

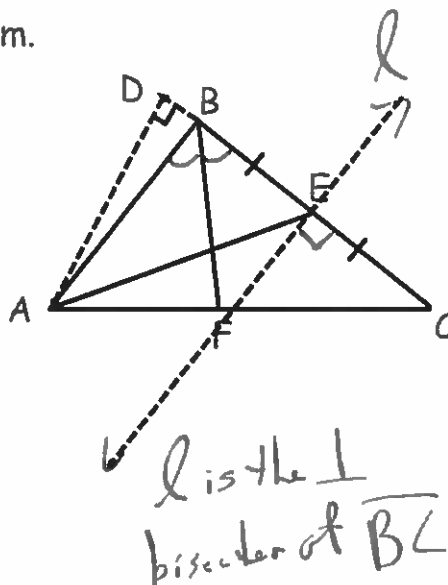
Chapter 4 Review

1. Name the following from the diagram.

Median:  $\overline{AE}$

Altitude:  $\overline{AD}$

Angle Bisector:  $\overline{BF}$



2. Use the diagram below to fill in the blanks.

A. If  $\overline{BD}$  is the perpendicular bisector of  $\overline{AC}$ , then

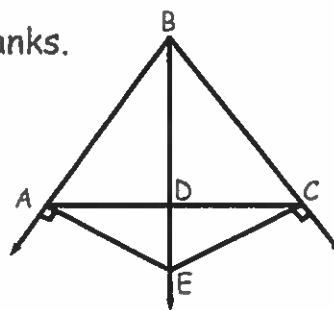
- ①  $BA = BC$  [ $\perp$  bisector Thm]
- $AD = DC$
- $AE = EC$

②  $\overline{BD} \perp \overline{AC}$ , D is the midpt of  $\overline{AC}$  [Def. of  $\perp$  bisector]

B. If  $AE = EC$ , then

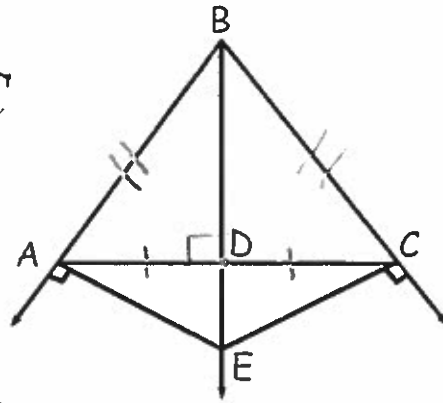
- ① E is on the  $\perp$  bisector of  $\overline{AC}$  [ $\perp$  bisector Thm]
- ② E is on the  $\angle$  bisector of  $\angle AEC$  [ $\angle$  bisector Thm #2]

C. If  $DC = DA$  then D is the midpoint of  $\overline{AC}$  and  $\overline{BD}$  is a median of Triangle ABC.



D. If  $\overline{AB} \cong \overline{BC}$  then  $\angle A \cong \angle C$

by the Base's Thm.



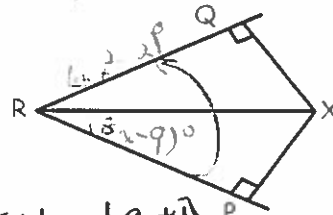
E. If  $\overline{BD}$  is both an altitude

and a median, then

triangle ABC is an isosceles triangle.

3. In the diagram,  $\overline{RX}$  is the angle bisector of angle R. Find QX and the measure of angle QRP. Provide a reason for any equation you write. Show all work to justify your answers.

$$\begin{aligned}
 QX &= y^2 - 2y \\
 PX &= 5y + 30 \\
 m\angle QRP &= 3x^2 - 2 \\
 m\angle XRP &= 8x - 9
 \end{aligned}$$



$$\boxed{1} \quad m\angle XRP = \frac{1}{2} m\angle QRP \quad \{\angle \text{ b. s. } \overline{RX} \text{ b. } \angle R\}$$

$$8x - 9 = \frac{1}{2}(3x^2 - 2)$$

$$16x - 18 = 3x^2 - 2$$

$$0 = 3x^2 - 16x + 16$$

$$0 = (3x^2 - 4x) + (-12x + 16)$$

$$0 = x(3x - 4) - 4(3x - 4)$$

$$0 = (3x - 4)(x - 4)$$

$$x = \frac{4}{3}, 4$$

$$\begin{array}{r}
 x \ 48 \mid + (-16) \\
 -4(12) \mid \checkmark
 \end{array}$$

or use the Quad Formula!  
 If  $ax^2 + bx + c = 0$   
 then  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$x = \frac{4}{3}$$

$$x = 4$$

$$m\angle QRP = 3\left(\frac{4}{3}\right)^2 - 2 \quad m\angle QRP = 3(4)^2 - 2$$

$$m\angle QRP = \frac{16}{3} - 2 \quad m\angle QRP = 3(16) - 2$$

$$\boxed{m\angle QRP = 3\frac{1}{3}}$$

$$m\angle QRP = 48 - 2$$

$$\boxed{m\angle QRP = 46^\circ}$$

2]  $QX = YP$  [∠ bisector Th #2]

$$y^2 - 2y = 5y + 30$$

$$y^2 - 7y - 30 = 0$$

$$(y+3)(y-10) = 0$$

$$y = -3, 10$$

$$y = -3$$

$$QX = (-3)^2 - 2(-3)$$

$$QX = 9 + 6$$

$$QX = 15$$

$$y = 10$$

$$QX = 10^2 - 2(10)$$

$$QX = 100 - 20$$

$$QX = 80$$

Assignment #38

Part I: p. 165 Cumulative Review #1-18

Part II: p. 131 #9-12 and p. 158 #26, 29

Study for the Chapter 4 test.