

## 10/25/19 - Warm Up Problem

If  $\angle 1 \cong \angle 9$ , then cd.

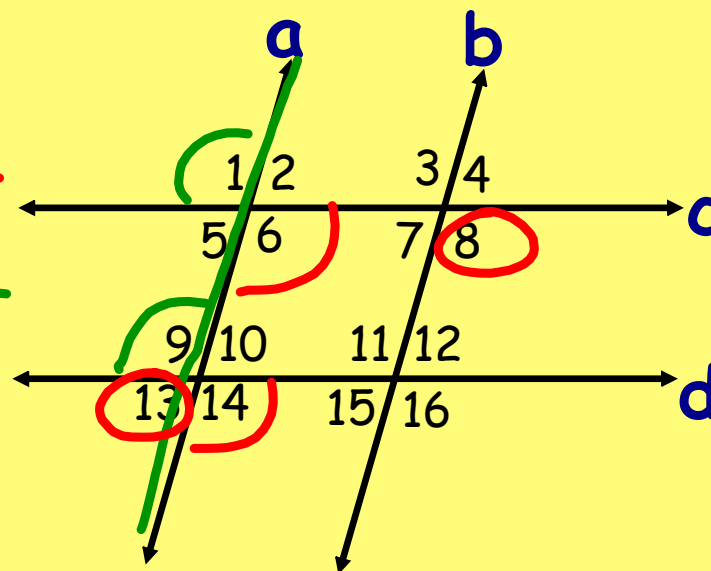
Justification: corresponding  
converse

If  $\angle 6 \cong \angle 14$ , then cd.

Justification: corresponding  
converse

If  $\angle 13$  is supplementary to  $\angle 8$ , then \_\_\_\_\_

Justification: Not Poss



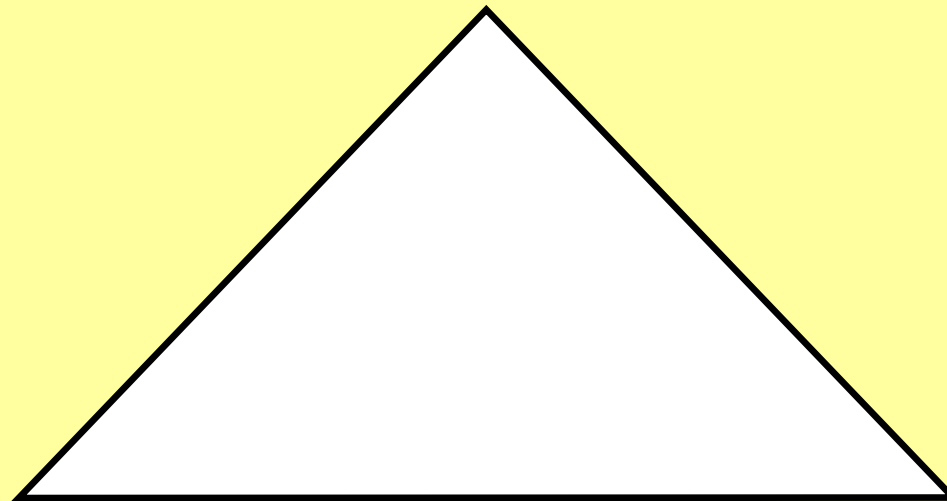
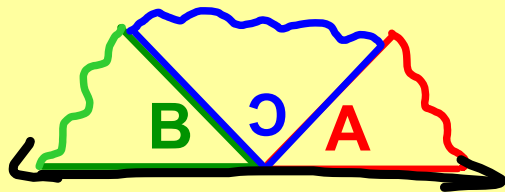
## Section 3.5 - Triangle Angle-Sum

**Goals:** Prove the Triangle Angle-Sum Theorem and use it to find missing measures in triangles

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### Triangle Angle-Sum Theorem

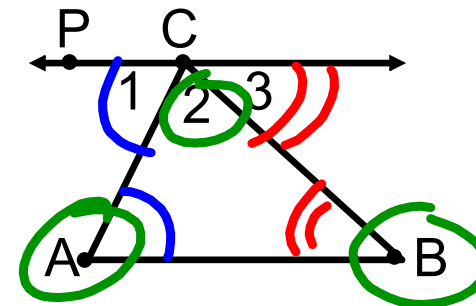
The sum of the measures of the interior angles of a triangle is 180 degrees.



