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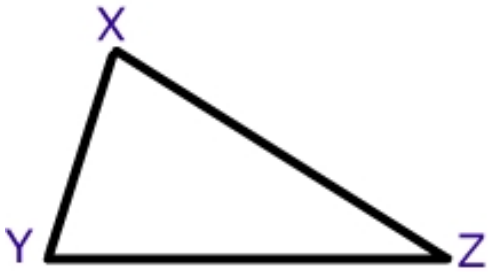
Activity and Worksheet

The relationship between sides and Angles of a Triangle

Warm Up
Directions: Before going to the website for the main activity, complete the table below.

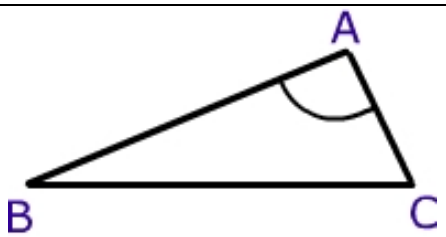
Part I: Identify the opposite side of the indicated angle.

Angle	Opposite Side
∠XYZ	
∠YZX	
∠ZXY	



Part II: Identify the opposite angle of the indicated side.

Side	Opposite Angle
$\overline{AB}$	
$\overline{BC}$	
$\overline{AC}$	



II. Internet Activity
<u>Objective of this Activity</u>: To determine what, if any, relationship exists between the size of a triangle's side and the measure of the respective side's opposite angle.

<u>Procedure</u>

Task #1) Go to the following web page www.mathwarehouse.com/triangle and spend a few minutes moving the three points around to get a hang of this page's program.

Task #2) Identify the side opposite of each angle in the chart below

Angle	Opposite Side
∠BCA	
∠BAC	
∠CBA	

Task #3) Create 7 unique triangles-- one for each table below. Fill in each part of the table below by writing down the size of the angles and sides, and then classifying each indicated angle as the smallest, the largest, or the middle sized angle. Follow the same steps for the sides by recording their lengths and then classifying the relative size of each (largest, smallest, middle).

NOTE: $m\angle CBA$ means the 'measure' of angle CBA → 'm' stands for *measure* or the number of degrees.

Triangle #1

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

Triangle #2

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

Triangle #3

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

(continued on next page)

Triangle #4

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

Triangle #5

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

Triangle #6

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

Triangle #7

Measure of Angle	Was <u>angle</u> the largest smallest or middle?	Length of Opposite Side	Was <u>side</u> the largest smallest or middle?
$m\angle CBA$:_____	Largest/Smallest/Middle	$\overline{AC}$	Largest/Smallest/Middle
$m\angle BAC$:_____	Largest/Smallest/Middle	$\overline{BC}$	Largest/Smallest/Middle
$m\angle BCA$:_____	Largest/Smallest/Middle	$\overline{AB}$:_____	Largest/Smallest/Middle

Circle the answer:

1) The largest angle is always opposite the (largest/smallest/middle) side.

2) The smallest angle is always opposite the (largest/smallest/middle) side.

3) The middles-sized angle is always opposite the (largest/smallest/middle) side.

Conclusion: What is the relationship between the size of an angle and the size of the side opposite that angle?

Worksheet

What must be the measure of the third angle in a triangle?

1) $\angle$**1 : 20** $\angle$**2 : 120** **third** $\angle$**:_____**

2) $\angle$**1 : 44** $\angle$**2 : 23** **third** $\angle$**:_____**

3) $\angle$**1 : 30** $\angle$**2 : 110** **third** $\angle$**:_____**

4) $\angle$**1 : 60** $\angle$**2 : 60** **third** $\angle$**:_____**

5) $\angle$**1 : 177** $\angle$**2 : 2** **third** $\angle$**:_____**

6) $\angle$**1 : 178** $\angle$**2 : 1** **third** $\angle$**:_____**

Make up three angle measurements that could be the angles of a triangle.

7) $\angle$**1 :_____** $\angle$**2 :_____** $\angle$**3:_____**

8) $\angle$**1 :_____** $\angle$**2 :_____** $\angle$**3:_____**

9) $\angle$**1 :_____** $\angle$**2 :_____** $\angle$**3:_____**

10) $\angle$**1 :_____** $\angle$**2 :_____** $\angle$**3:_____**

11) $\angle$**1 :_____** $\angle$**2 :_____** $\angle$**3:_____**

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