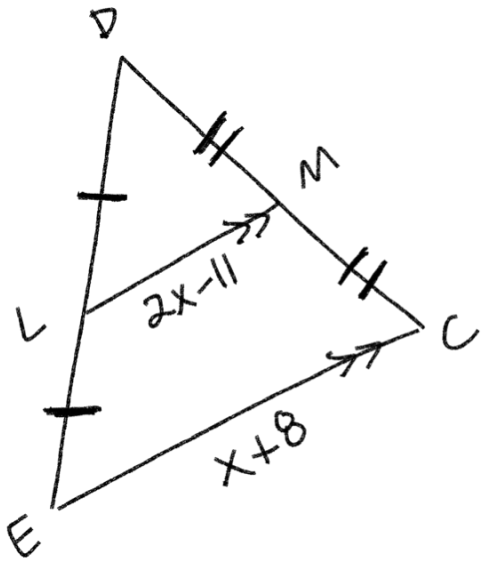
W-G Geometry Week 24 3/15

1.)



$\overline{LM}$ is a midsegment

2 midseg : base

$2(2x-11) = x+8$

$4x-22 = x+8$

$+22 \quad +22$

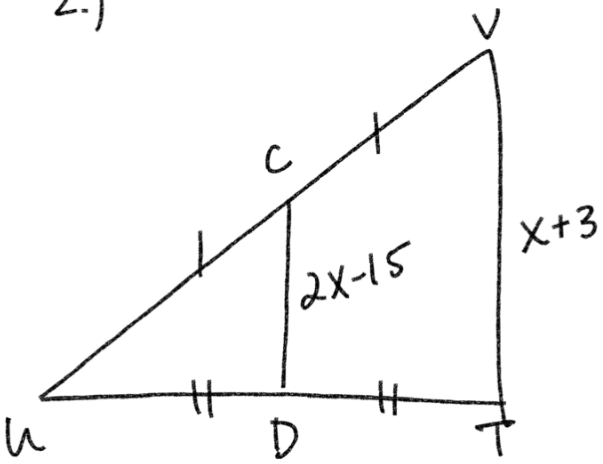
$4x = x+30$

$-x \quad -x$

$\frac{3x}{3} = \frac{30}{3}$

$\boxed{x = 10}$

2.)



$\overline{CD}$ is a midsegment

2 midseg = base

$2(2x-15) = x+3$

$4x-30 = x+3$

$+30 \quad +30$

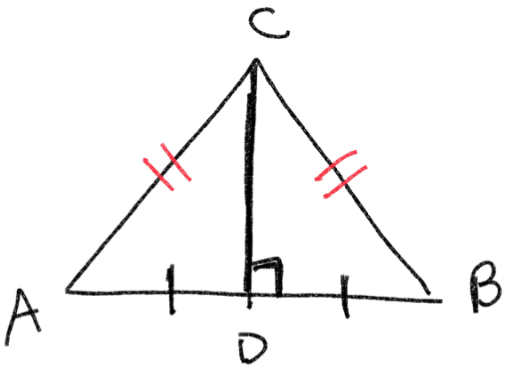
$4x = x+33$

$-x \quad -x$

$\frac{3x}{3} = \frac{33}{3}$

$\boxed{x = 11}$

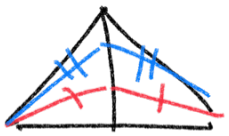
Perpendicular Bisector



$\overline{CD}$ = perpendicular bisector

$\overline{AD} \cong \overline{DB}$

$\overline{AC} \cong \overline{CB}$



Distance Formula

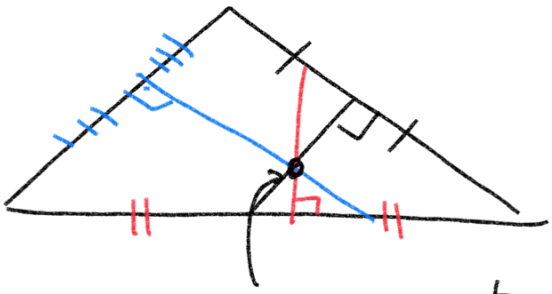
$(7, -2)$ $(-5, 3)$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{(-5-7)^2 + (3-(-2))^2}$$

