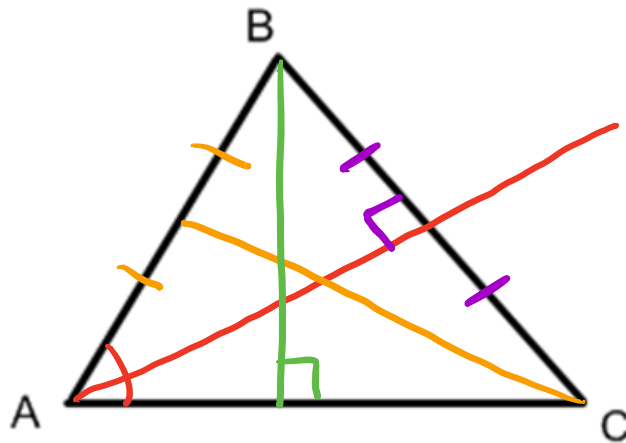


Do Now:

Matching...

-
1. perpendicular bisector a. centroid
2. angle bisector b. orthocenter
3. median c. circumcenter
4. altitude d. incenter

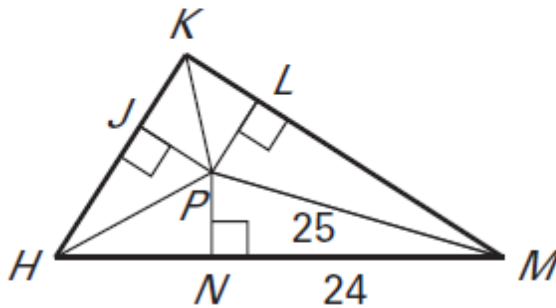


- Draw an angle bisector for angle A
- Draw a perpendicular bisector of side BC
- Draw a median from angle C to side AB
- Draw an altitude from angle B to side AC

DLT Bonus:

Point P is the incenter of $\triangle HKM$.

Find JP .



- a.) 7
- b.) 11
- c.) 24
- c.) 25
- d.) 49

Unit 8 Day 3: Segments of Triangles

Applying theorems about special segments of triangles (6.2-6.3)

Today's I Can Statements:

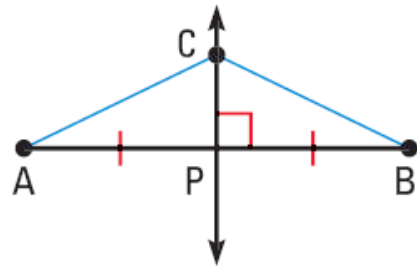
ST-1: I can identify different segments in a triangle.

ST-2: I can use theorems of segments in a triangle to solve.

ST-3: I can use coordinates to prove geometric theorems algebraically.

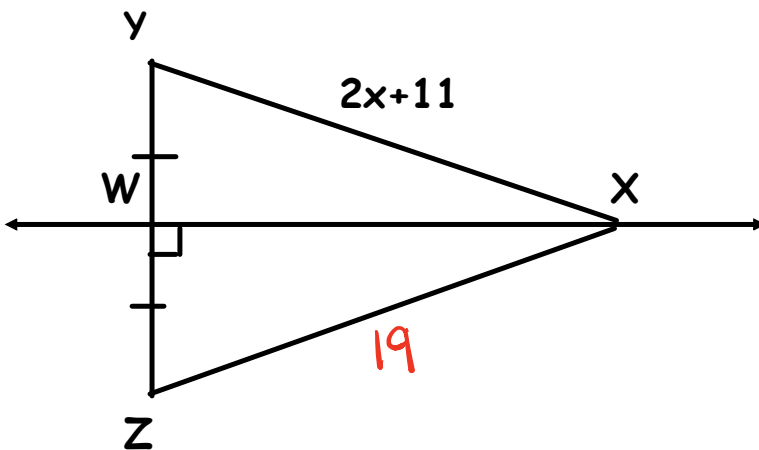
Perpendicular Bisector Theorem

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



If C is on the perp. bisector of AB, then $CA=CB$.

