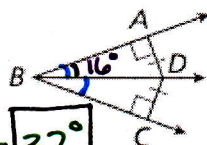


Section 6.1

Use the diagram for #1-2

1. Given that $m\angle ABD = 16^\circ$, find $m\angle ABC$



$$m\angle ABC = 2m\angle ABD = 2(16) = \boxed{32^\circ}$$

2. Given that $m\angle ABD = (2x + 12)^\circ$ and $m\angle CBD = (6x - 18)^\circ$, find the $m\angle ABC$.

$$\begin{aligned} 2x + 12 &= 6x - 18 \\ 30 &= 4x \\ 7.5 &= x \end{aligned}$$

$$m\angle ABC = \angle ABD + \angle CBD = 27 + 27$$

$$m\angle ABC = \boxed{54^\circ}$$

Use the diagram for #3-4

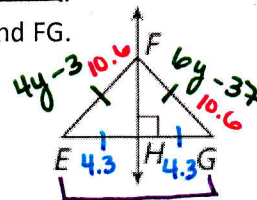
3. Given that FH is the perpendicular bisector of EG, $EF = 4y - 3$, and $FG = 6y - 37$, find FG.

$$4y - 3 = 6y - 37 \rightarrow 34 = 2y$$

$$17 = y$$

$$FG = 6(17) - 37$$

$$FG = \boxed{65}$$

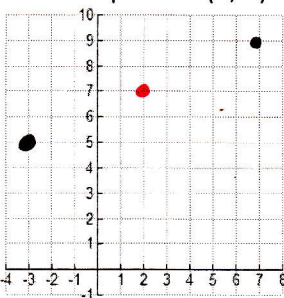


4. Given that $EF = 10.6$, $EH = 4.3$, and $FG = 10.6$, find EG.

$$EG = EH + HG$$

$$EG = \boxed{8.6}$$

5. Write an equation in point-slope form, $y - y_1 = m(x - x_1)$, for the perpendicular bisector of the segment with endpoints X(7, 9) and Y(-3, 5)



midpoint $\left(\frac{7+(-3)}{2}, \frac{9+5}{2}\right)$
 $= (2, 7)$
 x_1, y_1

$$y - 7 = -\frac{5}{2}(x - 2)$$

$$\text{slope} = \frac{5-9}{-3-7} = \frac{-4}{-10} = \frac{2}{5} \rightarrow \perp \text{ slope} = -\frac{5}{2}$$

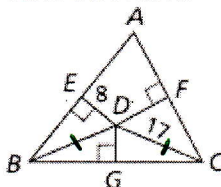
(opposite reciprocal)

Section 6.2

6. ED, FD, and GD are perpendicular bisectors of $\triangle ABC$. Find BD.

$$AD = CD = BD$$

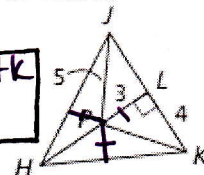
$$17 = 17 = \boxed{17}$$



7. JP, KP, and HP are angle bisectors of $\triangle HJK$. Find the distance from P to HK.

$$P \text{ to } JK = P \text{ to } HJ = P \text{ to } HK$$

$$3 = 3 = \boxed{3}$$



Section 6.3

Use the figure for #8-10. In $\triangle ABC$, $AE = 12$, $DG = 7$, and $BG = 9$. Find each length.

8. AG

$$AG = \frac{2}{3}AE$$

$$AG = \frac{2}{3}(12) = 8$$

9. GC

$$DG = \frac{1}{3}CD$$

$$7 = \frac{1}{3}CD$$

$$21 = CD \rightarrow GC = \frac{2}{3}CD$$

$$GC = \frac{2}{3}(21)$$

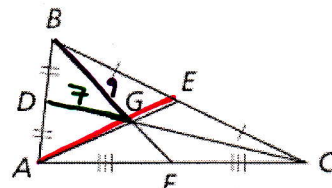
$$GC = 14$$

10. BF

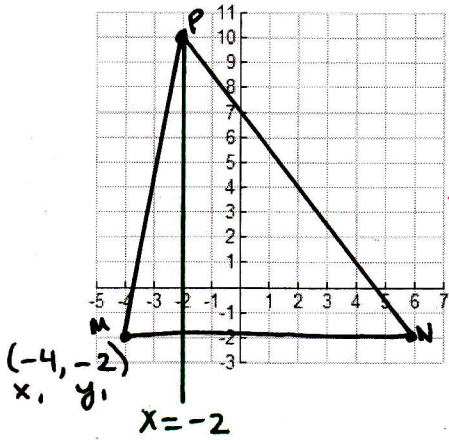
$$BG = \frac{2}{3}BF$$

$$9 = \frac{2}{3}BF$$

$$13.5 = BF$$



11. $\triangle MNP$ has vertices $M(-4, -2)$, $N(6, -2)$, and $P(-2, 10)$. Find the coordinates of the orthocenter.



Slope of PN

$$m = \frac{10 - (-2)}{-2 - 6} = \frac{12}{-8} = -\frac{3}{2}$$

+ slope = $\frac{2}{3}$

$(-2, -0.67)$

plug-in (-2)

$$y - (-2) = \frac{2}{3}(x - (-4))$$

$$y + 2 = \frac{2}{3}(2) \rightarrow y + 2 = 1.3$$

$$y = -0.67$$

Section 6.4

Use the diagram for #12-14. Find each measure.

12. ED

$$ED = \frac{1}{2} BC \rightarrow ED = \frac{1}{2}(20)$$

$$ED = 10$$

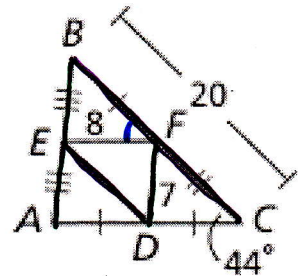
13. AB

$$FD = \frac{1}{2} AB \rightarrow 7 = \frac{1}{2} AB$$

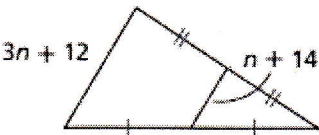
$$14 = AB$$

14. $m\angle BFE$

$$44^\circ$$



15. Find the value of n.



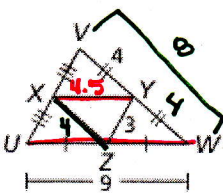
$$n + 14 = \frac{1}{2}(3n + 12)$$

$$n + 14 = 1.5n + 6$$

$$8 = .5n$$

$$16 = n$$

16. $\triangle XYZ$ is the midsegment triangle of $\triangle WUV$. What is the perimeter of $\triangle XYZ$.



$$XY = \frac{1}{2} UW$$

$$XY = \frac{1}{2}(9)$$

$$XZ = \frac{1}{2} VW$$

$$XZ = \frac{1}{2}(4.5)$$

$$P \text{ of } \triangle XYZ = 4.5 + 3 + 4$$

$$= 11.5$$