Congruent Triangles and the Two-Column Proof

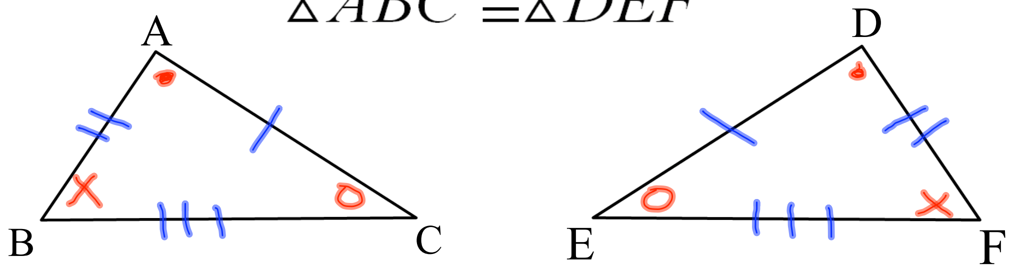
What does the term congruent refer to?

Extend this description to congruent triangles.

All $\measuredangle$'s and all sides being equal in measure.

What do we know about the corresponding sides and angles of congruent triangles? Use the following triangles in your descriptions:

$$\triangle ABC \cong \triangle DEF$$

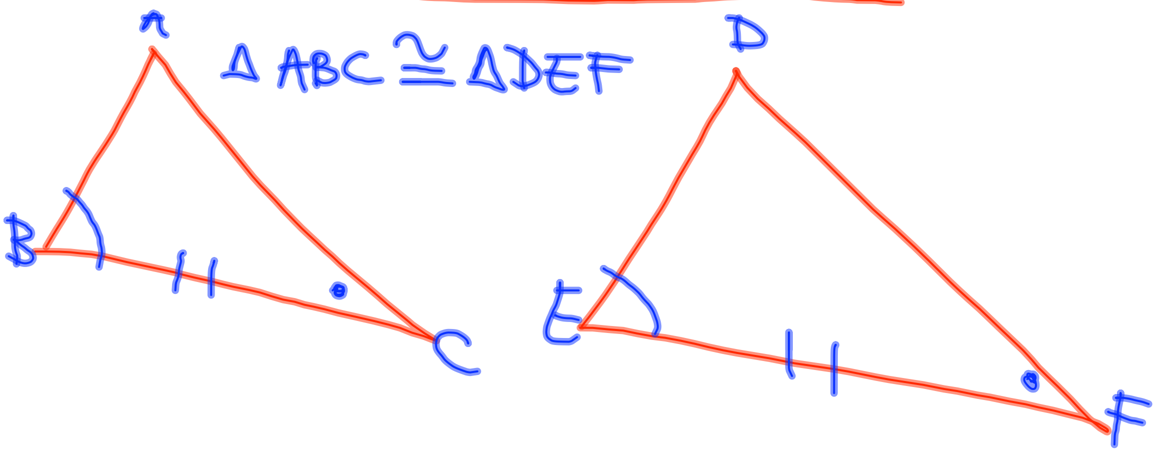


Angles	Sides
$\measuredangle A = \measuredangle D$	$AC = DE$
$\measuredangle C = \measuredangle E$	$AB = DF$
$\measuredangle B = \measuredangle F$	$BC = EF$

Recall the congruent triangle theorems:

