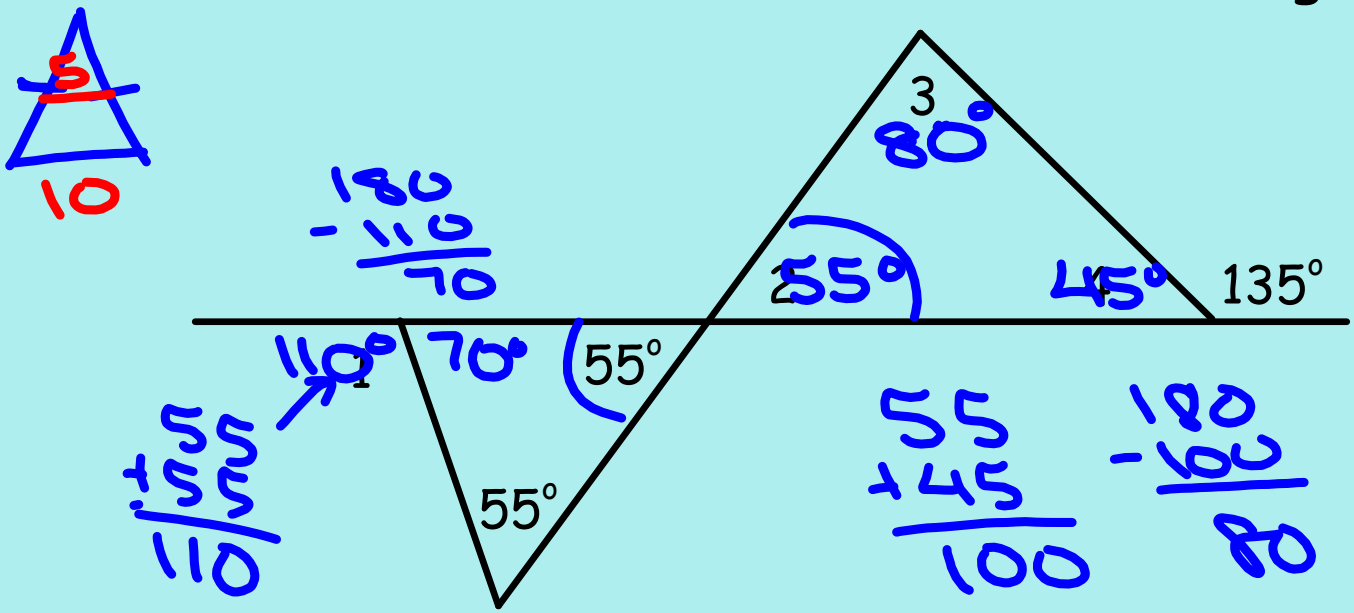
11/18/19 - Warm Up Problem

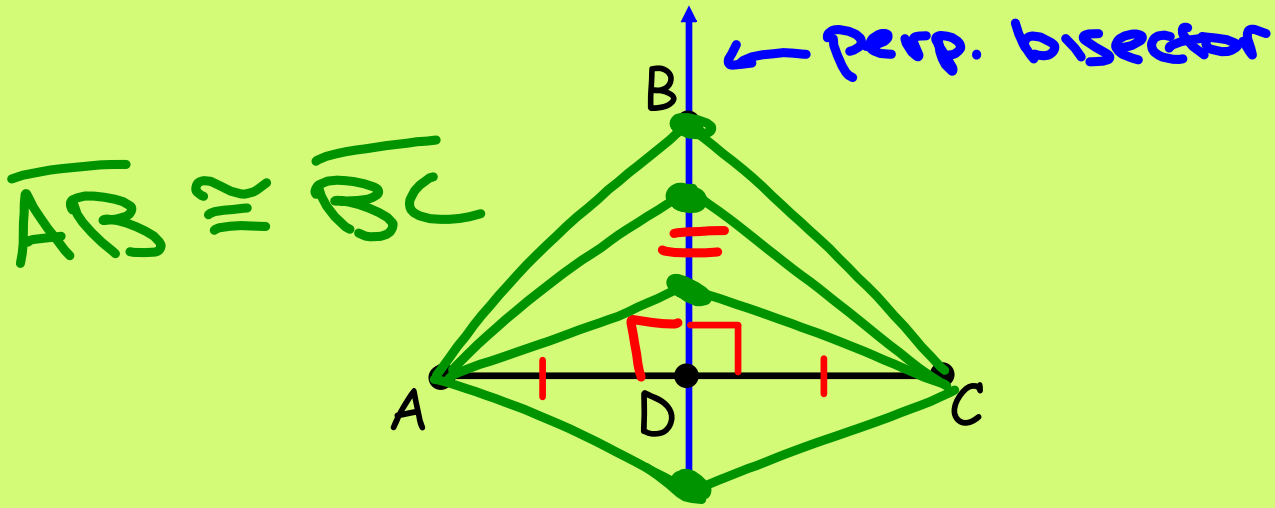
Find the measure of each numbered angle.