In the Diagram, \overleftrightarrow{WX} is the perpendicular bisector of \overline{YZ} .
What is the length of \overline{XZ} if $x=4$.



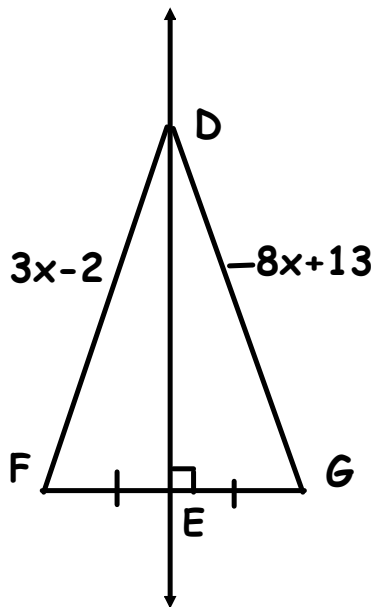
$$\overline{XZ} = 2x + 11$$

$$\overline{XZ} = 2(4) + 11$$

$$\overline{XZ} = 19$$

Line \overleftrightarrow{DE} bisects line \overline{FG} to form a 90° angle.

Find the lengths of \overline{DF} and \overline{DG} .



$$3x - 2 = -8x + 13$$

$$11x = 15$$

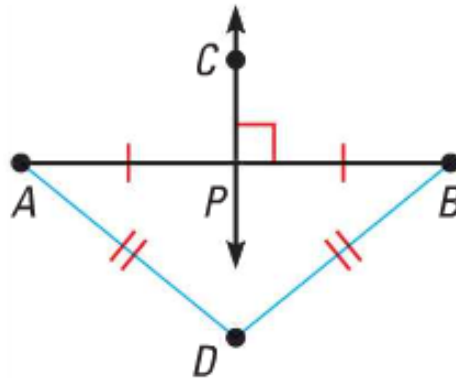
$$x = 15/11$$

$$\overline{DF} = \frac{23}{11} = 2.09$$

$$\overline{DG} = \frac{23}{11} = 2.09$$

Converse of the Perpendicular Bisector Theorem

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



If $DA = DB$, then D lies on the \perp bisector of \overline{AB} .

1. What segment lengths can you say are equal? Why?

$$\overline{LM} = \overline{NM} \quad \overline{LK} = \overline{NK}$$

$$\overline{LJ} = \overline{NJ}$$

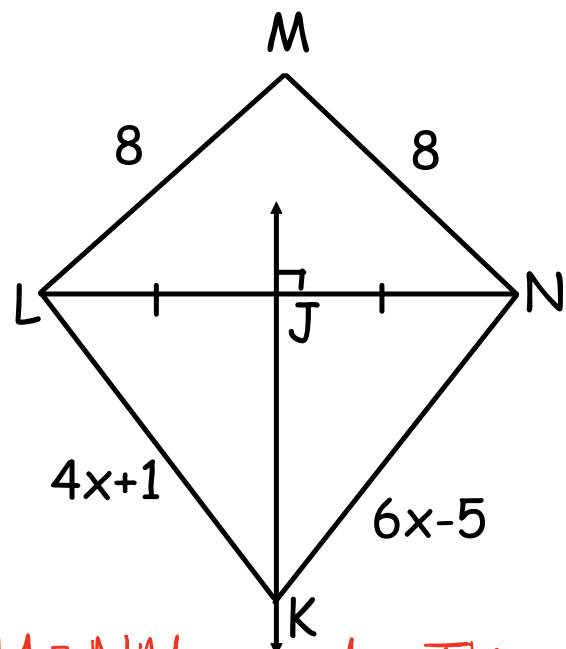
2. Find NK.