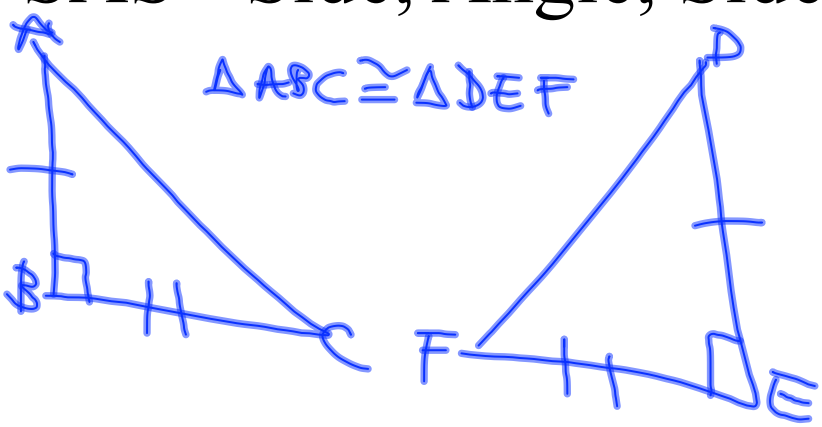
ASA - Angle, Side, Angle

$\triangle ABC \cong \triangle DEF$

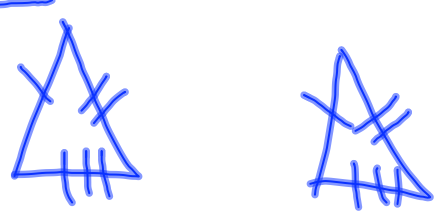


SAS - Side, Angle, Side

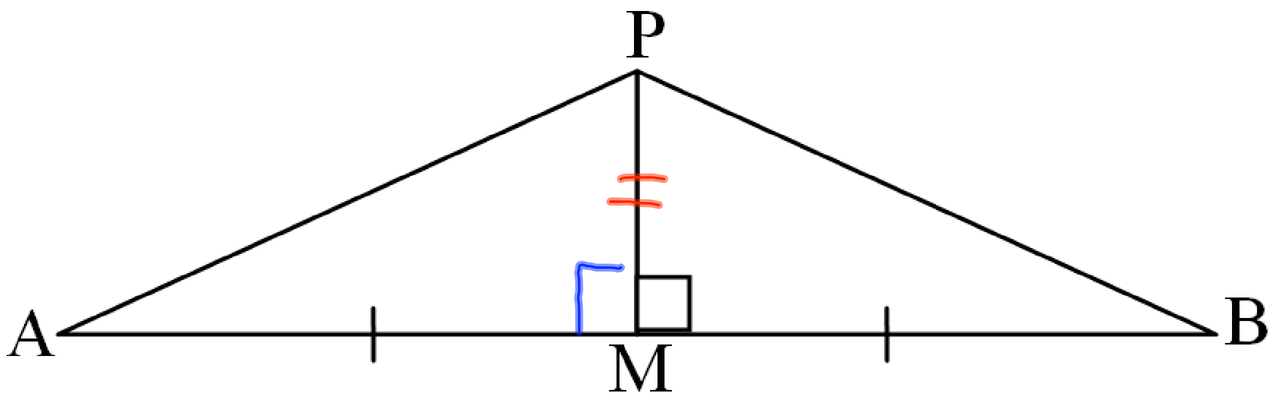
$\triangle ABC \cong \triangle DEF$



SSS - Side, Side, Side



In the following diagram, prove that $\boxed{\triangle PAM \cong \triangle PBM}$ using a two-column proof.

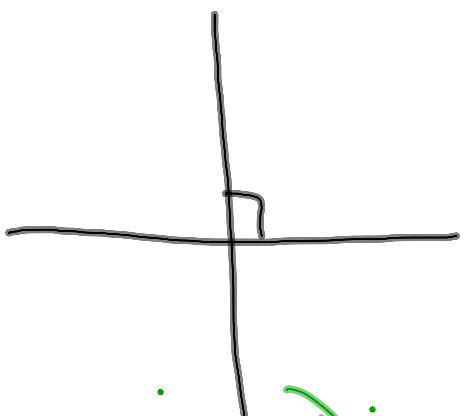


Statement	Reason
1. $AM = MB$	1. Given
2. $PM = PM$	2. Common side
3. $\measuredangle PMA = \measuredangle PMB = 90°$	3. Given
4. $\Delta PAM \cong \Delta PBM$	4. SAS

Review the Perpendicular Bisector Theorem on pg. 404

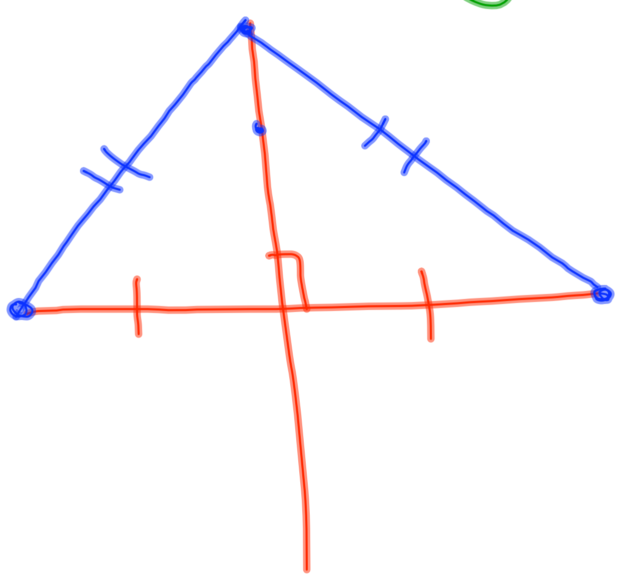
Perpendicular Bisector Theorem:
Any point on the perpendicular bisector of a line segment is equidistant from the endpoints of the segment.
The converse of this statement is also true.

Perpendicular

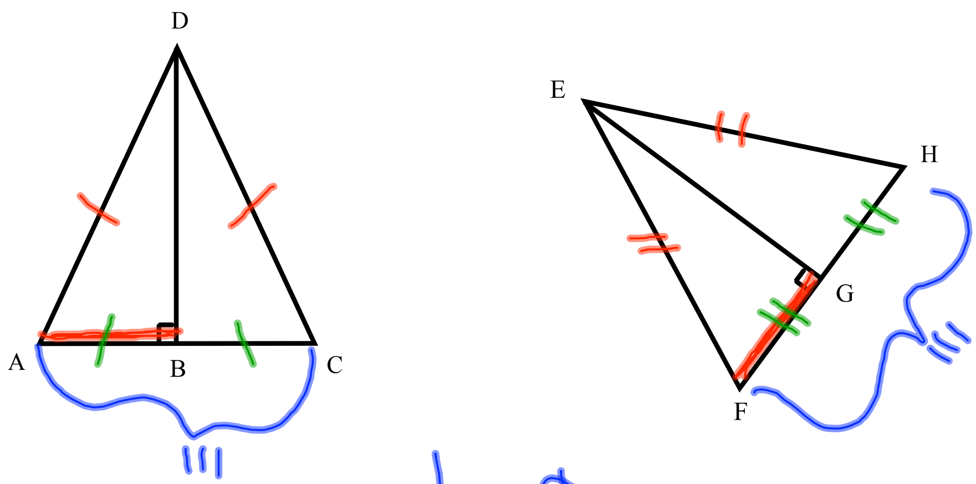


2 lines that intersect at 90°.

Bisector: Dividing in half.



In the diagram below, DA = DC, EF = EH, and AC = FH.
Prove AB = FG.



Statement	Reason
1. DA = DC EF = EH AC = FH	1. Given
2. $\angle DBA = \angle EGH = 90^\circ$	2. Given
3. AB = BC FG = GH	3. $\perp$ Bisector Theorem
4. AB + BC = AC FG + GH = FH	4. Additive Property.
5. AB + BC = FG + GH	5. Substitution
6. AB = FG	6. Substraction

Assignment:
Pg. 406 2, 3, 5-10, 13-16