Concept 11 - Bisectors, Medians, and Altitudes

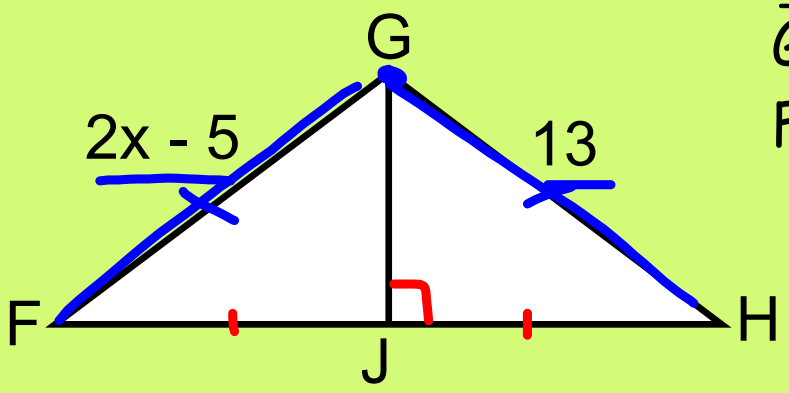
Goals: Identify and use properties of perpendicular bisectors, angle bisectors, medians, and altitudes of triangles

Perpendicular Bisector: a segment or line that goes through the midpoint of a segment and makes a 90 degree angle.



Perpendicular Bisector Theorem

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



$\overline{GJ}$ is a perpendicular bisector.

Find the value of x.

$2x - 5 = 13$

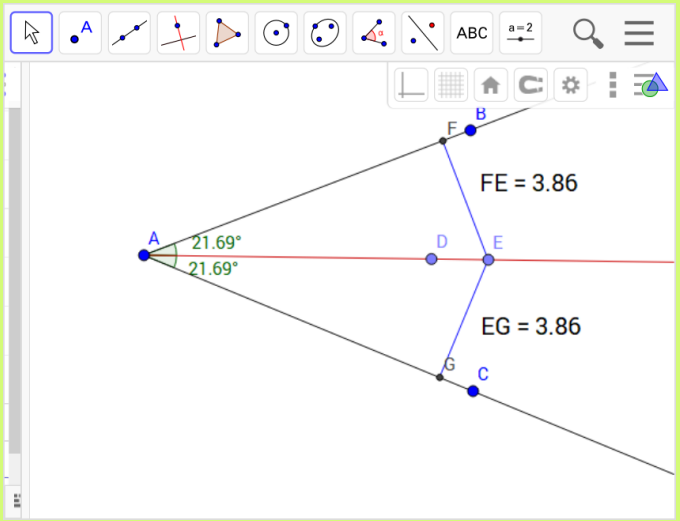
$+5 \quad +5$

$2x = 18$

$\frac{2x}{2} = \frac{18}{2}$

$x = 9$

What type of triangle is ΔGFH?



Angle Bisector

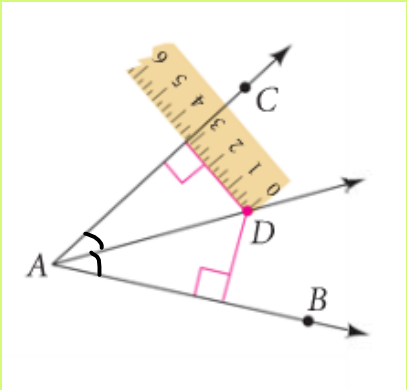
- a ray, segment, or line that divides an angle into two congruent adjacent angles

– cuts an angle in half

Angle Bisector Theorem

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

If $\overrightarrow{AD}$ is an angle bisector, then CD = DB.



