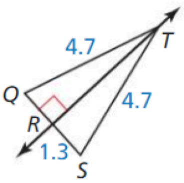
Bell Ringer

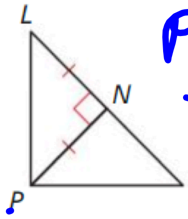
Monday 2/3

1. Find QR



$QR = 1.3$

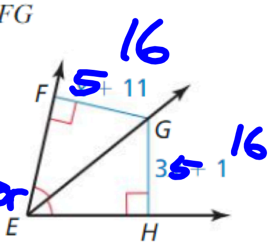
2. Which point is the perpendicular Bisector of $\overline{LM}$?



P or N

$\overline{PN}$ ⊥ Bisector

3. Find FG



$3x + 1 = x + 11$
$-x - 1 \quad -x - 1$
$2x = 10$
$x = 5$

$FG = 16$

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1. Using your ruler draw a triangle,
2. label each vertex A, B, and C on the inside.
3. Cut out the triangle.

Find the midpoints of each side by:

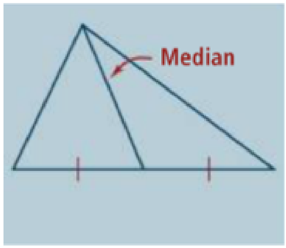
1. Fold vertex A until it touches vertex B and crease the side in the center of segment AB. Mark your crease with a point.

2. Fold vertex A until it touches vertex C and crease the side in the center of segment AC. Mark your crease with a point.

3. Fold vertex B until it touches vertex C and crease the side in the center of segment BC. Mark your crease with a point.

4. Using a ruler, draw three lines that connect each vertex with the midpoint on the opposite side.

The segments drawn were **medians of the triangle.** The Median of a triangle is a segment whose endpoints are a vertex and the midpoint of the opposite side. The triangles three medians are always concurrent.



In a triangle, the point of concurrency of the medians is the **centroid of the triangle**. This is also the *center of gravity* of a triangle because it is where the triangular shape will balance. For any triangle, the centroid is always inside the triangle.

Label the point of concurrency D

Measure Each of your medians (from vertex A to the midpoint, Vertex B to the midpoint, and Vertex C to the midpoint)

Next measure the lengths of AD, BD, and CD

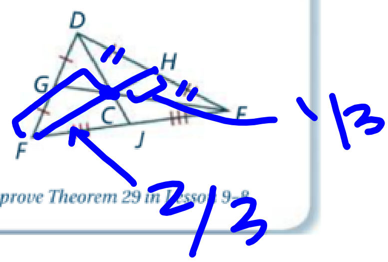
Let's look at some ratios:

take note

Theorem 29 Concurrency of Medians Theorem

The medians of a triangle are concurrent at a point that is two thirds the distance from each vertex to the midpoint of the opposite side.

$DC = \frac{2}{3}DJ \qquad EC = \frac{2}{3}EG \qquad FC = \frac{2}{3}FH$



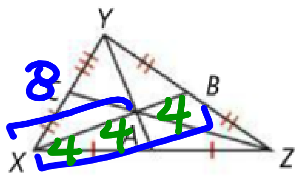
You will prove Theorem 29 in Lesson 9-8.

Problem 1 Finding the Length of a Median

In the diagram at the right, $XA = 8$. What is the length of $\overline{XB}$?

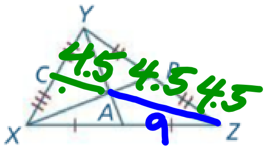
$\cancel{\frac{3}{2}} \cdot \cancel{\frac{2}{3}} XB = \frac{8 \cdot 3}{2}$

$\frac{24}{2} = \boxed{12}$



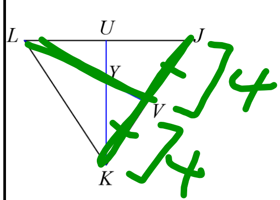
Got It? a. If $ZA = 9$, what is the length of $\overline{ZC}$?

b. **Reasoning** What is the ratio of ZA to AC? Explain.



