

Honors Geometry

Notes Section 5A

Use Medians and Altitudes

VOCABULARY

Median of a triangle: _____

Centroid: _____

Altitude of a triangle: _____

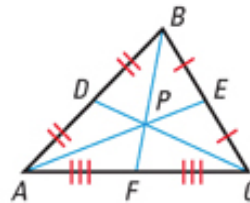
Orthocenter: _____

THEOREM 5.8 Concurrency of Medians of a Triangle

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 medians of $\triangle ABC$ meet at P and

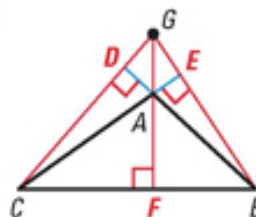
$$AP = \frac{2}{3} AE, BP = \frac{2}{3} BF, \text{ and } CP = \frac{2}{3} CD.$$



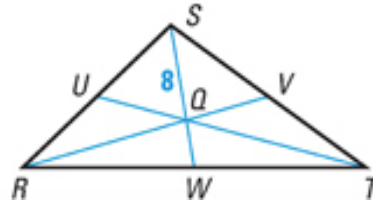
THEOREM 5.9 Concurrency of Altitudes of a Triangle

The lines containing the altitudes of a triangle are concurrent.

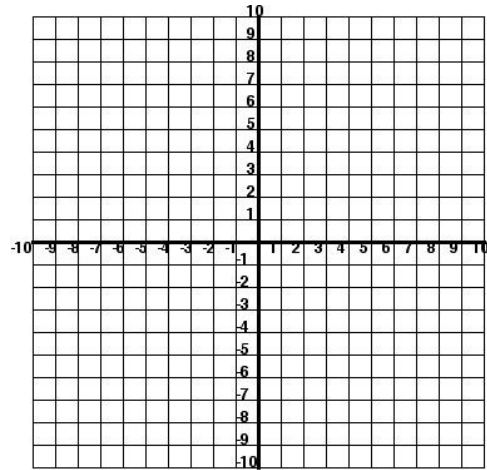
The lines containing \overline{AF} , \overline{BE} , and \overline{CD} meet at G .



EXAMPLE 1 In $\triangle RST$, Q is the centroid and $SQ = 8$. Find QW and SW .

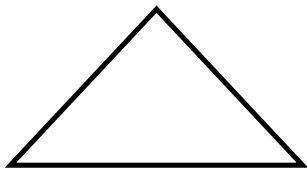


EXAMPLE 2 The vertices of $\triangle FGH$ are $F(2,5)$, $G(4,9)$ and $H(6,1)$. What are the coordinates of the centroid?

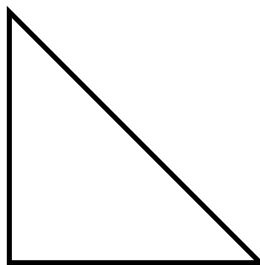


EXAMPLE 3 Find the orthocenter P in an acute triangle, a right triangle and an obtuse triangle.

a) Acute



b) Right



c) Obtuse