## Proving the Triangle Sum Theorem

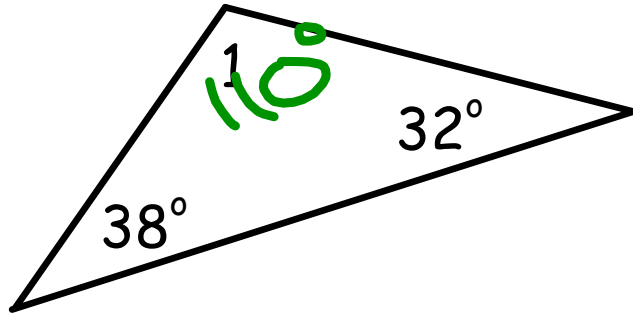
**Given:**  $PC \parallel AB$

**Prove:**  $m\angle A + m\angle B + m\angle 2 = 180$



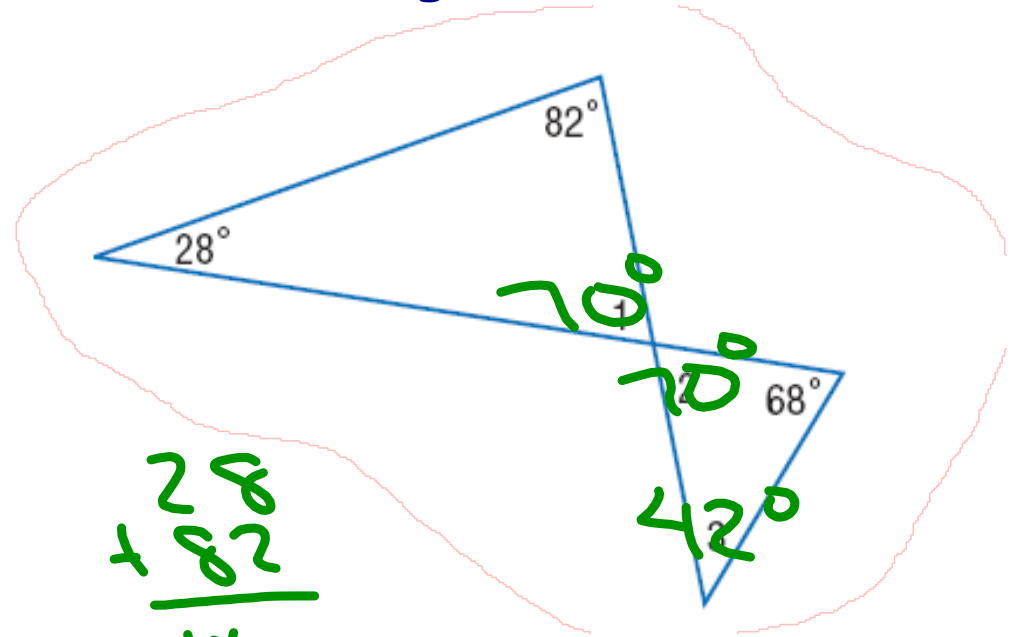
Statements	Justifications
1. $PC \parallel AB$	Given
2. $m\angle 1 = m\angle A$	Alt. Int. Thm
3. $m\angle 3 = m\angle B$	Alt. Int. Thm
4. $\angle 1, \angle 2, \angle 3$ are supplementary	Linear Pair Post.
5. $m\angle 1 + m\angle 2 + m\angle 3 = 180$	Def of Supp.
6. $m\angle A + m\angle B + m\angle 2 = 180$	Substitution

Find the measure of each numbered angle.



