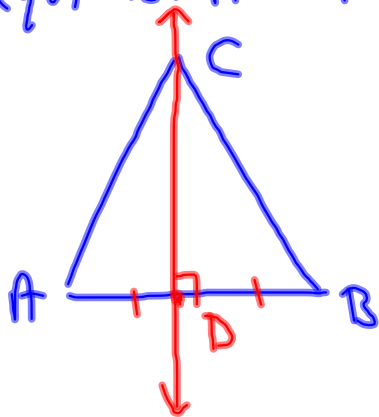


## 5.1 Perpendicular + Angle bisectors

Equidistant: when a point is the same distance from 2 or more objects.

1. ⊥ bisector theorem: if a point is on the ⊥ bisector of a segment, then it is equidistant from the endpoints of a segment.

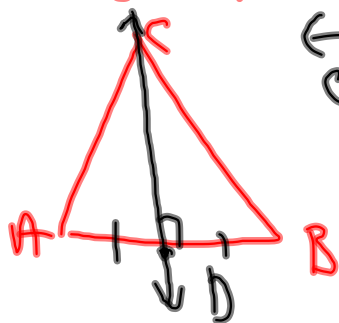
Ex:



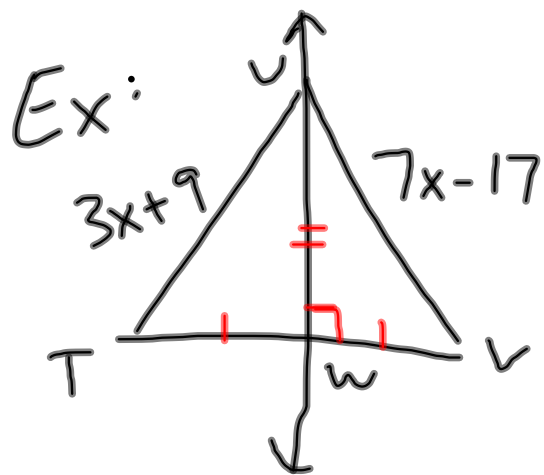
$$\overline{AD} \cong \overline{BD}$$

Converse of the ⊥ bisector theorem

if a point is equidistant from the endpoints of a segment, then it is on the ⊥ bisector of the segment.



$\overleftrightarrow{CD}$  is the ⊥ bisector of  $\overline{AB}$



Given:  $\overleftrightarrow{UV}$  is the  
 $\perp$  bisector of  $\overline{TV}$ .

Find  $UV$

$$\begin{array}{r} 3x+9 = 7x-17 \\ -3x \quad -3x \\ \hline \end{array}$$

$$9 = 4x - 17$$

$$\begin{array}{r} +17 \quad +17 \\ \hline \end{array}$$

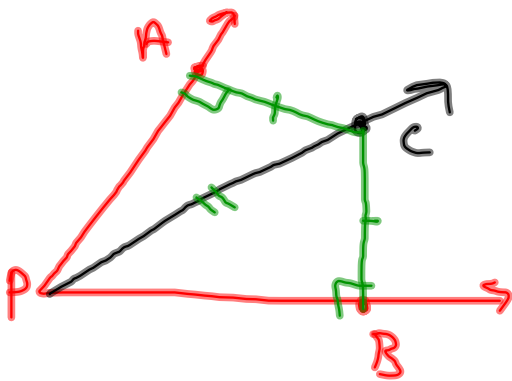
$$\frac{26}{4} = \frac{4x}{4}$$

$$\cdot x = 6.5$$

$$\begin{aligned} UV &= 7x - 17 \\ &= 7(6.5) - 17 \\ &= \underline{28.5} \end{aligned}$$

## ∠ bisector thm

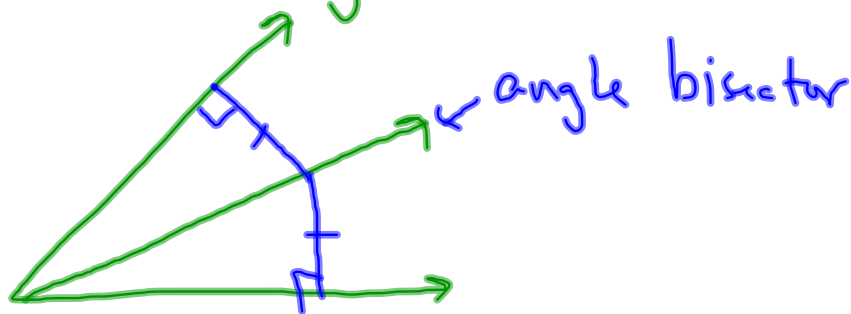
if a pt. is on the bisector of an ∠  
then it is equidistant from the sides  
of the ∠.

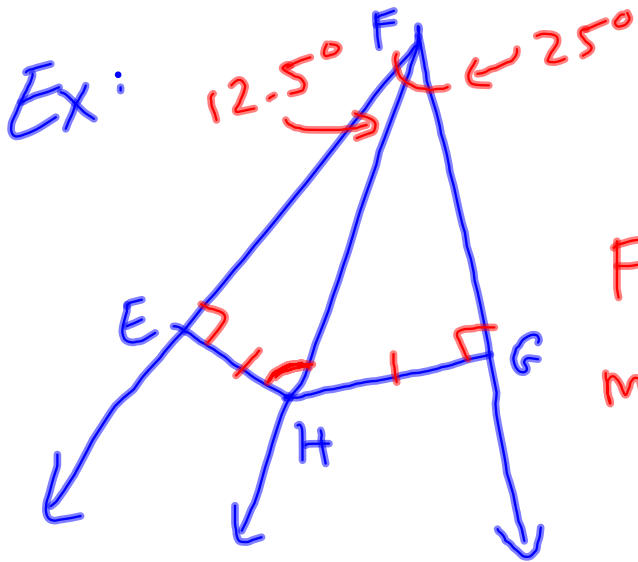


If  $\angle APC \cong \angle CPB$ ,  
then  $AC = BC$

### Converse of $\angle$ bisector thm

if a point is on the interior of angle and is equidistant to the sides of the  $\angle$ , then it is on the angle bisector.





Find the  $m\angle EHF$  if  $m\angle EFG$  is  $25^\circ$ .

$$\begin{aligned}
 180 &= 12.5 + 90 + x \\
 180 &= 102.5 + x \\
 -102.5 &-102.5 \\
 \hline
 x &= 77.5^\circ
 \end{aligned}$$

HW:  
p. 304 2-30 even,  
odds extra credit