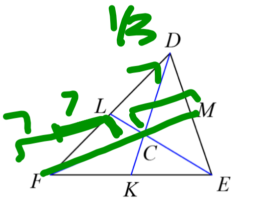
$\overline{ZC} = 13.5$

Find KJ if $VJ = 4$



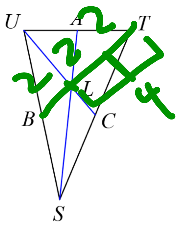
$\boxed{8}$

Find FM if $CM = 7$



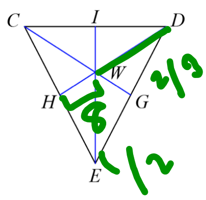
$7 \cdot 3 = \boxed{21}$

Find TB if $TL = 4$



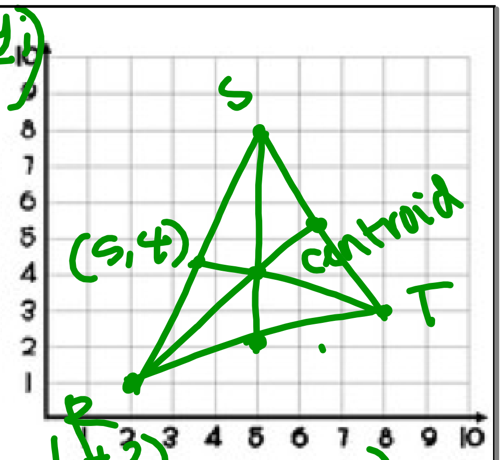
$\boxed{6}$

Find DW if $WH = 8$



$\boxed{16}$

› R(2, 1), S(5, 8), T(8, 3) $\left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)$



› Use the midpoint formula to find the midpoint of RT

› Now use the median formula to find the centroid

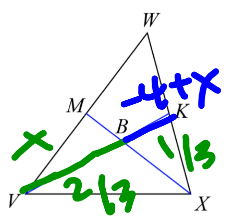
› Hint: the x value will remain the same

$\overline{RT} = \left(\frac{2+8}{2}, \frac{1+3}{2}\right) = (5,2)$

$\overline{ST} = \left(\frac{5+8}{2}, \frac{8+3}{2}\right) = (6.5, 5.5)$

$\overline{RS} = \left(\frac{5+2}{2}, \frac{1+8}{2}\right) = (3.5, 4.5)$

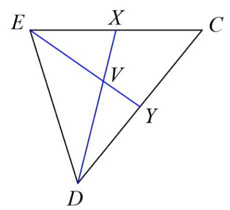
1. Find x if $VB = x$ and $BK = -4 + x$

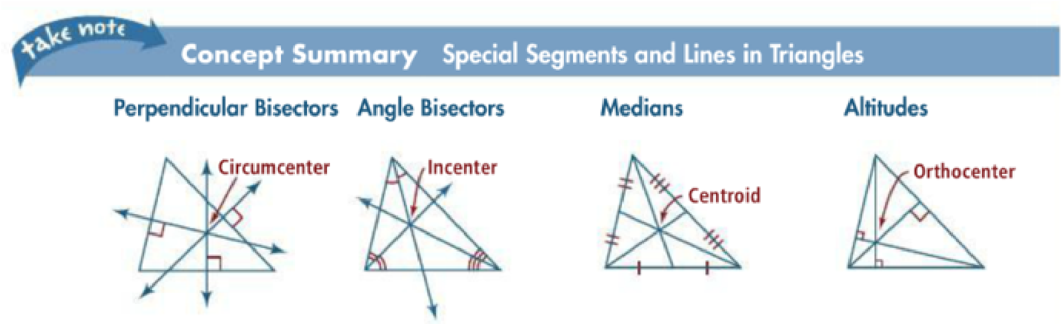


$x = 2(-4+x)$

$-4+x = \frac{3x}{2}$

2. Find x if $EV = -6 + 2x$ and $EY = x + 7$





6.4 Medians and Altitudes of Triangles

Pg 348-350 #s 2, 3-13 odd, 17, 27, 28, 41, 43, 55, 56