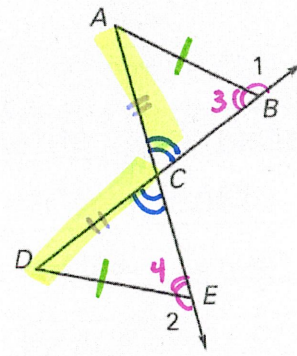


Example #4: Prove.

**Given:**  $\angle 1 \cong \angle 2$ ,  $\overline{AB} \cong \overline{DE}$

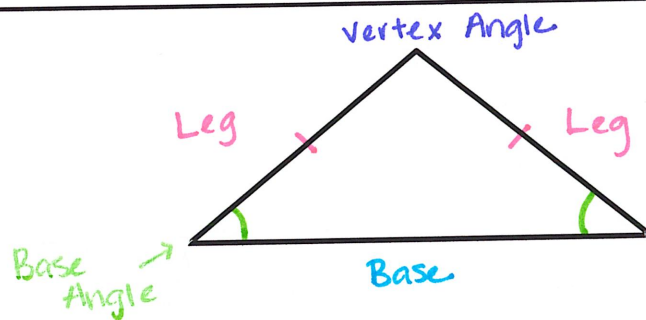
**Prove:**  $\overline{DC} \cong \overline{AC}$



Statement	Reason
1. $\angle 1 \cong \angle 2$	1. Given
2. $\angle 1$ and $\angle 3$ , $\angle 2$ and $\angle 4$ are supplementary angles	2. Def <sup>n</sup> of Supplementary Angles
3. $\therefore \angle 3 \cong \angle 4$	3. Congruent supplements Th <sup>m</sup>
4. $S: \overline{AB} \cong \overline{DE}$	4. Given
5. $A: \angle ACB \cong \angle DCE$	5. Vertical Angles
6. $\triangle ACB \cong \triangle DCE$	6. AAS
7. $\overline{DC} \cong \overline{AC}$	7. CPCTC

## Chapter 4.7: Use Isosceles and Equilateral Triangles

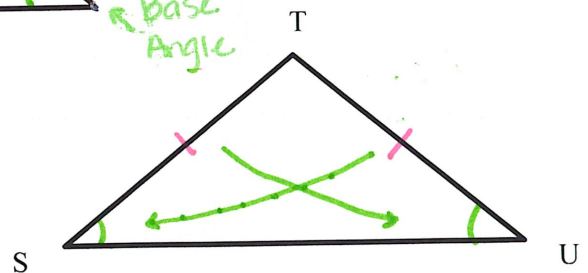
**Isosceles Triangle:**



**Base Angles Theorem (Theorem 4.7):**  
(Legs)

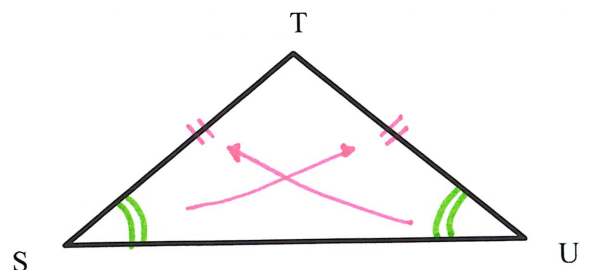
If two sides of a triangle are congruent, then the angles opposite them are congruent.

If  $\overline{ST} \cong \overline{JT}$ , then  $\angle S \cong \angle U$



**Converse of Base Angles Theorem (Theorem 4.8):**

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

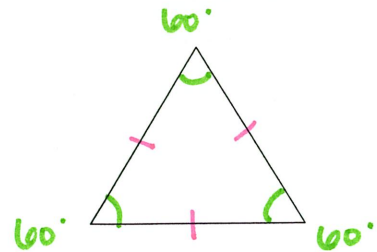


### Corollary to the Base Angles Theorem

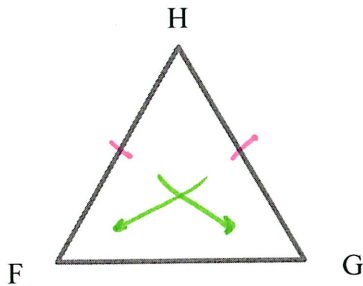
If a triangle is equilateral, then it is equiangular.

### Corollary to the Converse Base Angles Theorem

If a triangle is equiangular, then it is equilateral.

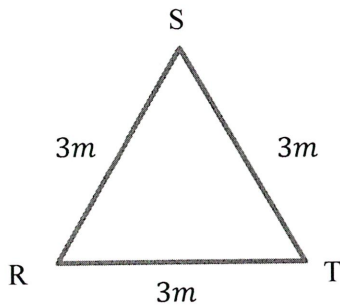


Example #1: In  $\triangle FGH$ ,  $\overline{FH} \cong \overline{GH}$ . Name two congruent angles.



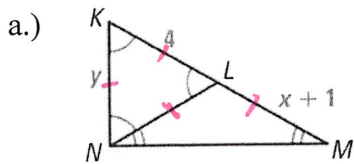
$\angle F \cong \angle G$  (Thm 4.7)

Example #2: Find the measures of  $\angle R$ ,  $\angle S$ , and  $\angle T$



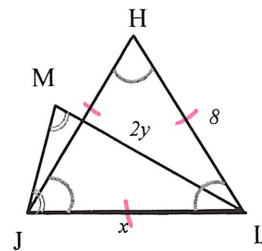
Since  $\overline{SR} \cong \overline{RT} \cong \overline{TS}$   $\triangle RST$  is an equilateral triangle... by the Corollary to the Base Angles Thm  $\angle R = 60^\circ$ ,  $\angle S = 60^\circ$ , and  $\angle T = 60^\circ$

Example #3: Find the values of  $x$  and  $y$  in the diagram.



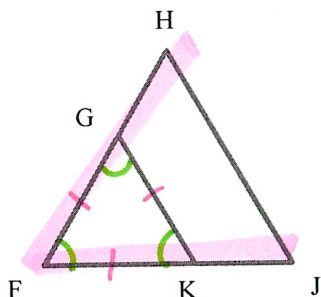
$y = 4$   
 $x + 1 = 4$   
 $-1 \quad -1$   
 $x = 3$

b.)



$x = 8$   
 $\frac{2y}{2} = \frac{8}{2}$   
 $y = 4$

Example #4: Complete the statements



If  $\overline{FH} \cong \overline{FG}$ , then,  $\angle H \cong \angle J$

If  $\triangle FGK$  is equiangular and  $FG = 15$ , the  $GK = 15$  units