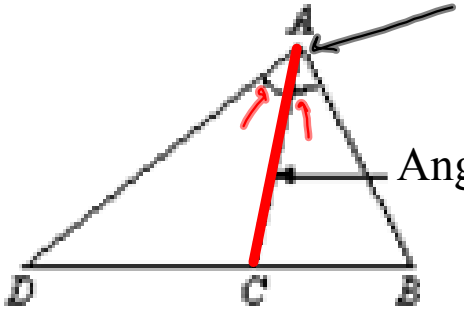
Lesson 5.3
Medians, Altitudes, Angle Bisector & Perpendicular Bisectors

VOCABULARY

In a triangle, an **angle bisector** is a segment from the Corner **VERTEX** of the angle to its opposite side on the ray Opposite the angle.

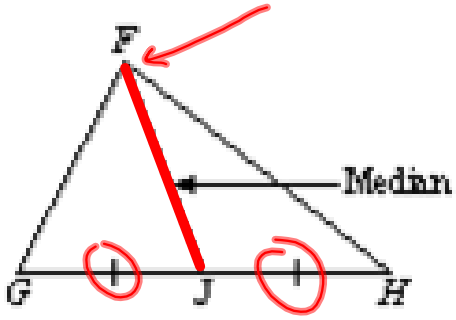
$\overline{AC}$ is an angle bisector of ΔABD from vertex A to side $\overline{DB}$



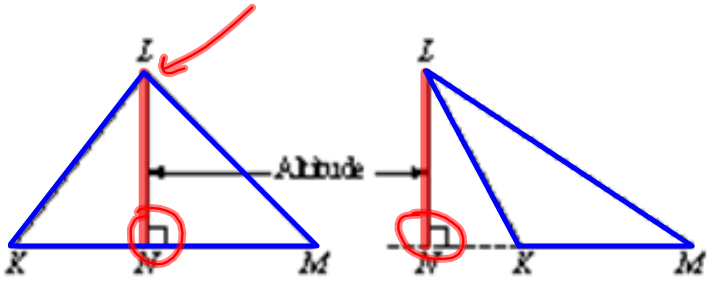
Angle Bisector

A **median** of a triangle is a segment drawn from a **VERTEX** to the **MIDPOINT** of the opposite side.

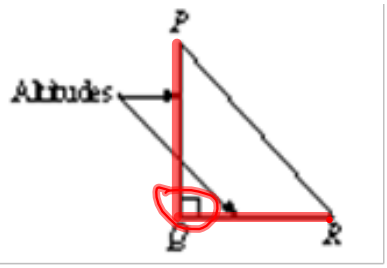
$\overline{FJ}$ is a median of ΔFGH from vertex F to side $\overline{GH}$.



An **altitude** of a triangle is a perpendicular segment drawn from a **VERTEX** to the line that contains the **OPPOSITE** side. An altitud may lie outside of the triangle. It may also be a side of the triangle.

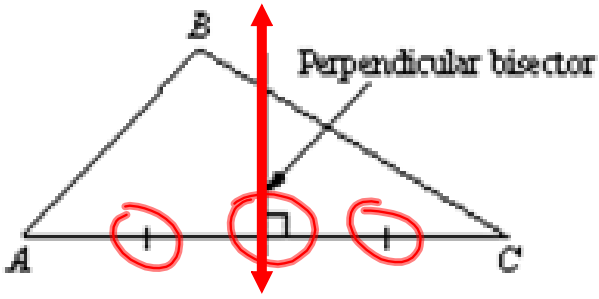


In these two triangles, $\overline{LN}$ is an altitude of ΔKLM from vertex L.



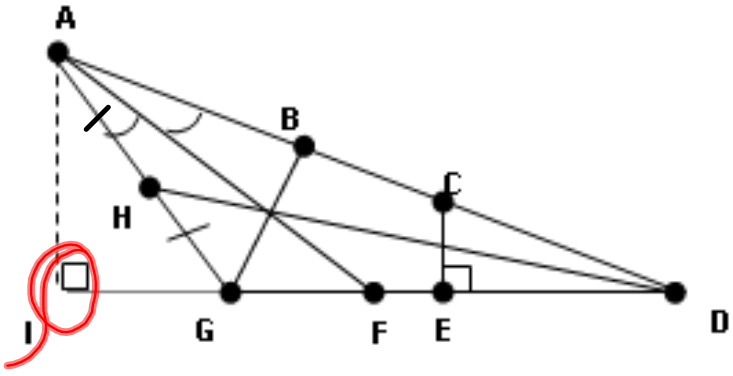
In ΔPRQ, $\overline{PQ}$ is the altitude from P a $\overline{QR}$ is the altitude from R.

A **perpendicular bisector** of a side of a triangle is a line perpendicular to a side through the **MIDPOINT** of the side. A perpendicular bisector of $\overline{AC}$ n ΔABC is shown.



Examples

Given obtuse triangle ΔAGD with obtuse angle $\angle G$, and $\overline{GE} \cong \overline{DE}$. Identify a median, an angle bisector, an altitude and a perpendicular bisector.



1. Name an angle bisector.
$\overline{AF}$

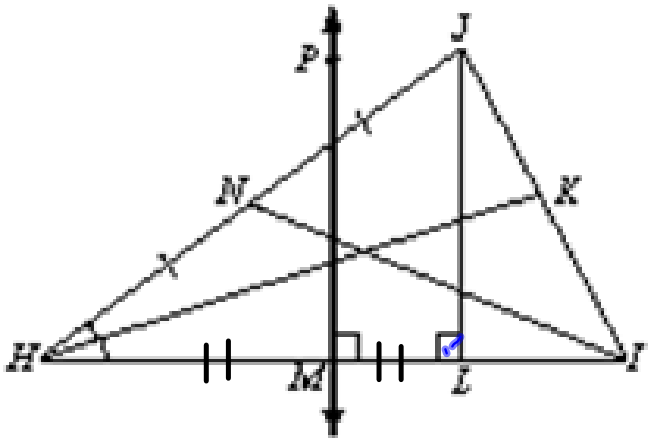
2. Name a median.
$\overline{HD}$

3. Name a perpendicular bisector. $\overline{CE}$

4. Name an altitude.
$\overline{AF}$

Practice

Use the figure to the right.



1. Name an angle bisector.

HK

2. Name a median.

JN

3. Name a perpendicular bisector.

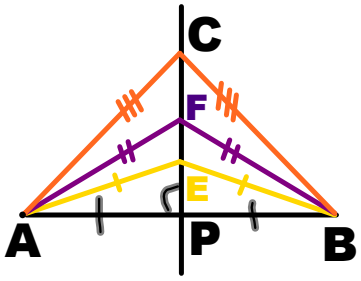
MP

4. Name an altitude.

JL

PERPENDICULAR BISECTOR THEOREM

A point is on the perpendicular bisector of a segment if and only if it is equidistant from the endpoints of the segment.



$\overline{CP}$ is the perpendicular bisector of $\overline{AB}$