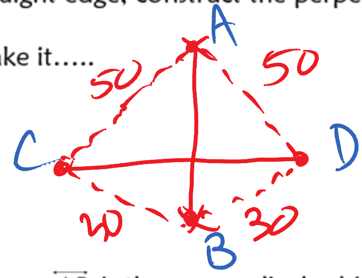
Notes

Thursday, October 31, 2013
6:26 AM

4.4 Equidistance Theorems

1) Using a compass and straight edge, construct the perpendicular bisector of a segment.

2) Some other ways to make it…..

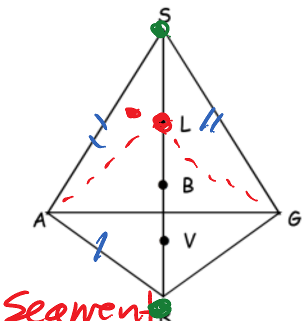


In the diagrams above, $\overleftrightarrow{AB}$ is the perpendicular bisector of $\overleftrightarrow{CD}$

For your proofs!

Theorem: If 2 pts are equidistant from the endpts of a seg., then they determine the ⊥ bis of that segment.

Theorem: If a pt. is on the ⊥ bis of a seg., Then it is equidistant from the endpts of that segment.

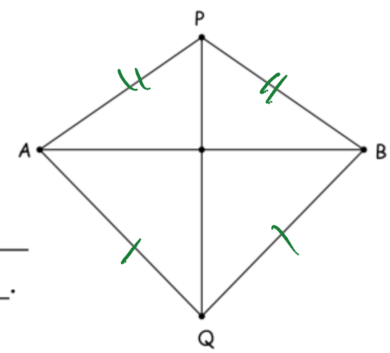


Equidistant means____.

Look at some examples of these theorems:

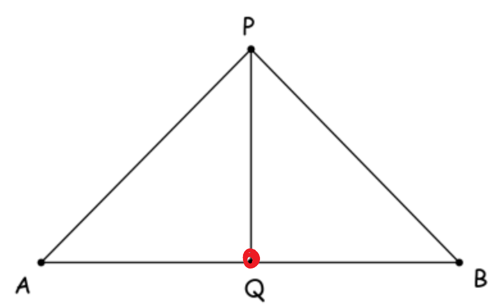
1) If $\overline{PA} \cong \overline{PB}$ and $\overline{QA} \cong \overline{QB}$,

Then, $\overline{PQ}$ is the ⊥ bisector of $\overline{AB}$,
because P is equidistant from A and B
and Q is equidistant from A and B.



2) If $\overleftrightarrow{PQ}$ is the ⊥ bisector of $\overline{AB}$

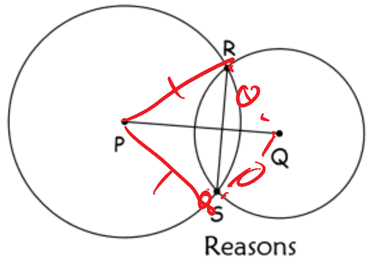
Then $\overline{PA} \cong \overline{PB}$
and $\overline{AQ} \cong \overline{BQ}$.



The theorem we just proved can SIGNIFICANTLY shorten some proofs, if you can see when to apply it. Let's look at some together.

Given: Circles P and Q

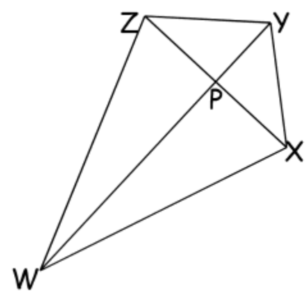
Prove: $\overline{PQ}$ is the $\perp$ bisector of $\overline{RS}$



Statements	Reasons
1) ⊙P ⊙Q	1) Given
2) Draw $\overline{RP}$, $\overline{SP}$, $\overline{SQ}$, $\overline{RQ}$	2) 2 pts. Determine a line
3) $\overline{PR} \cong \overline{PS}$	3) All radii are $\cong$
4) $\overline{RQ} \cong \overline{QS}$	4) " "
5) $\overline{PQ}$ is the $\perp$ bis of $\overline{RS}$	

2. Given: $WX \cong WZ$
$XY \cong YZ$

Prove: Δ WPZ is a right triangle

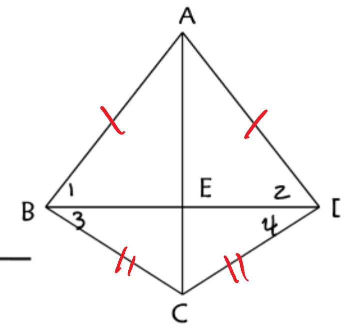


Statements	Reasons

3. Given: $\angle 1 \cong \angle 2$

$\angle 3 \cong \angle 4$

Prove: $\overleftrightarrow{AE}$ is the $\perp$ bisector of $\overline{BD}$



4. Given: $\overline{AD} \perp bis.\ \overline{BC}$

Prove: $\Delta ABE \cong \Delta ACE$