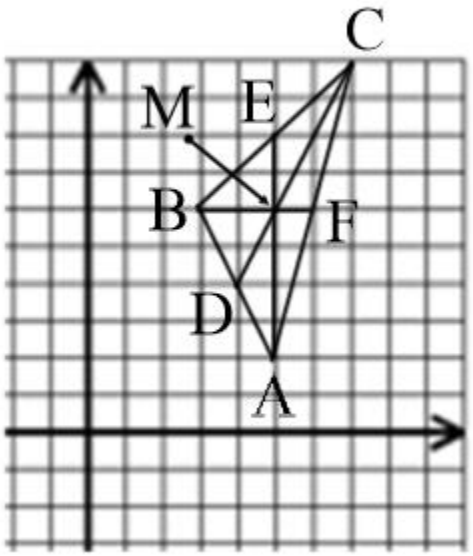
8.6 Medians in a Triangle

Name: _____Hr:_____

Graph A, B, and C. Determine the midpoints D, E, and F of each side. Draw the three medians and find the centroid "M". Show that the centroid divides the medians into a2:1 ratio.

1. $A(5,2),\quad B(3,6),\quad C(7,10)$



Midpoint of $\overline{AB}$: Label it "D"

$(4,4)$

Midpoint of $\overline{BC}$: Label it "E"

$(5,8)$

Midpoint of $\overline{AC}$: Label if "F"

$(6,6)$

Centroid: Label it "M"

$(5,6)$

Length of $\overline{CM}$

$\sqrt{20}=2\sqrt{5}$

Length of $\overline{MD}$

$\sqrt{5}$

Length of $\overline{CD}$

$\sqrt{45}=3\sqrt{5}$

Show that $CM=\frac{2}{3}CD$

$2\sqrt{5}=\frac{2}{3}\left(3\sqrt{5}\right)$

$2\sqrt{5}=2\sqrt{5}$

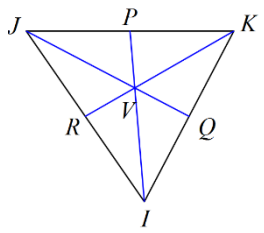
Show that $MD=\frac{1}{3}CD$

$\sqrt{5}=\frac{1}{3}\left(3\sqrt{5}\right)$

$\sqrt{5}=\sqrt{5}$

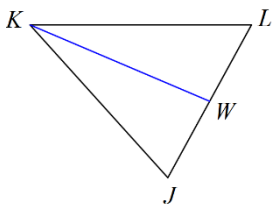
For problems 2-8 assume the segments that appear to be medians are medians.

2. Find VR if $KR=33$



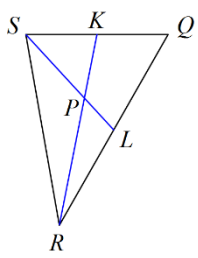
VR = 11

3. Find JL if $WL=2.1$



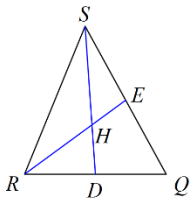
JL = 4.2

4. Find PL if $SP=6$



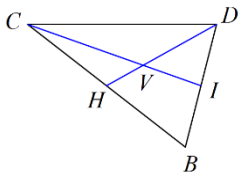
PL =3

5. Find x if $SH=x-7$ and $SD=x-5$



x =11

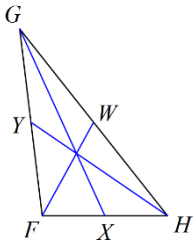
6. Find x if $CI=5x+11$ and $VI=5x-9$



x = 3.8

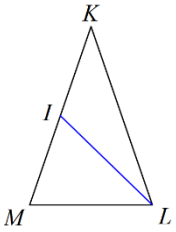
7. Find GF if $YF = 4$

GF =8



8. Find x if $IM = 2x - 1$ and $IK = x$

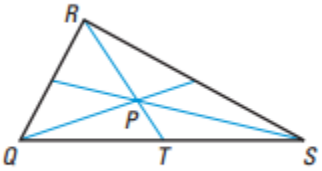
x = 1



9. Given: P is the centroid of $\triangle QRS$

$PT = 5$

Prove: $RT = 15$

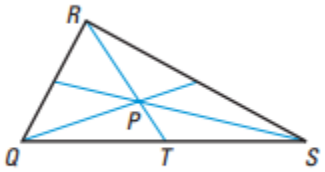


Statement	Reason
1. P is the centroid of $\triangle QRS$	1. Given
2. $PR = \frac{2}{3}RT$	2. Medians of a Triangle Theorem
3. $PR + PT = RT$	3. Segment Addition Postulate
4. $\frac{2}{3}RT + PT = RT$	4. Substitution Property of Equality
5. $PT = \frac{1}{3}RT$	5. Subtraction Property of Equality
6. $PT = 5$	6. Given
7. $5 = \frac{1}{3}RT$	7. Substitution Property of Equality
8. $15 = RT$	8. Multiplication Property of Equality
9. $RT = 15$	9. Symmetric Property of Equality

10. Given: P is the centroid of $\triangle QRS$

$PR = 26$

Prove: $PT = 13$



Statement	Reason
1. P is the centroid of $\triangle QRS$	1. Given
2. $PR = \frac{2}{3}RT$	2. Medians of a Triangle Theorem
3. $PR = 26$	3. Given
4. $26 = \frac{2}{3}RT$	4. Transitive Property of Equality
5. $39 = RT$	5. Multiplication Property of Equality
6. $PR + PT = RT$	6. Segment Addition Postulate
7. $26 + PT = 39$	7. Substitution Property of Equality
8. $PT = 13$	8. Subtraction Property of Equality