of Orthocenter



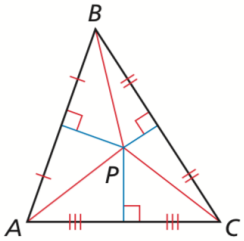


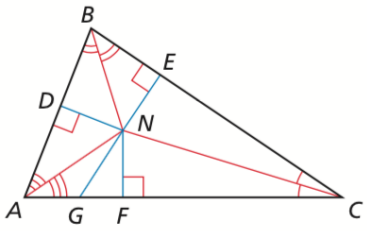


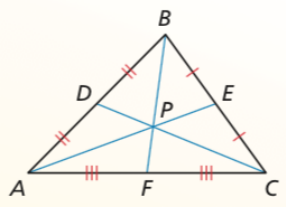
Practice:
Find the coordinates of the orthocenter of ΔXYZ with vertices X(-5, -1), Y(-2, 4), Z(3, -1).

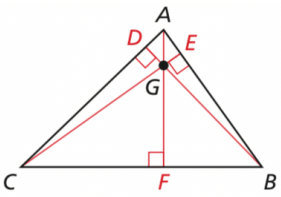


The **coincident points** you should know right now, and how to find each of these points.



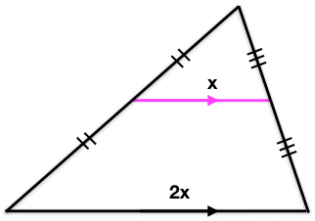






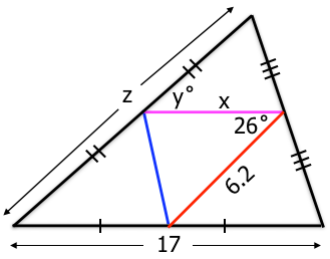
Ch 6.4 The Triangle Midsegment Theorem

Triangle Midsegment: _____

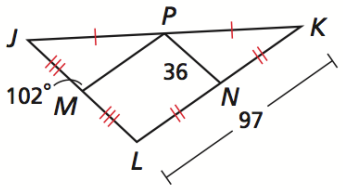


Triangle Midsegment Theorem	

Determine the values of x, y, and z.

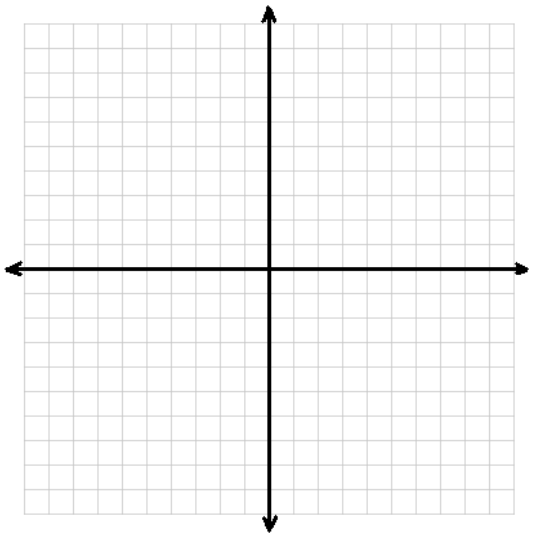


Solve for JL, PM, $m\angle MLK$.



Exercise:

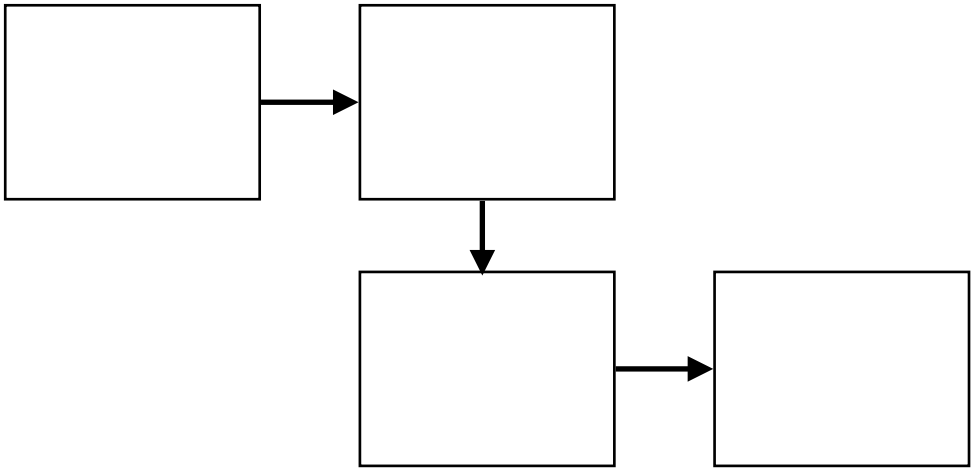
The vertices of △RST are R(-7, 0), S(-3, 6), and T(9, 2). M is the midpoint of RT, and N is the midpoint of ST. Show that MN || RS and $MN = \frac{1}{2}RS$.