$3+2$

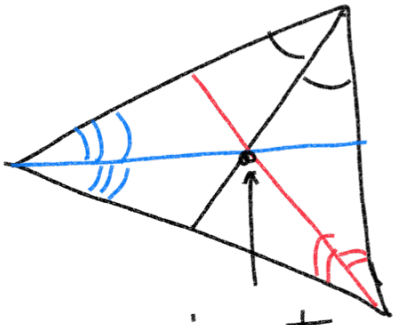
$$\sqrt{(-12)^2 + (5)^2} = \sqrt{144 + 25} = \sqrt{169} = \boxed{13}$$



circumcenter

perpendicular bisector

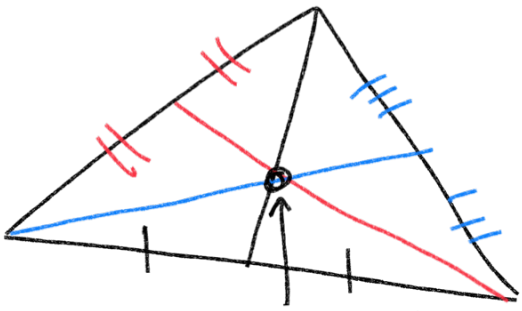
- Divides opposite segment in half
- forms a 90° angle.



incenter

Angle bisector

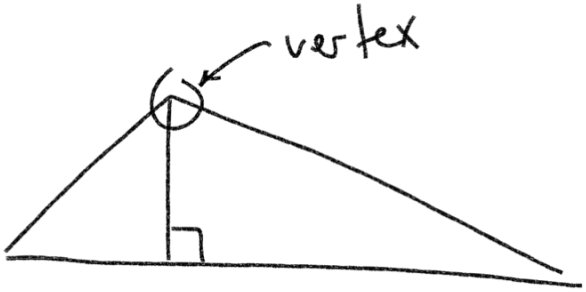
- Divides an angle into two equal pieces



Centroid

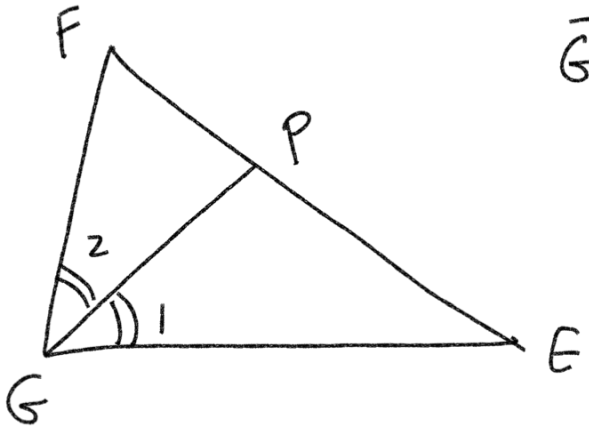
Median

- Divide opposite side into two equal pieces.
- originates at a vertex, does not form a perpendicular angle.



Altitude (Height)

