

5-1 Study Guide

Bisectors of Triangles

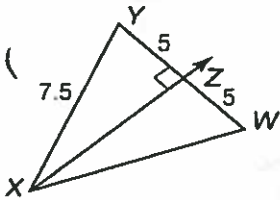
Name: Answer Key Per: _____

Perpendicular Bisector A perpendicular bisector is a line, segment, or ray that is perpendicular to the given segment and passes through its midpoint. Some theorems deal with perpendicular bisectors.

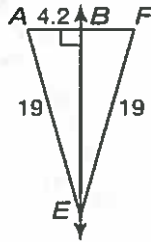
WARM-UP Exercises:

Find each measure.

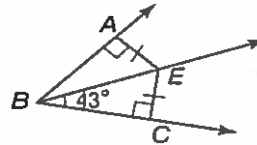
1. $XW = 7.5$



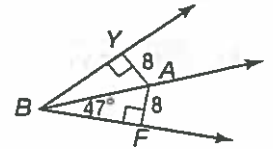
2. $BF = 4.2$



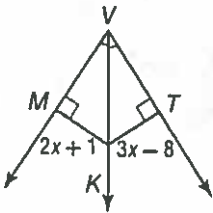
3. $m\angle ABE = 43^\circ$



4. $m\angle YBA = 47^\circ$



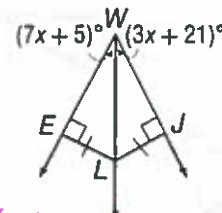
5. $MK = 19$



$2x+1 = 3x-8$
 $1 = x-8$
 $9 = x$

$2(9)+1$
 $18+1 = 19$

6. $m\angle EWL = 33$

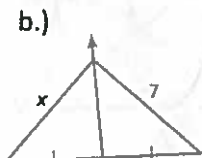
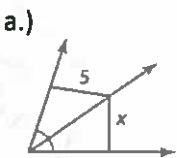


$7x+5 = 3x+21$
 $4x+5 = 21$
 $-5 -5$
 $4x = 16$
 $x = 4$

$7(4)+5$
 $28+5$
 33

Challenge Problems:

7. Find x.



Cannot solve because no 90° (\square)

Cannot solve because no 90° (\square)

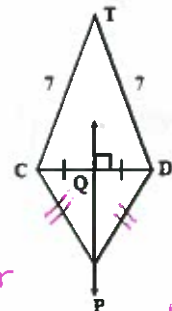
8. A.) Find all congruent segments.

$\overline{CT} \cong \overline{TD}$ $\overline{PC} \cong \overline{PD}$
 $\overline{CQ} \cong \overline{QD}$

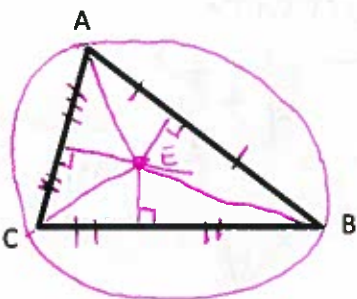
B.) Is T on QP?

Yes, \overline{QP} is the perpendicular bisector

And since T is equidistant to each end point, then T must lie on the \perp bisector



Draw the perpendicular bisectors. The point of intersection of the perpendicular bisectors is: Circumcenter



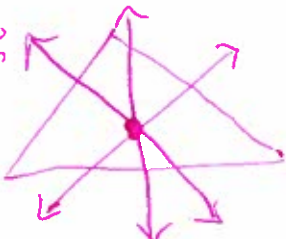
What three congruent segments can you add to the diagram?

$\overline{AE} \cong \overline{CE} \cong \overline{BE}$

*The Circumcenter is equidistant from the vertices.

Location of the circumcenters.

Acute: Inside



Obtuse: outside



Right: ON (hypotenuse)

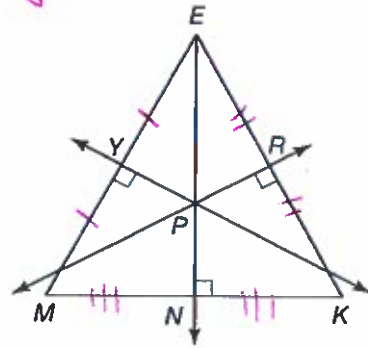


Point P is the circumcenter of $\triangle EMK$. List any segment(s) congruent to each segment below.

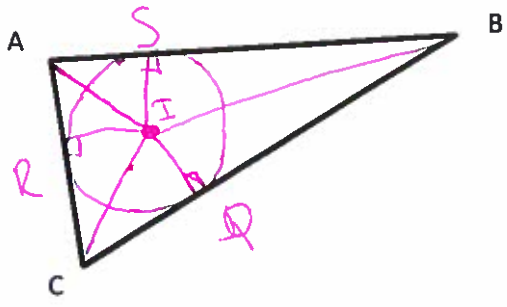
9. $\overline{MY} \cong \overline{YE}$

10. $\overline{ER} \cong \overline{RE}$

11. $\overline{MN} \cong \overline{NK}$



Draw the angle bisectors. The point of intersection of the angle bisectors is: Incenter



What three congruent segments can you add to the diagram?

$\overline{SI} \cong \overline{RI} \cong \overline{QI}$

Point U is the incenter of $\triangle GHY$. Find each measure.

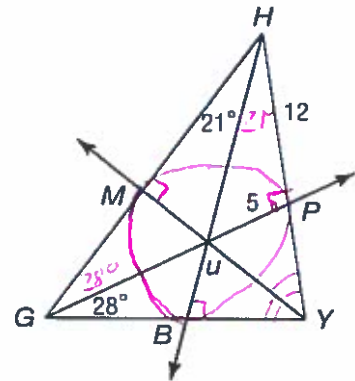
12. $MU = 5$

13. $m\angle UGM = 28^\circ$

14. $m\angle PHU = 21^\circ$

15. HU

$5^2 + 12^2 = HU^2$
 $25 + 144 = HU^2$
 $169 = HU^2$
 $HU = 13$

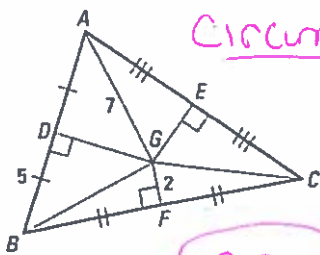


What about $m\angle UYB$?
 $\frac{82}{2} = 41^\circ$

Exit Slip:

Find each measure.

Find GC.

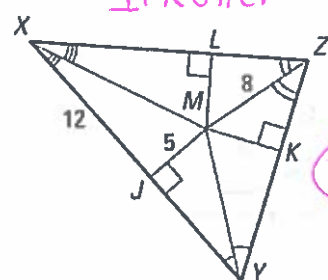


Circumcenter

$GC = 7$

Find MK.

Incenter



$MK = 5$