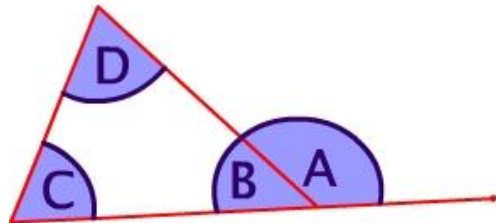


Relationship between Exterior and Remote Interior Angles in a Triangle



$\angle A =$ exterior angle

$\angle C =$ remote interior angle

$\angle D =$ remote interior angle

exterior angle = sum of the remote interior angles

$$\angle A = \angle C + \angle D$$

URL on Remote, Exterior and Interior Angles of A Triangle

<http://www.mathwarehouse.com/geometry/triangles/angles/remote-exterior-and-interior-angles-of-a-triangle.php>

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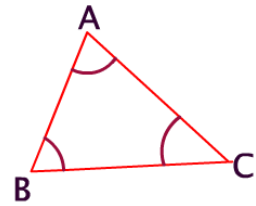
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Warm Up→

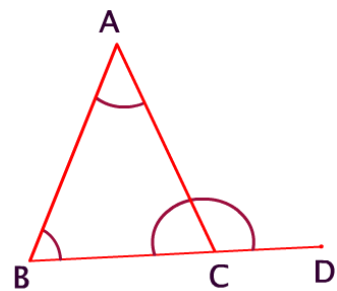
1) $m\angle ABC = 80^\circ$ $m\angle BCA = 50^\circ$, what is $m\angle CAB$?

2) The sum of the interior angles of a triangle is _____

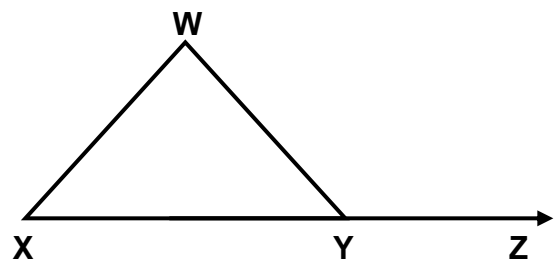
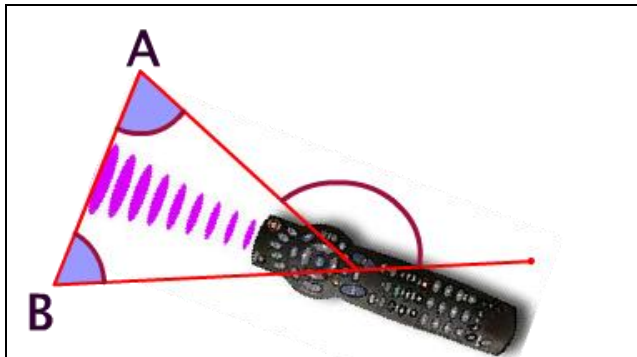


An exterior angle of a triangle is formed by extending any one side.

Name the exterior angle.



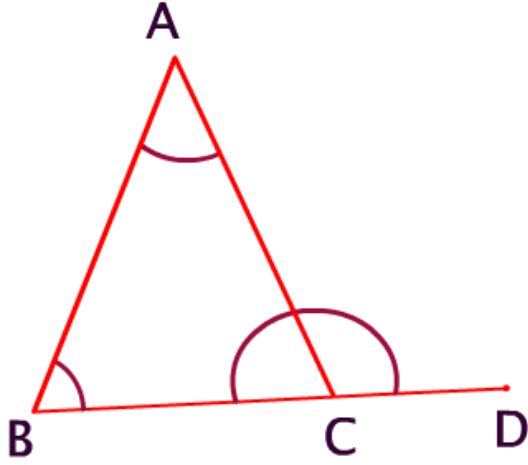
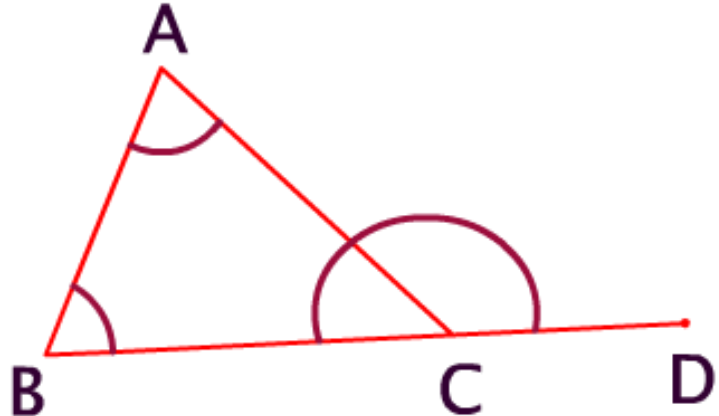
Name the remote interior angles