$$\begin{array}{r} 38 \\ + 32 \\ \hline 70 \end{array}$$

$$\begin{array}{r} 180 \\ - 70 \\ \hline \end{array}$$

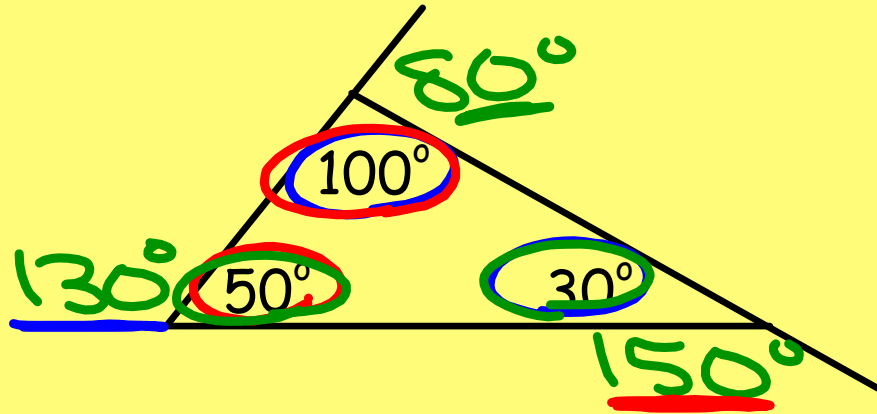


$$\begin{array}{r} 28 \\ + 82 \\ \hline 110 \end{array}$$

$$\begin{array}{r} 70 \\ + 68 \\ \hline 138 \end{array}$$

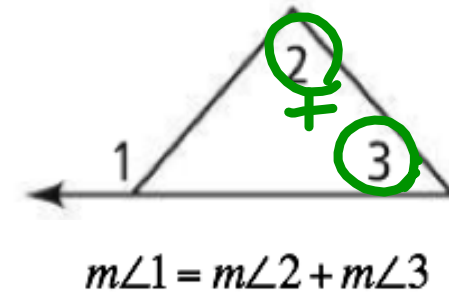
## Exterior Angles of Triangles

**Exterior Angle:** an angle formed by one side of a triangle and the extension of another side

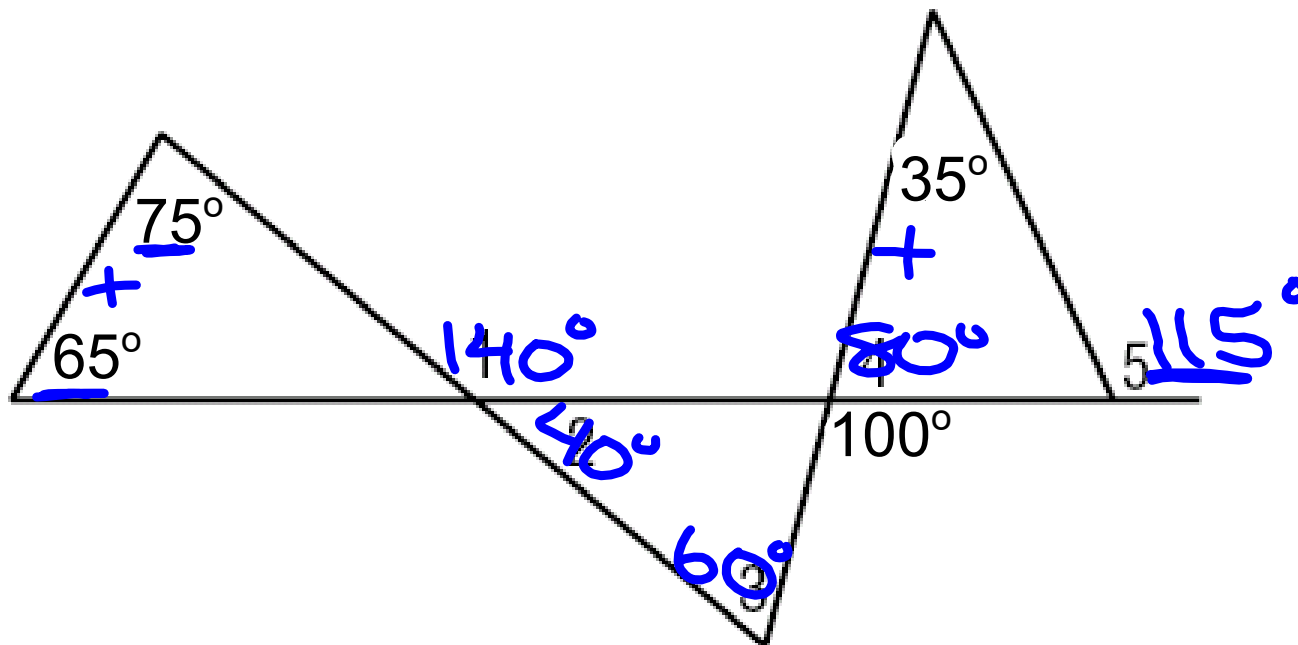


### Triangle Exterior Angle Theorem

The measure of each exterior angle of a triangle equals the sum of the measures of its two remote interior angles.

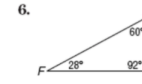
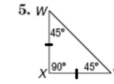
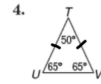
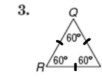
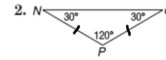
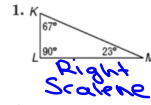


Find the measure of each numbered angle.

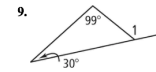
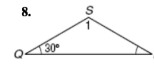
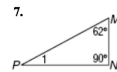


**Assignment:**  
**Concept 9 Worksheet**

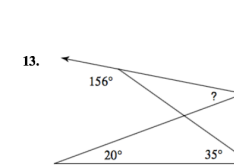
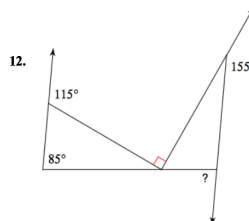
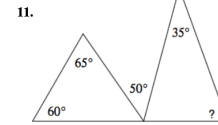
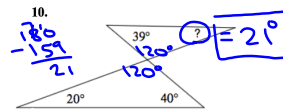
Classify each triangle by its sides (scalene, isosceles, or equilateral) and by its angles (acute, equiangular, obtuse, or right).



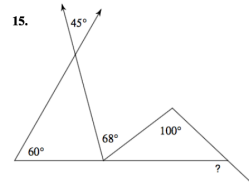
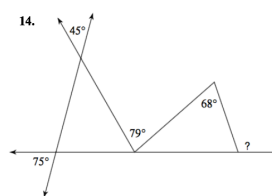
Find the measure of Angle I in each triangle.



Find the measure of each angle marked with a question mark.



Find the value of the angle marked with a question mark.



Write and solve an equation to find the value of x for each triangle. Show your work.

