CENTROIDS

A median is drawn from the vertex to the midpoint of the opposite side. The centroid is the intersection of the medians

1) In the diagram below of ΔACE, medians $\overline{AD}$, $\overline{EB}$, and $\overline{CF}$ intersect at G. The length of $\overline{FG}$ is 12 cm.

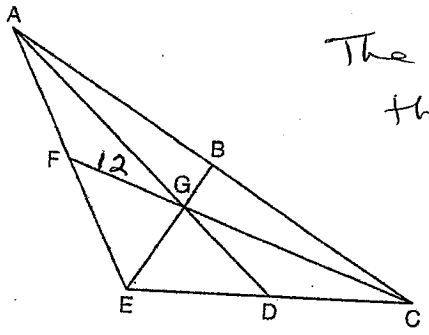
What is the length, in centimeters, of $\overline{GC}$?

1) 24
2) 12
3) 6
4) 4

$$\frac{GC}{FG} = \frac{2}{1}$$

$$\frac{x}{12} = \frac{2}{1}$$

$$x = 24$$



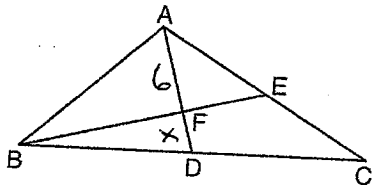
The parts of the centroid are in a ratio of 2:1

2) In the diagram of ΔABC below, medians $\overline{AD}$ and $\overline{BE}$ intersect at point F. If $AF = 6$, what is the length of $\overline{FD}$?

1) 6
2) 2
3) 3
4) 9

$$\frac{AF}{FD} = \frac{2}{1}$$

$$\frac{6}{x} = \frac{2}{1} \qquad 2x = 6 \qquad x = 3$$



3) In ΔABC shown below, P is the centroid and $BF = 18$. What is the length of $\overline{BP}$?

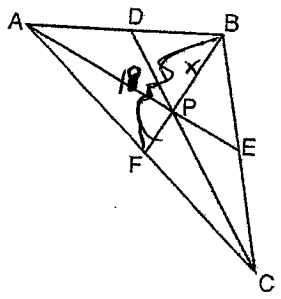
1) 6
2) 9
3) 3
4) 12

If comparing part of a centroid to the whole:

$$\overline{BP} = \frac{2}{3}\overline{BF}$$

$$\overline{BP} = \frac{2}{3}(18)$$

$$\overline{BP} = 12$$



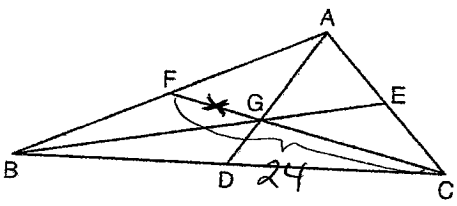
4) In the diagram below of ΔABC, medians $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$ intersect at G. If $CF = 24$, what is the length of $\overline{FG}$?

1) 8
2) 10
3) 12
4) 16

$$\overline{FG} = \frac{1}{3}\overline{CF}$$

$$\overline{FG} = \frac{1}{3}(24)$$

$$FG = 8$$



) As shown below, the medians of ΔABC intersect at D. If the length of $\overline{BE}$ is 12, what is the length of $\overline{BD}$?

1) 8

2) 9

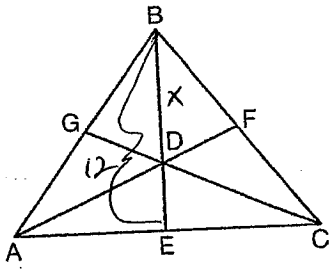
3) 3

4) 4

$\overline{BD} = \frac{2}{3}\overline{BE}$

$\overline{BD} = \frac{2}{3}(12)$

$\overline{BD} = 8$



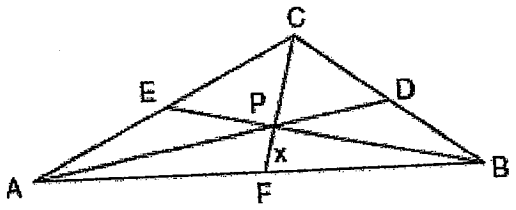
) In the diagram of ΔABC below, Jose found centroid P by constructing the three medians. He measured $\overline{CF}$ and found it to be 6 inches. If $PF = x$, which equation can be used to find x?

1) $x + x = 6$

2) $2x + x = 6$

3) $3x + 2x = 6$

4) $x + \frac{2}{3}x = 6$



7) In the diagram below, point P is the centroid of ΔABC. If $PM = 2x + 5$ and $BP = 7x + 4$, what is the length of $\overline{PM}$?

1) 9

2) 2

3) 18

4) 27

$\frac{\overline{BP}}{\overline{PM}} = \frac{2}{1}$

$\frac{7x+4}{2x+5} = \frac{2}{1}$

$2(2x+5) = 7x+4$

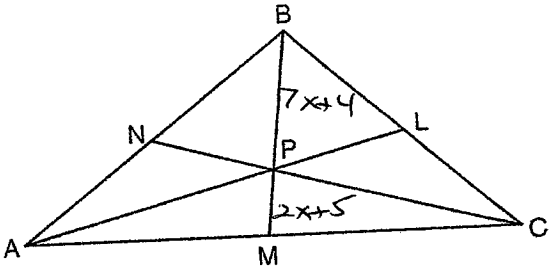
$4x + 10 = 7x + 4$

$-4x \quad -4 \quad -4x \quad -4$

$6 = 3x$

$3x = 6$

$x = 2$



8) The three medians of a triangle intersect at a point. Which measurements could represent the segments of one of the medians?

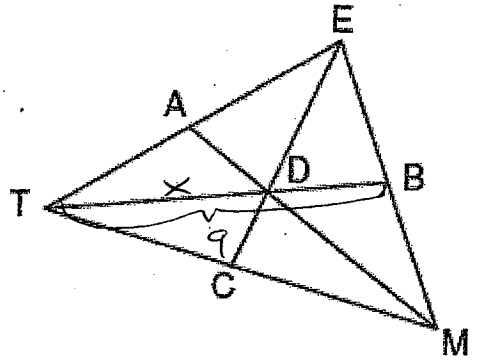
1) 2 and 3

2) 3 and 4.5

3) 3 and 6

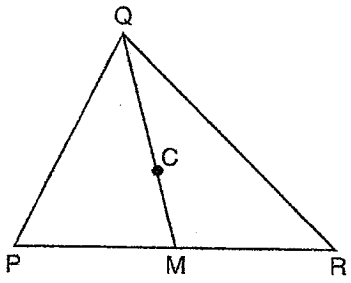
4) 3 and 9

9) In the diagram below of ΔTEM, medians $\overline{TB}$, $\overline{EC}$, and $\overline{MA}$ intersect at D, and $TB = 9$. Find the length of $\overline{TD}$.



$TD = \frac{2}{3}(TB)$

$TD = \frac{2}{3}(9)$

$TD = 6$

10) In the diagram below, $\overline{QM}$ is a median of triangle PQR and point C is the centroid of triangle PQR. If $QC = 5x$ and $CM = x + 12$, determine and state the length of $\overline{QM}$