Find each measure.

x = 8

BF = 40

DF = 40

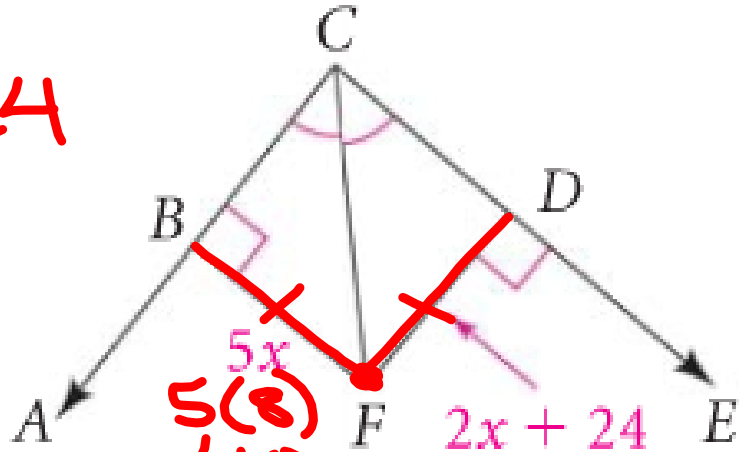
$5x = 2x + 24$

$-2x \quad -2x$

$3x = 24$

$\frac{3x}{3} = \frac{24}{3}$

$x = 8$



$5(8)$

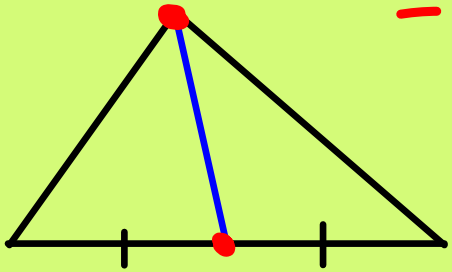
40

$2(8)+24$

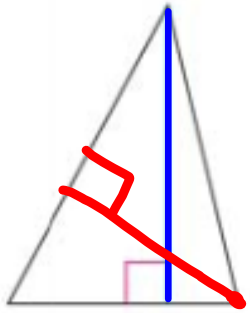
40

Median: a segment inside of a triangle whose endpoints are a vertex and the midpoint of the opposite side

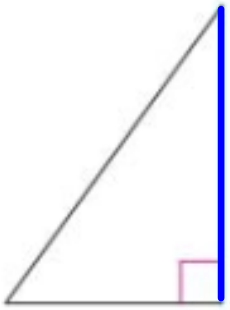
- cuts a side in half



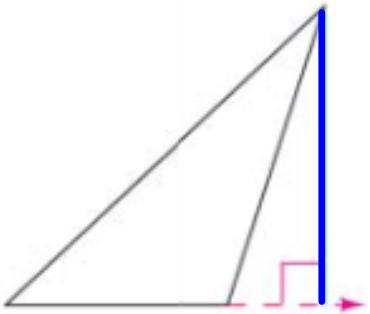
Altitude: a segment inside of a triangle which starts at a vertex and ends perpendicular to the opposite side



Acute Triangle:
Altitude is inside.

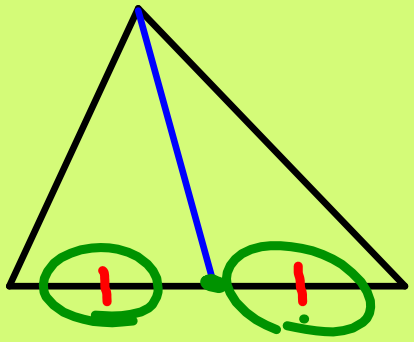


Right Triangle:
Altitude is a side.

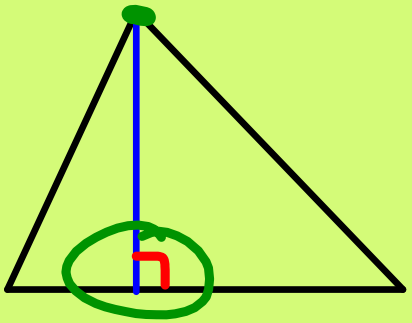


Obtuse Triangle:
Altitude is outside.

