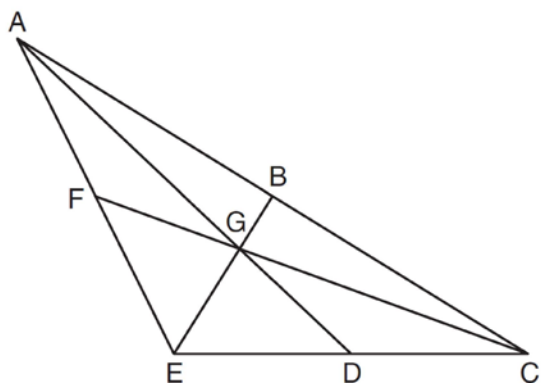


G.G.43: Centroid: Investigate, justify, and apply theorems about the centroid of a triangle, dividing each median into segments whose lengths are in the ratio 2:1

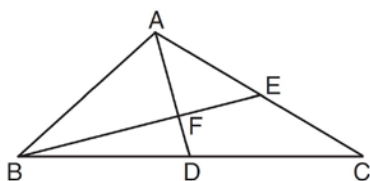
- 1 In the diagram below of $\triangle ACE$, medians \overline{AD} , \overline{EB} , and \overline{CF} intersect at G . The length of \overline{FG} is 12 cm.



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

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

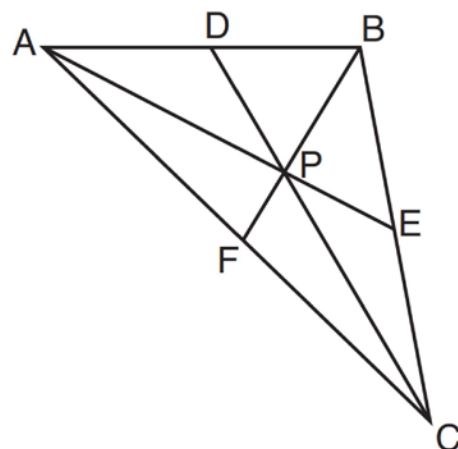
- 2 In the diagram of $\triangle ABC$ below, medians \overline{AD} and \overline{BE} intersect at point F .



If $AF = 6$, what is the length of \overline{FD} ?

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

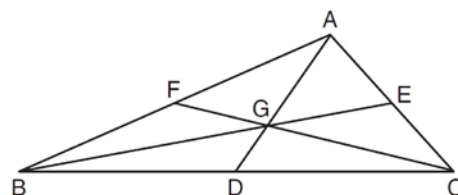
- 3 In $\triangle ABC$ shown below, P is the centroid and $BF = 18$.



What is the length of \overline{BP} ?

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

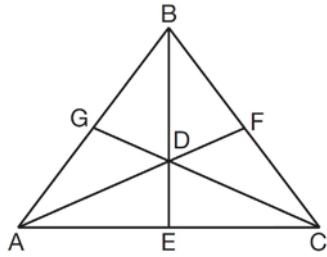
- 4 In the diagram below of $\triangle ABC$, medians \overline{AD} , \overline{BE} , and \overline{CF} intersect at G .



If $CF = 24$, what is the length of \overline{FG} ?

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

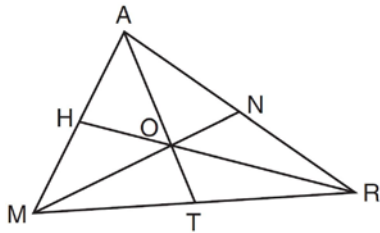
- 5 As shown below, the medians of $\triangle ABC$ intersect at D .



If the length of \overline{BE} is 12, what is the length of \overline{BD} ?

- 1) 8
- 2) 9
- 3) 3
- 4) 4

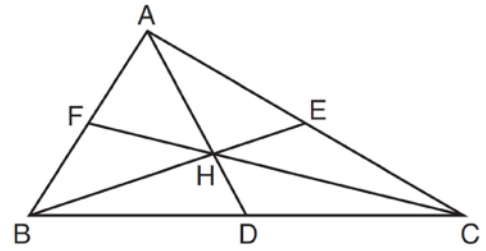
- 6 In the diagram below of $\triangle MAR$, medians \overline{MN} , \overline{AT} , and \overline{RH} intersect at O .



If $TO = 10$, what is the length of \overline{TA} ?