Ch 6.5 Indirect Proof and Inequalities in One Triangle

Direct Proof flowchart:

Indirect Proof or "_____"



Given: Any triangle
Prove: A triangle cannot have two obtuse angles.

1) Identify the conjecture to be proven:

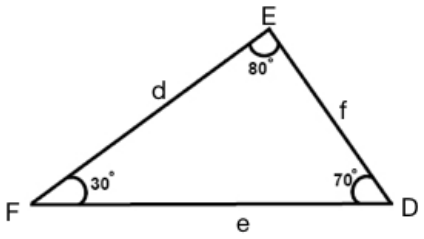
2) Assume the opposite (negation) of the conclusion is true.

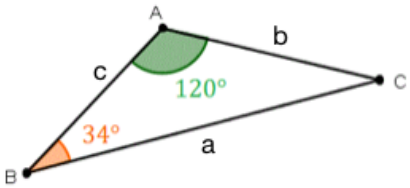
3) Use direct reasoning to show that the assumption leads to a contradiction.

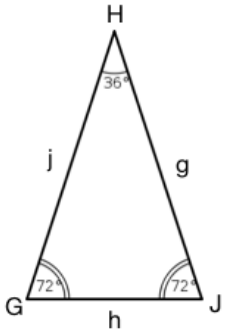
4) Conclude that since the assumption is false, the original conjecture must be true.

Try this:

Order the angles from smallest to largest. Then, using the angle order, can you order the side lengths from smallest to largest?



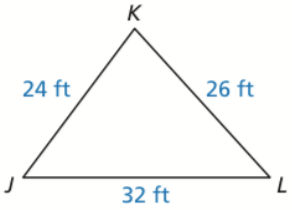




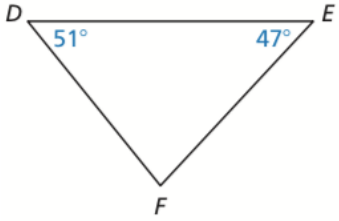
Triangle Larger Angle Theorem	
Triangle Longer Side Theorem	

Exercise:

1) List the angles from smallest to largest

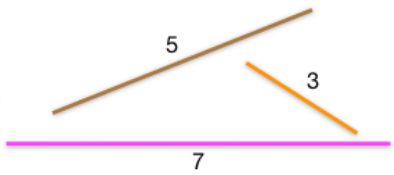


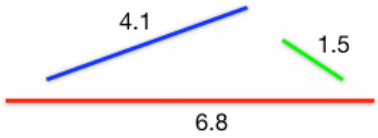
2) List the sides from shortest to longest.



A triangle can be formed by 3 segments, but not every set of three segments will work.

How are you supposed to know?





Triangle Inequality Theorem	

Can you make triangles out of the following lengths?

a) 8, 12, 21

b) 6.2, 7, 9

c) 4.3, 5.7, 10

Exercise:

The figure shows approximate distances. What is the range of distances from San Francisco to Oakland?

Ch 6.6 Inequalities in Two Triangles

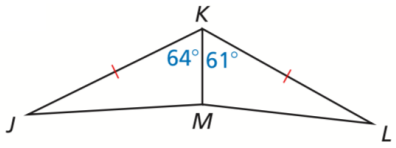
Definition:

When two sides of a triangle stay the same length and the third side changes length, it is called _____

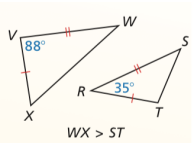
If the included angle of the two sides gets bigger, then the third side gets _____

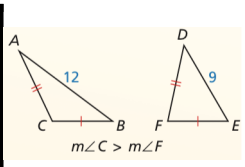
Example:

Which is greater? Side JM or ML?



Hinge Theorem	
Converse of the Hinge Theorem	





Problem:

Two groups of bikers leave the same camp heading in opposite directions. Each group travels 2 miles, then changes direction and travels 1.2 miles. Group A starts due east and then turns 45° toward north. Group B starts due west and then turns 30° toward south. Which group is farther from camp? Explain your reasoning.