- from vertex to opposite side, forming a 90° angle



$\overline{GP}$ is an angle bisector

$\measuredangle 1 = 3x + 36$

$\measuredangle 2 = 2x + 48$

$\measuredangle 1 = \measuredangle 2$

$3x + 36 = 2x + 48$

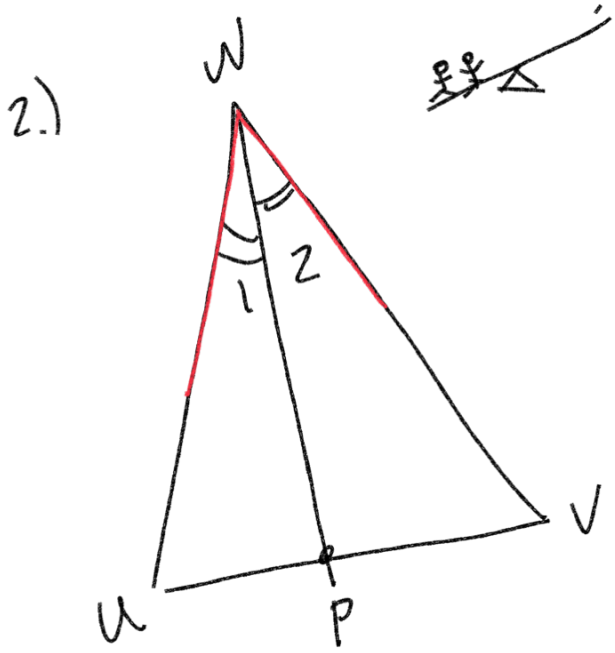
$-36 \quad -36$

$3x = 2x + 12$

$-2x \quad -2x$

$\boxed{x = 12}$

2.)



$\overline{WP}$ = an angle bisector

$\measuredangle 2 = 7x - 1$

$\measuredangle UWV = 12x + 4$

$2(\measuredangle 2) = \measuredangle UWV$

$2(7x - 1) = 12x + 4$

$14x - 2 = 12x + 4$

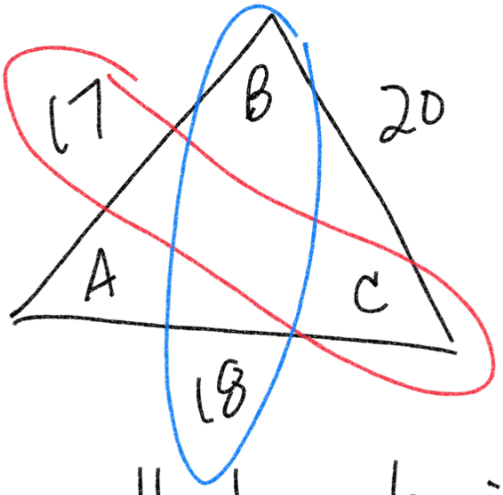
$-12x \quad -12x$

$2x - 2 = 4$

$+2 \quad +2$

$\frac{2x}{2} = \frac{6}{2}$

$\boxed{x = 3}$



smallest angle → Largest angle

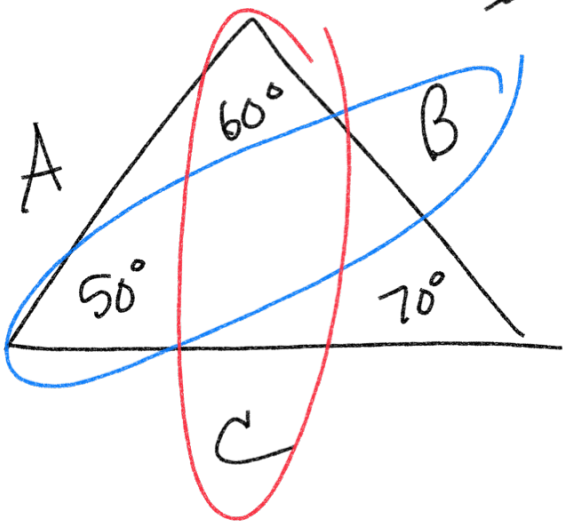
C, B, A

smallest angle is opposit the smallest side

- BCA

smallest side

smallest angle



order the sides from least → greatest

B, C, A

The sum of any two sides of a triangle is greater than any one side.

3, 8, 10 Triangle

$3+8=11$ $11>10$ ✓

$8+10=18$ $18>3$ ✓

$3+10=13$ $13>8$ ✓

3, 8, 12 Not triangle

$8+12=20$ $20>3$ ✓

$3+12=15$ $15>8$ ✓

$3+8=11$ ~~$11>12$~~

Can each of the following be a triangle?

1.) 8, 17, 24 $8+17=25$ $25>24$ Triangle

2.) 9, 13, 22 $9+13=22$ ~~$22>22$~~ Not triangle

3.) 12, 8, 21 $12+8=20$ ~~$20>21$~~ Not triangle

4.) 15, 18, 4 $15+4=19$ $19>18$ Triangle