

LESSON 5.4

Practice

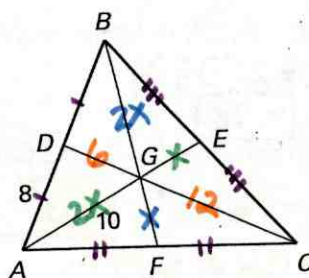
For use with pages 318-327

→ medians

S m L
X 2X 3X

G is the centroid of $\triangle ABC$, $AD = 8$, $AG = 10$, and $CD = 18$. Find the length of the segment.

1. $\overline{BD} = 8$
2. $\overline{AB} = 2(8) = 16$
3. $\overline{EG} = 2X = 10$
 $X = 5$
4. $\overline{AE} = 15$
 $10 + 5$
5. $\overline{CG} = 12$
6. $\overline{DG} = 6$



3X CD = 18
2X = 12
X = 6

7. Use the graph shown.

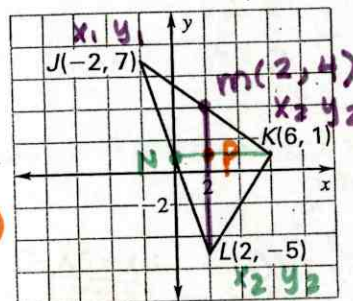
- a. Find the coordinates of M, the midpoint of \overline{JK} . Use the median \overline{LM} to find the coordinates of the centroid P.

$m\left(\frac{-2+6}{2}, \frac{7+1}{2}\right) = (2, 4)$

LM = 9
 $\frac{2}{3}(9) = 6$ units

- b. Find the coordinates of N, the midpoint of \overline{KL} .

Verify that $KP = \frac{2}{3}KN$.
 $N\left(\frac{-2+2}{2}, \frac{7-5}{2}\right) = (0, 1)$
 $KN = 6$ and $\frac{2}{3}(6) = 4$ units



P is 4 units from K

$\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right)$

Find the coordinates of the centroid P of $\triangle ABC$.

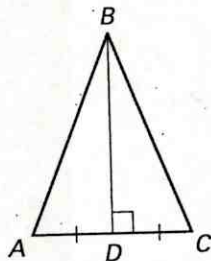
8. $A(-7, -4), B(-3, 5), C(1, -4)$

9. $A(0, -2), B(6, 1), C(9, -5)$

$P\left(\frac{-7 + -3 + 1}{3}, \frac{-4 + 5 + -4}{3}\right) = P\left(\frac{-9}{3}, \frac{-3}{3}\right) = P(-3, -1)$

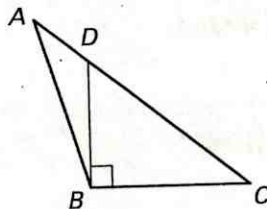
Is \overline{BD} a perpendicular bisector of $\triangle ABC$? Is \overline{BD} a median? an altitude? angle bisector?

10.



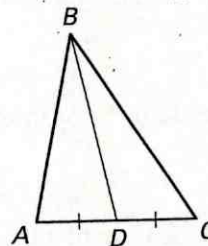
⊥ Bisector
median
altitude
angle bisector

11.



NONE

12.



median

LESSON 5.4 Practice *continued*
For use with pages 318-327

Find the measurements.

13. Given that $AB = BC$, find AD and $m\angle ABC$.

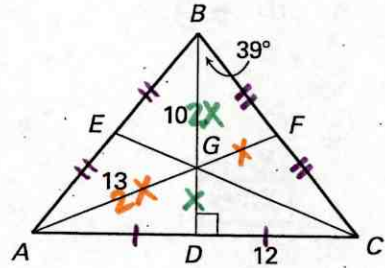
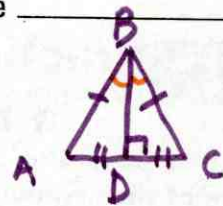
$m\angle ABC = 2(39)$
 $= 78$

14. Given that G is the centroid of $\triangle ABC$, find FG and BD .

$2X = 13$
 $X = 13/2$ or 6.5

$FG = 6.5$

$2X = 10$
 $X = 5$
 $BD = 3(5)$
 $= 15$

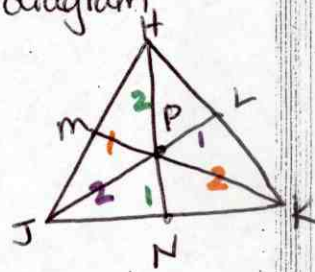


Copy and complete the statement for $\triangle HJK$ with medians \overline{HN} , \overline{JL} , \rightarrow Draw a diagram and \overline{KM} , and centroid P .

15. $PN = \frac{1}{3} HN$
 $\frac{1}{3} = \frac{1}{3}$

16. $PL = \frac{1}{2} JP$
 $\frac{1}{2} = \frac{1}{2}$

17. $KP = \frac{2}{3} KM$
 $\frac{2}{3} = \frac{2}{3}$



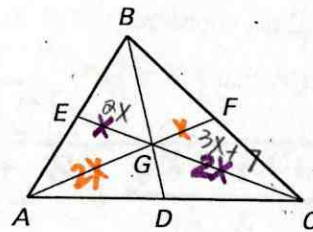
Point G is the centroid of $\triangle ABC$. Use the given information to find the value of x .

18. $CG = 3x + 7$ and $CE = 6x$
 $2EG = CG$
 $2(2x) = 3x + 7$
 $4x = 3x + 7$
 $x = 7$

$EG = x = 2x$
 $CG = 2x$
 $CE = 3x = 6x$

19. $FG = x + 8$ and $AF = 9x - 6$
 $AF = 3FG$
 $9x - 6 = 3(x + 8)$
 $9x - 6 = 3x + 24$
 $6x = 30$
 $x = 5$

20. $BG = 5x - 1$ and $DG = 4x - 5$
 $BG = 2DG$
 $5x - 1 = 2(4x - 5)$
 $5x - 1 = 8x - 10$
 $-3x = -9$
 $x = 3$



Complete the sentence with *always*, *sometimes*, or *never*.

21. The median of a triangle is ? the perpendicular bisector.

Sometimes

22. The altitude of a triangle is ? the perpendicular bisector.

Sometimes

23. The medians of a triangle ? intersect inside the triangle.

always

24. The altitudes of a triangle ? intersect inside the triangle.

Sometimes