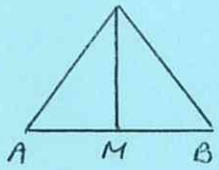
Geometry Chapter 4
Tips for Proving Triangles Congruent

When trying to prove that two triangles are congruent, follow these steps:

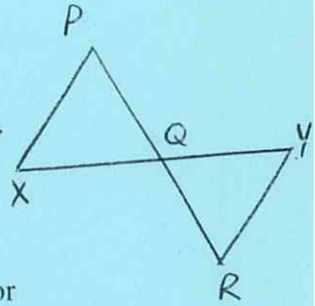
1. Put tic marks on the diagram from your given statements with "$\cong$".

2. Make conclusions from given statements that do not contain "$\cong$".
   Look for the following key words: **midpoint**
   segment bisector
   angle bisector
   perpendicular ($\perp$).
   parallel also – will lead to $\cong$ alternate interior $\angle$'s
   There may be others from time to time, but these are the most common. Apply the definitions of these terms in order to get additional sides and angles congruent.

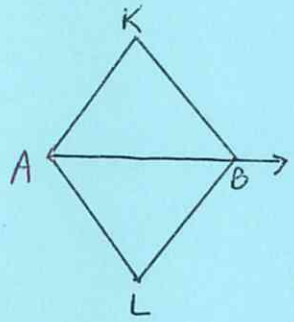


Examples

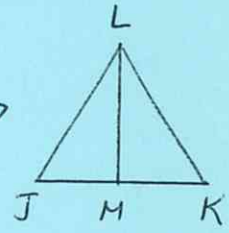
a. Given: M is the midpoint of $\overline{AB}$
   In your proof, you can put : $\overline{AM} \cong \overline{BM}$ by definition of midpoint



b. Given: $\overline{XY}$ bisects $\overline{PR}$ at point Q
   In your proof, you can put: $\overline{PQ} \cong \overline{RQ}$ by def of segment bisector



c. Given: $\overrightarrow{AB}$ bisects $\angle KAL$
   In your proof, you can put: $\angle KAB \cong \angle LAB$ by def of angle bisector



d. Given: $\overline{LM} \perp \overline{JK}$
   In your proof, you then put: $\angle LMJ$ & $\angle LMK$ are right $\angle$'s by def of $\perp$
   * * * * **AND THEN** $\angle LMJ \cong \angle LMK$ by all right $\angle$'s are $\cong$

3. Look for reflexive (shared) sides and mark them $\cong$; look for vertical angles and mark them $\cong$. If you still do not have enough congruencies to prove the triangles congruent, then look for the 3rd angle pairs and mark them congruent using the "3rd $\angle$ Pair of a Δ Theorem"

DO NOT RANDOMLY PUT TIC MARKS ON SIDES AND ANGLES FOR NO REASON!!

If the proof involves proving a pair of sides or angles is congruent, follow the same procedure as above. However, your proof will have one additional statement (the prove statement) and its corresponding justification will be CPCTC.