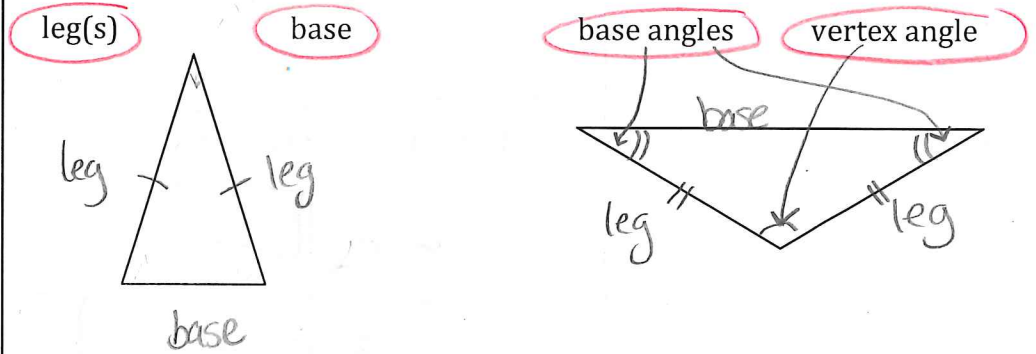


ESSENTIAL QUESTION: How are the sides &  $\angle$ s of a  $\Delta$  related if there are two or more  $\cong$  sides or  $\angle$ s?

QUESTIONS:

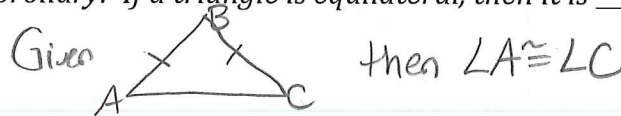
Parts of an Isosceles Triangle



**Theorem 4.7: Base Angles Theorem** B/L Thm

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

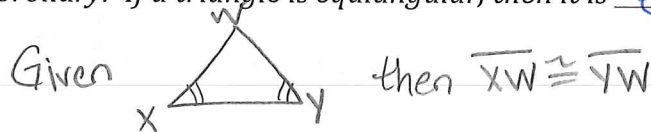
(Corollary: If a triangle is equilateral, then it is equiangular.)



**Theorem 4.8: Base Angles Converse Theorem** B/L Conv. Thm

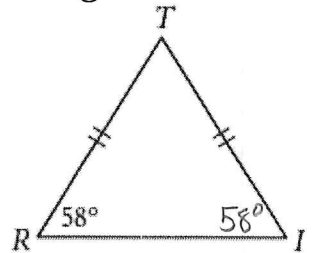
If two angles of a triangle are congruent, then the sides opposite them are congruent.

(Corollary: If a triangle is equiangular, then it is equilateral.)



A1. Complete the following statements based on the figure.

- $\Delta IRT$  is a(n) isosceles triangle.
- $\angle R$  and  $\angle I$  are base angles.
- The vertex angle is angle  $\angle T$ .
- $m\angle T =$   $64^\circ$        $180 - 2(58) = 64$



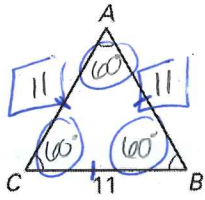
SUMMARY:

If a  $\Delta$  has 2  $\cong$  sides then it has 2  $\cong$   $\angle$ s  
If a  $\Delta$  has 2  $\cong$   $\angle$ s then it has 2  $\cong$  sides.

( $\cong$  sides correspond to  $\cong$   $\angle$ s)  
(and  $\cong$   $\angle$ s corresp. to  $\cong$  sides)

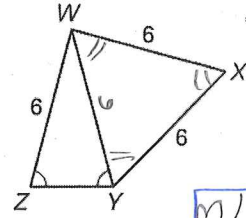
QUESTIONS:

A2. Give the measures of the sides and angle not given.



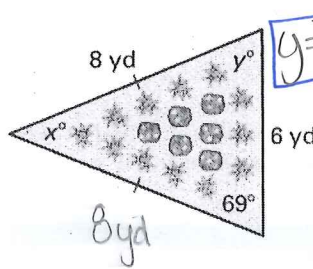
Base  $\angle$  Thm corollary

A3. Find  $YW$  and  $m\angle XWY$ .



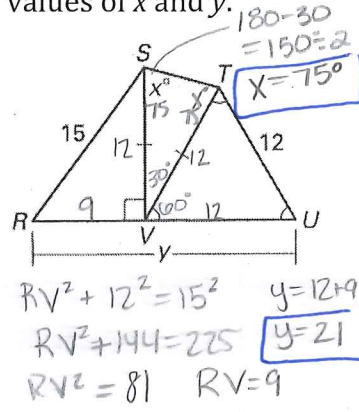
$YW=6$   
(BL conv.)  
 $m\angle XWY=60^\circ$   
(BL converse corollary)

A4. Find the perimeter of the triangular garden,  $x$ , and  $y$ .



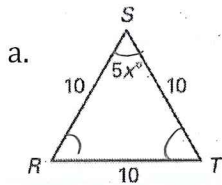
$y=69^\circ$   
Per =  $6+8+8 = 22 \text{ yd}$   
 $180 - 69 - 69 = 42^\circ$   
 $x=42^\circ$

A5. Find the values of  $x$  and  $y$ .

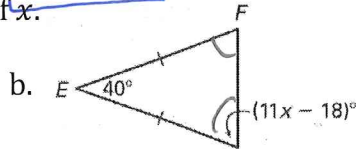


$180 - 30 = 150 \div 2 = 75^\circ$   
 $x=75^\circ$   
 $RV^2 + 12^2 = 15^2$   
 $RV^2 + 144 = 225$   
 $RV^2 = 81$   
 $RV = 9$   
 $y = 12 + 9 = 21$

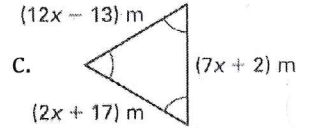
A6. Find the value of  $x$ .



$5x = 60$   
 $x = 12$



$180 - 40 = 140 \div 2 = 70^\circ$   
 $70 = 11x - 18$   
 $88 = 11x$   
 $x = 8$



$2x + 17 = 7x + 2$   
 $-2 - 2x$   
 $15 = 5x$   
 $x = 3$   
OR  
 $12x - 13 = 7x + 2$   
 $-7x + 13$   
 $5x = 15$   
 $x = 3$

Skip in lesson?  
HW problem

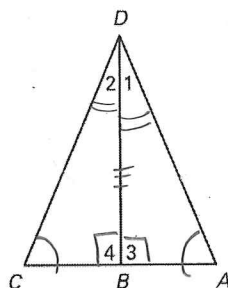
A7. Fill in the proof

GIVEN:

- $\overline{DB} \perp \overline{AC}$ ,
- $\overline{BD}$  bisects  $\angle ADC$

PROVE:

$\triangle ADC$  is isosceles



Statement

Reason

1.  $\overline{BD}$  bisects  $\angle ADC$  1. Given
2.  $\angle 1 \cong \angle 2$  2. Def. of bisector
3.  $\overline{DB} \perp \overline{AC}$  3. Given
4.  $\angle 4 \cong \angle 3$  4. Thm 3.9/Thm 2.3
5.  $\overline{DB} \cong \overline{DB}$  5. Reflexive
6.  $\triangle CBD \cong \triangle ABD$  6. ASA  $\cong$
7.  $\angle C \cong \angle A$  7. CPCTC
8.  $\triangle ADC$  is isosceles 8. Def. of  $\triangle$

isosceles  $\triangle$