$$6x - 5 = 4x + 1$$

$$2x = 6$$

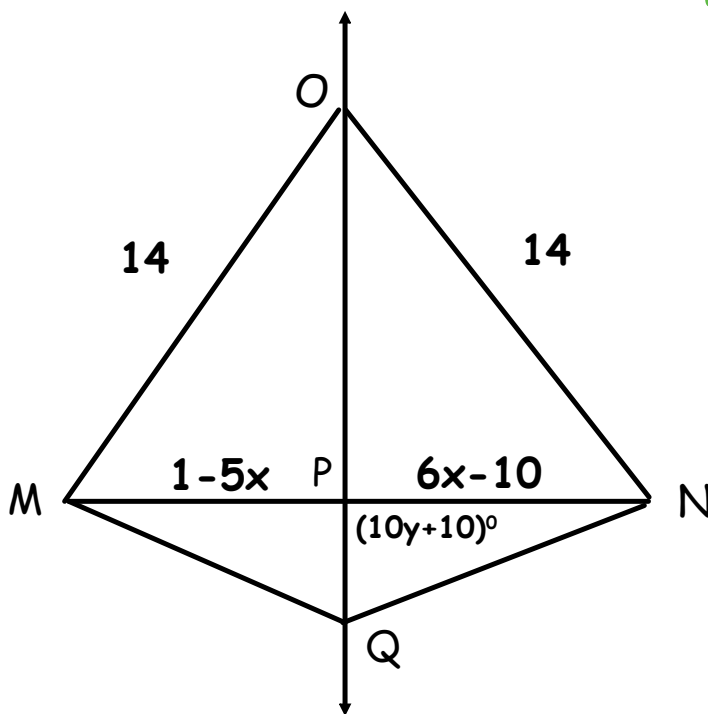
$$x = 3 \quad \overline{NK} = 13$$

3. Is M located on JK? Why?



Yes, because we know $LM = NM$ and JK represents a perpendicular bisector, so it will go through the point M .

In the Diagram $\overline{MO} = \overline{NO}$. Find the values of x and y .



$$1 - 5x = 6x - 10$$

$$11 = 11x$$

$$x = 1$$

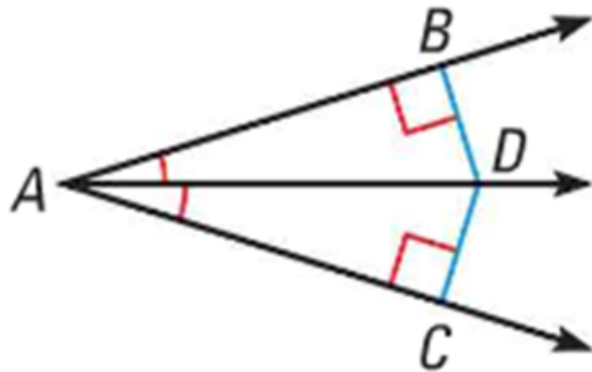
$$90 = 10y + 10$$

$$80 = 10y$$

$$y = 8$$

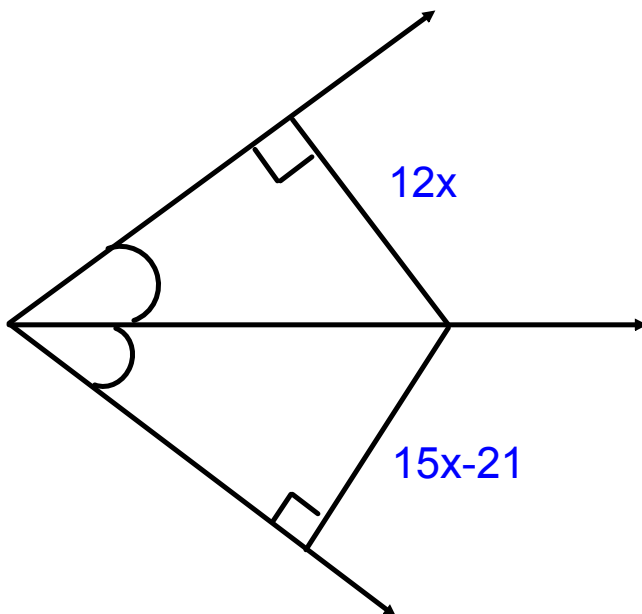
Angle Bisector Theorem

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



If \overrightarrow{AD} bisects $\angle BAC$ and $\overline{DB} \perp \overrightarrow{AB}$ and $\overline{DC} \perp \overrightarrow{AC}$, then $DB = DC$.

