

**Advanced Geometry**  
**Isosceles Triangles**

Name: \_\_\_\_\_

Base Angles: The congruent angles in an isosceles triangle.

Vertex Angle: The angle in an isosceles triangle formed by the congruent sides.

Isosceles Triangle Theorem (ITT):

If two sides of a triangle are congruent, then the angles opposite those sides are congruent.

Converse of Isosceles Triangle Theorem (CITT):

If two angles of a triangle are congruent, then the sides opposite those angles are congruent.

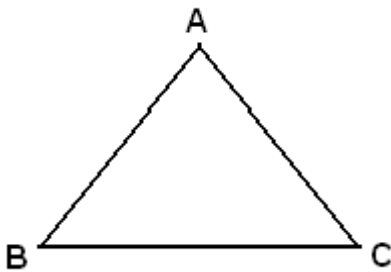
Corollary to Isosceles Triangle Theorem:

The angle bisector of the vertex angle of an isosceles triangle is the perpendicular bisector of the opposite side.

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**PROOF OF ITT:**

If two sides of a triangle are congruent, then the angles opposite those sides are congruent.

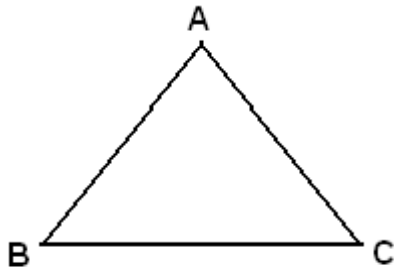


**Given:**  $\overline{AB} \cong \overline{AC}$

**Prove:**  $\angle B \cong \angle C$

**PROOF OF CONVERSE OF ITT:**

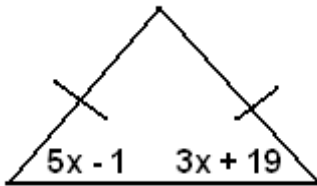
If two angles of a triangle are congruent, then the sides opposite those angles are congruent.



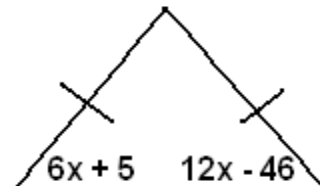
Given:  $\angle B \cong \angle C$

Prove:  $\overline{AB} \cong \overline{AC}$

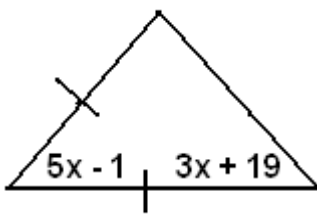
[EX1] Solve for x.



[EX2] Solve for x.



[EX3] Solve for x.



[EX4] Solve for x.