- 1) 30
- 2) 25
- 3) 20
- 4) 15

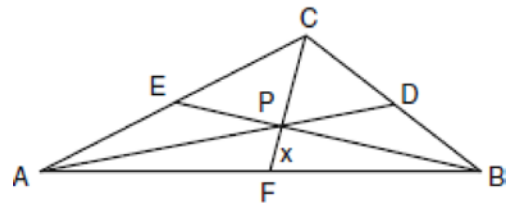
- 7 In the diagram below of $\triangle ABC$, point H is the intersection of the three medians.



If \overline{DH} measures 2.4 centimeters, what is the length, in centimeters, of \overline{AD} ?

- 1) 3.6
- 2) 4.8
- 3) 7.2
- 4) 9.6

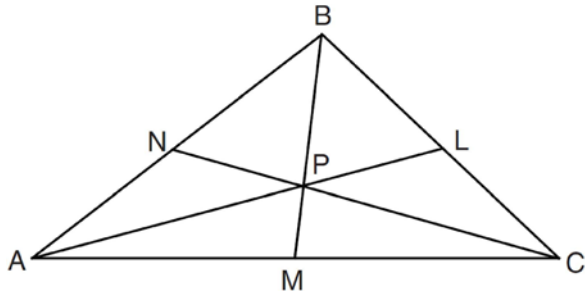
- 8 In the diagram of $\triangle ABC$ below, Jose found centroid P by constructing the three medians. He measured \overline{CF} and found it to be 6 inches.



If $PF = x$, which equation can be used to find x ?

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

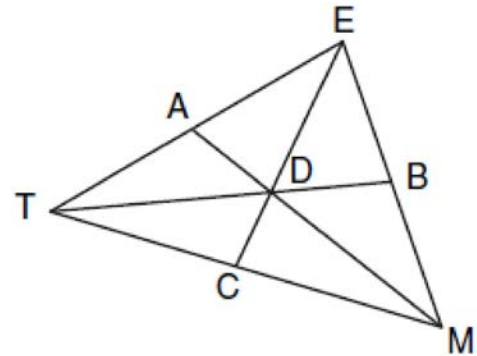
- 9 In the diagram below, point P is the centroid of $\triangle ABC$.



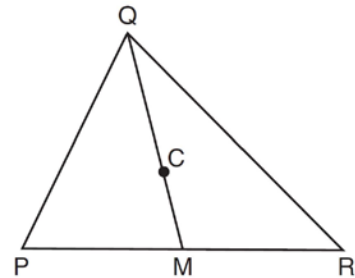
If $\overline{PM} = 2x + 5$ and $\overline{BP} = 7x + 4$, what is the length of \overline{PM} ?

- 1) 9
 - 2) 2
 - 3) 18
 - 4) 27
- 10 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

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



- 12 In the diagram below, \overline{QM} is a median of triangle PQR and point C is the centroid of triangle PQR .



If $\overline{QC} = 5x$ and $\overline{CM} = x + 12$, determine and state the length of \overline{QM} .

G.G.43: Centroid: Investigate, justify, and apply theorems about the centroid of a triangle, dividing each median into segments whose lengths are in the ratio 2:1

Answer Section

1 ANS: 1 REF: 061104ge

2 ANS: 3

The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

REF: 081307ge

3 ANS: 4

The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

REF: 081220ge

4 ANS: 1

The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

$$\overline{GC} = 2\overline{FG}$$

$$\overline{GC} + \overline{FG} = 24$$

$$2\overline{FG} + \overline{FG} = 24$$

$$3\overline{FG} = 24$$

$$\overline{FG} = 8$$

REF: 081018ge

5 ANS: 1

$$2x + x = 12. \quad \overline{BD} = 2(4) = 8$$

$$3x = 12$$

$$x = 4$$

REF: 011408ge

6 ANS: 1

REF: 061527ge

7 ANS: 3

$$2.4 + 2(2.4) = 7.2$$

REF: 081526ge

8 ANS: 2

REF: 060914ge

9 ANS: 1

$$7x + 4 = 2(2x + 5). \quad PM = 2(2) + 5 = 9$$

$$7x + 4 = 4x + 10$$

$$3x = 6$$

$$x = 2$$

REF: 011226ge

10 ANS: 3

REF: 061424ge

11 ANS:
6

REF: 011034ge

12 ANS:
 $5x = 2(x + 12)$ $QM = 5(8) + (8) + 12 = 60$

$$5x = 2x + 24$$

$$3x = 24$$

$$x = 8$$

REF: 081433ge