For the Diagram given, find the value of x.



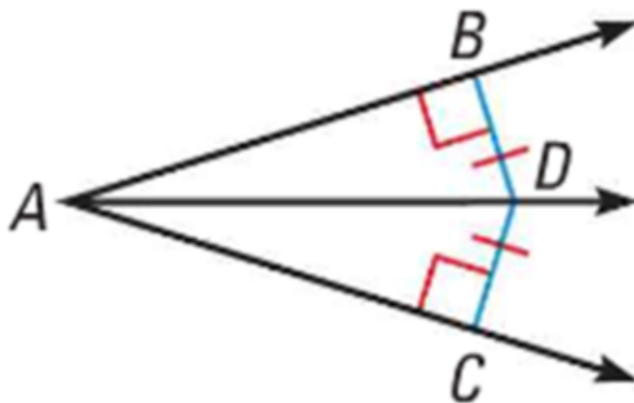
$$12x = 15x - 21$$

$$21 = 3x$$

$$x = 7$$

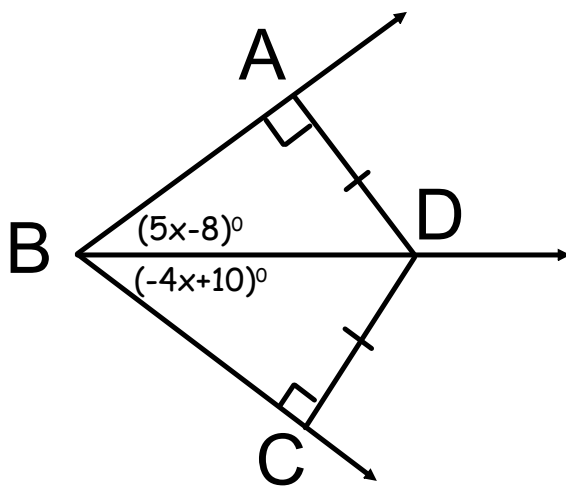
Converse of the Angle Bisector Theorem

If a point is in the interior of an angle and is equidistant from the sides of the angle, then it lies on the bisector of the angle.



If $\overline{DB} \perp \overrightarrow{AB}$ and $\overline{DC} \perp \overrightarrow{AC}$ and $DB = DC$, then \overrightarrow{AD} bisects $\angle BAC$.

Find the value of x .



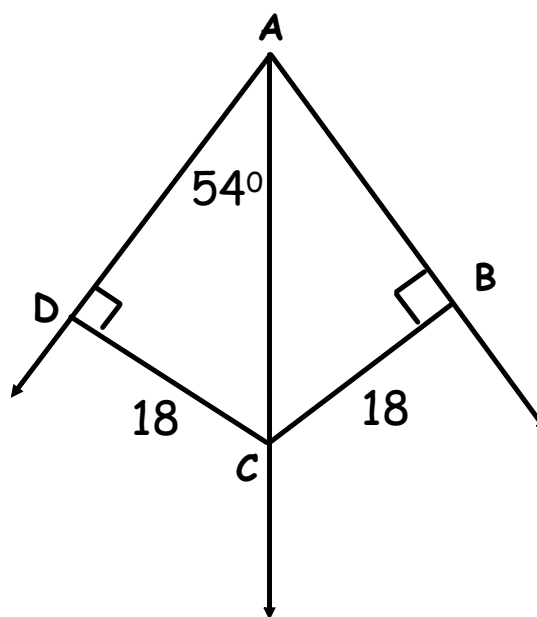
$$5x - 8 = -4x + 10$$

$$9x = 18$$

$$x = 9$$

Find the measure
of $\angle BAD$

$$54 + 54 = 108^\circ$$
$$\angle BAD = 108^\circ$$



Tonight's Assignment:
WS 6.1-6.3 Homework

Remember:
Segments of Triangles Quiz will be

Friday 1/31 Monday 2/3

Today's I Can Statements:

ST-1: I can identify different segments in a triangle.

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