

# **Lesson 3:**

# **Triangle Properties**

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- It is a closed figure; and
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**triangle:** a polygon consisting of three line segments and three angles

## Classifying Triangles:

Triangles can be classified by their side lengths or by the sizes of the interior angles.

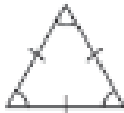

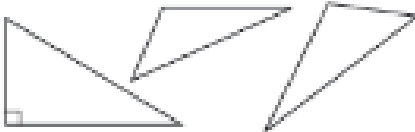
## Classifying Triangles:

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TRIANGLES CLASSIFIED BY ANGLE MEASURE		
acute	all three angle measures are less than $90^\circ$	
right	one angle measure is $90^\circ$	
obtuse	one angle measure is greater than $90^\circ$	

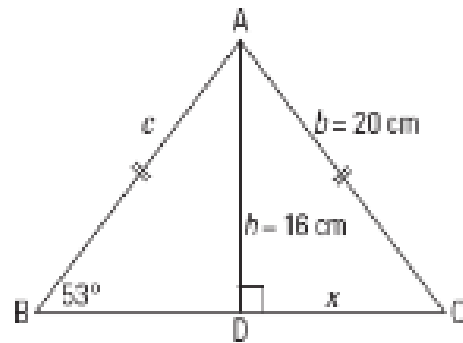
# Classifying Triangles:

Triangles can be classified by their side lengths or by the sizes of the interior angles.

TRIANGLES CLASSIFIED BY SIDE LENGTH		
equilateral	three sides are of equal length and three angles are of equal measure	
isosceles	two sides are of equal length and two angles are of equal measure	
scalene	all sides are of different lengths and no angles are of equal measure	

### Example 3

Use the following diagram to answer the questions below.

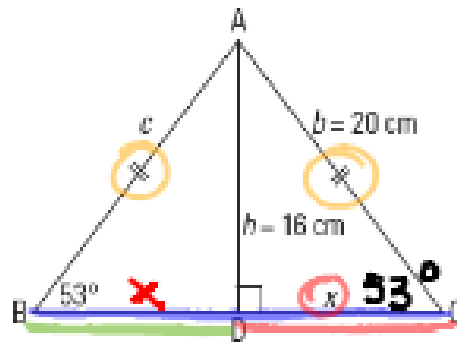


- What is the length of side  $BC$ ?
- Classify  $\triangle ABC$  by angle measure and by side length.



### Example 3

Use the following diagram to answer the questions below.



- What is the length of side BC?
- Classify  $\triangle ABC$  by angle measure and by side length.

$$x^2 = b^2 - h^2$$

$$x^2 = 20^2 - 16^2$$

$$x^2 = 400 - 256$$

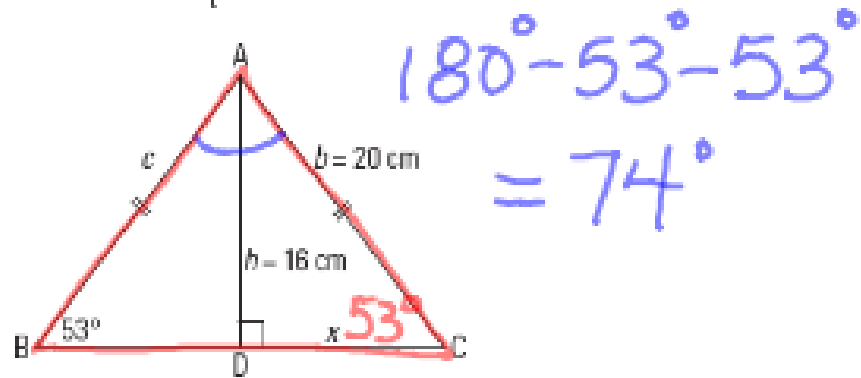
$$\sqrt{x^2} = \sqrt{144}$$

$$x = 12 \text{ cm}$$

$$\therefore BC = 24 \text{ cm}$$

### Example 3

Use the following diagram to answer the questions below.



a) What is the length of side  $BC$ ?

b) Classify  $\triangle ABC$  by angle measure and by side length.

3 acute angles  
2 sides same length

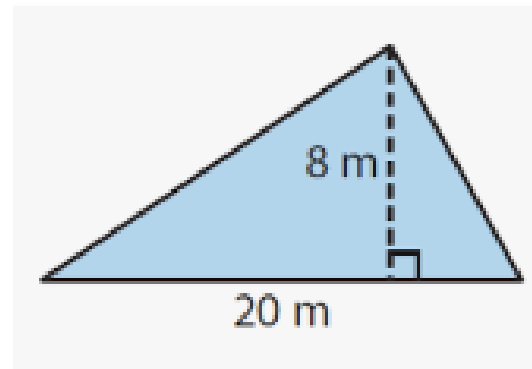
$\therefore$  acute isosceles triangle

# Area:

The area of a triangle is calculated using the following formula:

$$A = \frac{bh}{2}$$

where  $b$  is the base and  $h$  is the height.



base = 20 m  
height = 8 m

$$A = \frac{bh}{2}$$

$$A = \frac{(20)(8)}{2} = 80 \text{ m}^2$$