

6.1 – 6.3 Day 3 WS: Median, Altitude, Angle Bisector, & Perpendicular Bisector

**Draw and label a figure to illustrate each situation. Be sure to include appropriate markings.**

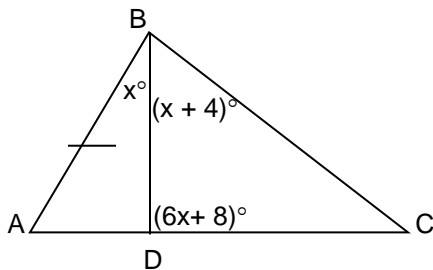
1.  $\overline{AD}$  is an altitude of  $\triangle ABC$ .                      2.  $\overline{GH}$  is a median of  $\triangle EFG$ .

3.  $\overline{NP}$  is a perpendicular bisector of  $\overline{ML}$  in  $\triangle KLM$ .                      4.  $\overline{RS}$  is the angle bisector of  $\triangle PRQ$ .

5.  $\overline{TU}$  is the altitude, median, and perpendicular bisector of  $\triangle UVW$ .

**Answer the following with Always, Sometimes or Never.**

6. The three altitudes of a triangle intersect at a vertex of the triangle. \_\_\_\_\_
7. The three medians of a triangle intersect at a point outside the triangle. \_\_\_\_\_
8. The three angle bisectors of a triangle intersect at a point inside the triangle. \_\_\_\_\_
9. Find the value of  $x$  if  $\overline{BD}$  is an altitude of  $\triangle ABC$ . \_\_\_\_\_



Use the picture to the right to determine True or False:

\_\_\_\_ 10. If  $G$  is the midpoint of  $\overline{ED}$ , then  $\overline{CG}$  is a median of  $\triangle EBD$ .

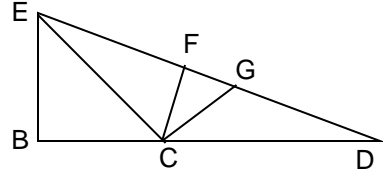
\_\_\_\_ 11. If  $\overline{CF} \perp \overline{ED}$ , then  $\overline{CF}$  is an altitude of both  $\triangle ECD$  and  $\triangle ECG$ .

\_\_\_\_ 12. If  $\overline{EB} \perp \overline{BD}$ , the  $\overline{EB}$  is an altitude of  $\triangle ECD$ .

\_\_\_\_ 13. If  $\overline{CF} \perp \overline{ED}$ , then  $\overline{CF}$  is a perpendicular bisector of  $\triangle ECD$ .

\_\_\_\_ 14. If  $\overline{CG}$  is a median of  $\triangle ECD$ , then  $G$  is the midpoint of  $\overline{ED}$ .

\_\_\_\_ 15. Each leg of a right triangle is also an altitude of the triangle.



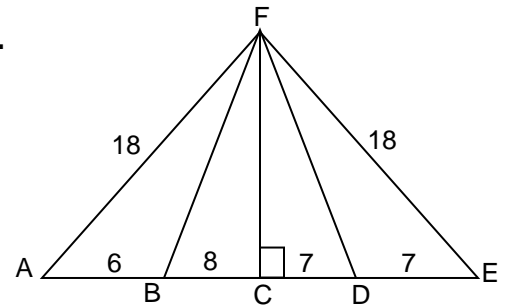
Complete each statement in as many ways as possible.

16.  $\overline{FD}$  is \_\_\_\_\_ of  $\triangle FCE$ . (1 answer)

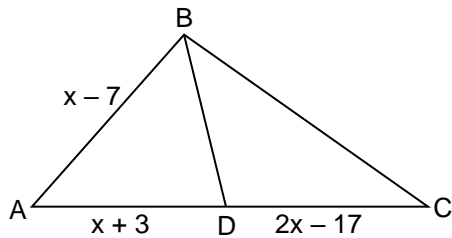
17.  $\overline{FC}$  is \_\_\_\_\_ of  $\triangle AFE$ . (4 answers)

18.  $\overline{FC}$  is \_\_\_\_\_ of  $\triangle BFE$ . (1 answer)

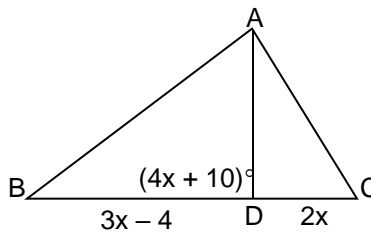
19.  $\overline{FC}$  is an altitude of \_\_\_\_\_ triangles.



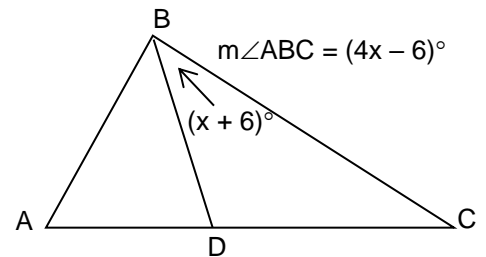
20. Find  $\overline{AB}$  if  $\overline{BD}$  is a median of  $\triangle ABC$ .



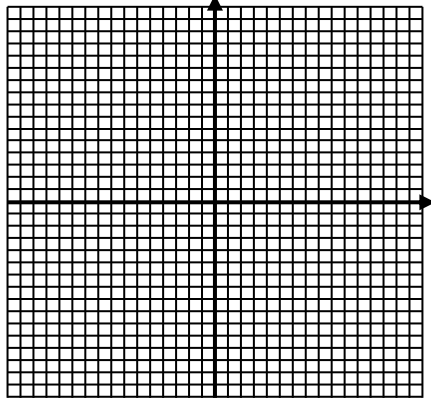
21. Find  $\overline{BC}$  if  $\overline{AD}$  is an altitude of  $\triangle ABC$ .



22. Find  $m\angle ABC$  if  $\overline{BD}$  is an angle bisector of  $\triangle ABC$ .



23. Plot the points. A(2, 5), B(12, -1), and C(-6, -8) are the vertices of  $\triangle ABC$ .



24. What are the coordinates of K if  $\overline{CK}$  is a median of  $\triangle ABC$ ?

25. What is the slope of the perpendicular bisector of  $\overline{AB}$ ?

26. What is the slope of  $\overline{CL}$  if  $\overline{CL}$  is the altitude from point C?

27. Point N on  $\overline{BC}$  has coordinates  $(6, -\frac{10}{3})$ . Is  $\overline{NA}$  an altitude of  $\triangle ABC$ ? Explain your answer.

In  $\triangle AHW$ ,  $m\angle A = 64^\circ$  and  $m\angle AWH = 36^\circ$ . If  $\overline{WP}$  is an angle bisector and  $\overline{HQ}$  is an altitude, find each measure.

28.  $m\angle AQH =$  \_\_\_\_\_

29.  $m\angle APW =$  \_\_\_\_\_

30.  $m\angle AHQ =$  \_\_\_\_\_

31.  $m\angle HXW =$  \_\_\_\_\_

32. If  $\overline{WP}$  is a median,  $AP = 3y + 11$  and  $PH = 7y - 5$ , find AH.