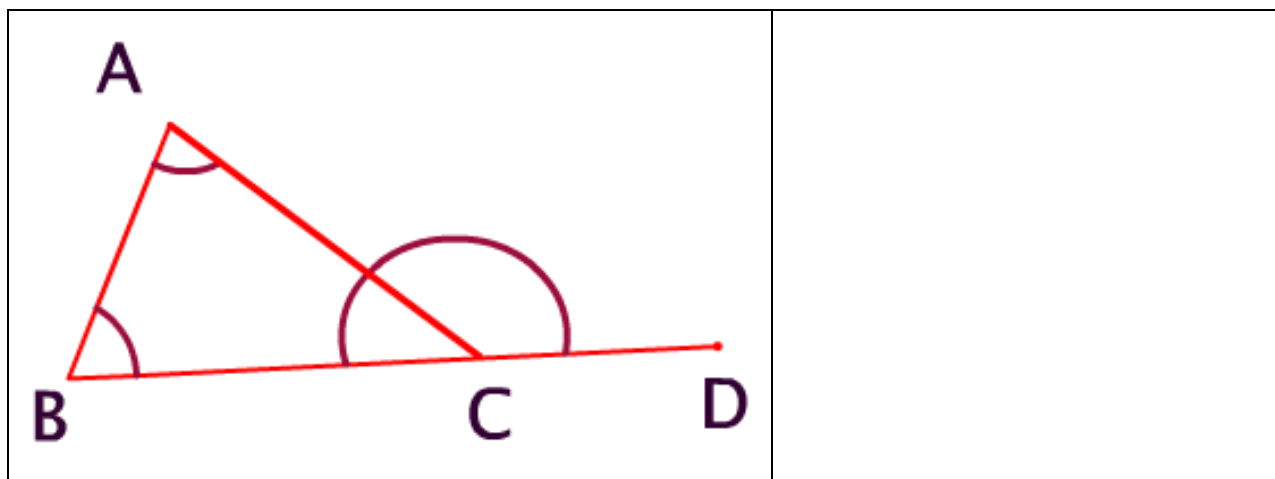


Exploration:

What is the relationship between an exterior angle the interior angles?

Use a compass to help you fill out the chart below. Pencil in the measure of each angle in the chart below

	<p>#1</p> <p>$m\angle BCA =$ $m\angle B =$ $m\angle A =$ $m\angle B + m\angle A =$ $m\angle ACD =$</p>
	<p>#2</p> <p>$m\angle BCA =$ $m\angle B =$ $m\angle A =$ $m\angle B + m\angle A =$ $m\angle ACD =$</p>
	<p>#3</p> <p>$m\angle BCA =$ $m\angle B =$ $m\angle A =$ $m\angle B + m\angle A =$ $m\angle ACD =$</p>



Looking at #'s 1—3, do you see a pattern emerging?