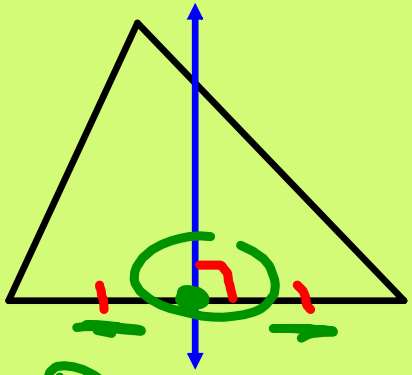
Identify each as a perpendicular bisector, angle bisector, median, or altitude.



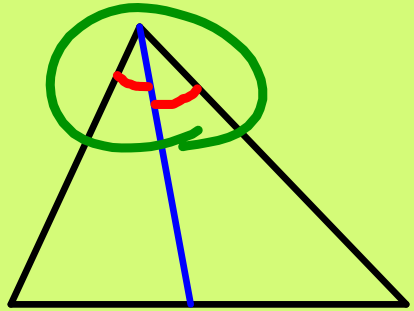
Median



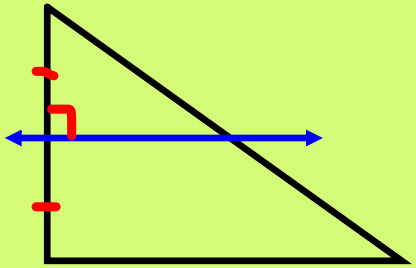
Altitude



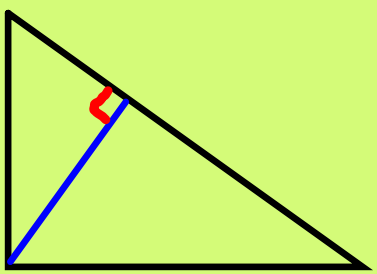
Perp. Bisector



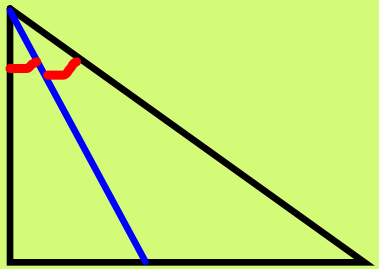
Angle Bisector



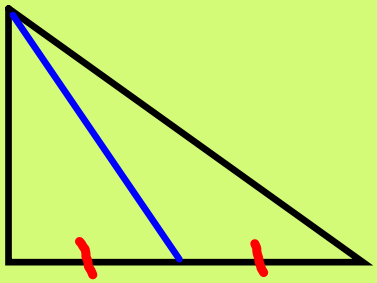
Perp. Bisector



Altitude



Angle Bisector



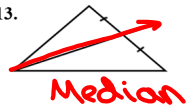
Median

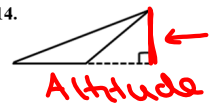
Assignment:

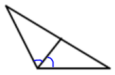
Concept 11 Worksheet
(13-26)

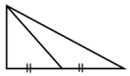
BISECTORS, MEDIANS, AND ALTITUDES

Identify each triangle as containing either a perpendicular bisector, angle bisector, median, or altitude.

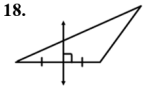
13. 

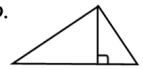
14. 

15. 

16. 

17. 

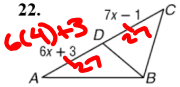
18. 

19. 

20. 

21. 

Find the indicated variables and measures. Show your work.

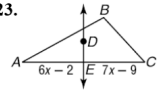
22. 

$\overline{BD}$ is a median.

$6x+3 = 7x-1$
$-6x \quad -6x$
$3 = x-1$
$+1 \quad +1$
$x = 4$

$x =$ 4

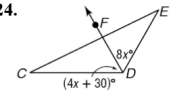
AC = 54

23. 

$\overline{DE}$ is the perpendicular bisector of $\overline{AC}$.

$x =$ _____

AC = _____

24. 

$\overline{DF}$ bisects $\angle CDE$.

$x =$ _____

$m\angle CDE =$ _____

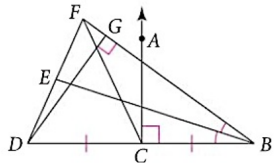
25. In ΔBDF, decide if each segment is an altitude, median, angle bisector, or perpendicular bisector.

a. $\overline{DG}$

b. $\overline{EB}$

c. $\overline{AC}$

d. $\overline{FC}$



26. In ΔACE, decide if each segment is an altitude, median, angle bisector, or perpendicular bisector.

a. $\overline{AD}$

b. $\overline{BE}$

c. $\overline{CF}$