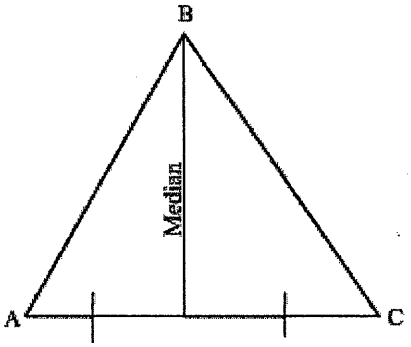
Geometry
Points of Concurrency Notes
Centroid and Orthocenter

Key

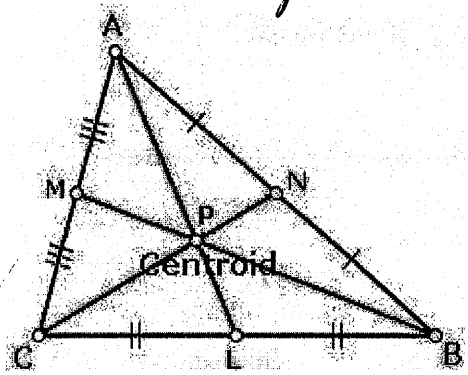
Essential Question 1: What are the properties of a median?

- A median of a triangle is a segment whose endpoints are a vertex of the triangle and the midpoint of the opposite side.



- The point of concurrency of the **medians of a triangle** is called the centroid of the triangle.
- The centroid is the concurrency point of the triangle

Theorem: The medians of a triangle intersect at a point that is two-thirds of the distance from each vertex to the midpoint of the opposite side

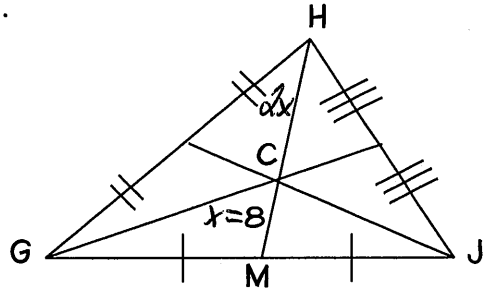


The centroid is point of concurrency inside the triangle.

Example 1: C is the centroid of ΔΔGHJ and CM = 8. Find CH and HM.

$CH = 2(8) = 16$

$HM = 16 + 8 = 24$



Example 2: G is the centroid of ΔΔABC. Find the value of x given FG = x + 8 and AF = 9x – 6.

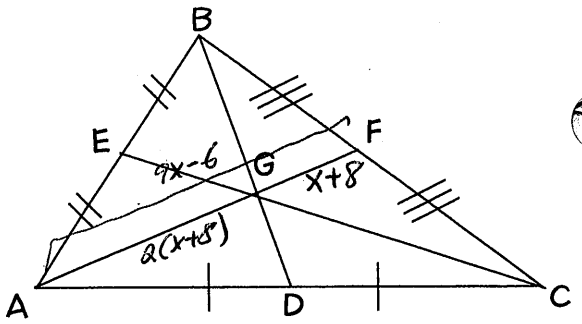
$2(x+8)+x+8 = 9x-6$

$2x+16+x+8 = 9x-6$

$3x+24 = 9x-6$

$30 = 6x$

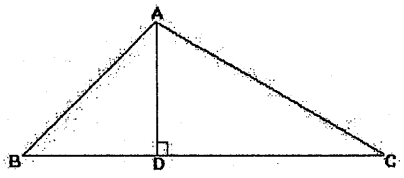
$5 = x$



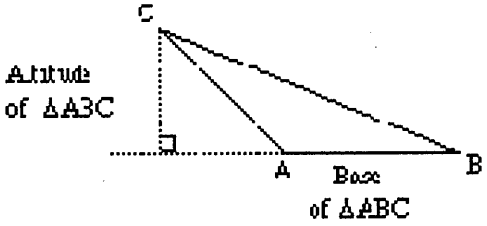
Essential Question 2: What are the properties of an altitude?

- An altitude of a triangle is the perpendicular segment from a vertex to the opposite side or to the line that contains the opposite side.

Acute



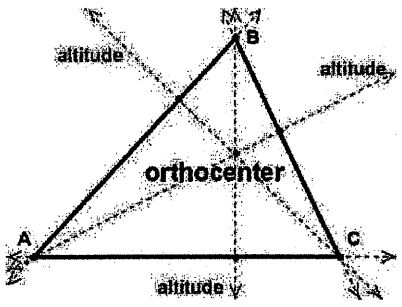
Obtuse



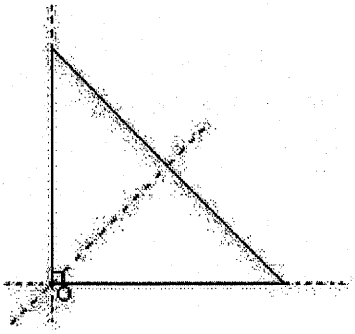
- Another word for the altitude of a triangle is the height of the triangle.

- The point of concurrency of the **altitudes of a triangle** is called the orthocenter of the triangle.

Acute



Right



Obtuse