#4

$m\angle BCA =$
 $m\angle B =$
 $m\angle A =$
 $m\angle B + m\angle A =$
 $m\angle ACD =$

#5

$m\angle BCA =$
 $m\angle B =$
 $m\angle A =$
 $m\angle B + m\angle A =$
 $m\angle ACD =$

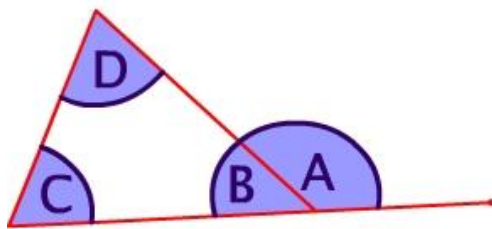
#6

$m\angle BCA =$
 $m\angle B =$

	$m\angle A =$ $m\angle B + m\angle A =$ $m\angle ACD =$
--	---

Explain what is happening. Do you see a pattern in the data ? If so explain:

The Formula



$\angle A =$ exterior angle

$\angle C =$ remote interior angle

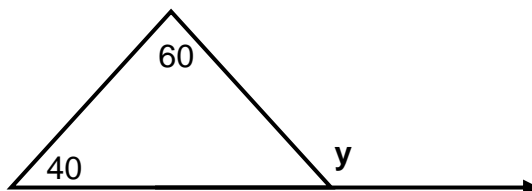
$\angle D =$ remote interior angle

exterior angle = sum of the remote interior angles

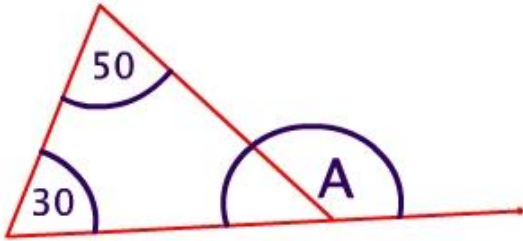
$$\angle A = \angle C + \angle D$$

Practice Problems. Solve for the variables.

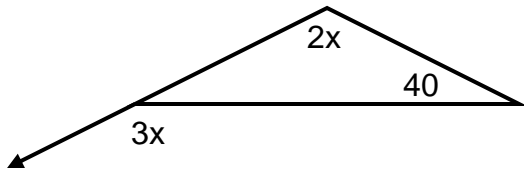
1) Solve for y .



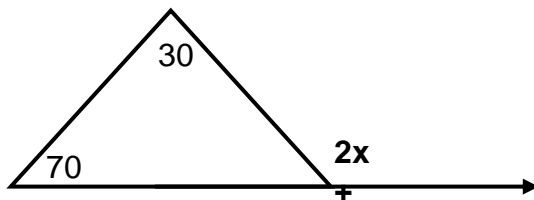
2)



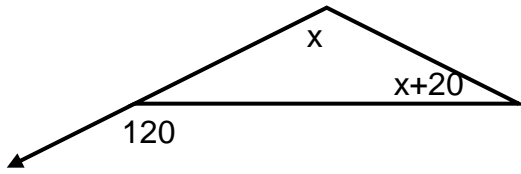
3) Solve for x .



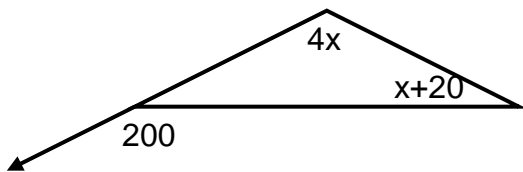
4)



5) Determine the value of x



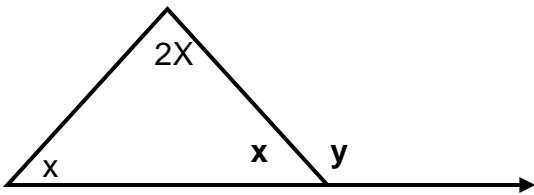
6)



7) In triangle ABC, $m\angle C = 80$, $m\angle B = 2x$ and the measure of an exterior angle at A is $4x$. Draw a sketch and find x .

8) In triangle ABC, $m\angle C = 40$, $m\angle B = x$ and the measure of an exterior angle at A is $2x$. Draw a sketch and find x .

9) Challenge Problem (determine the value of x and of y)



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