

# Chapter 9- Lesson 4

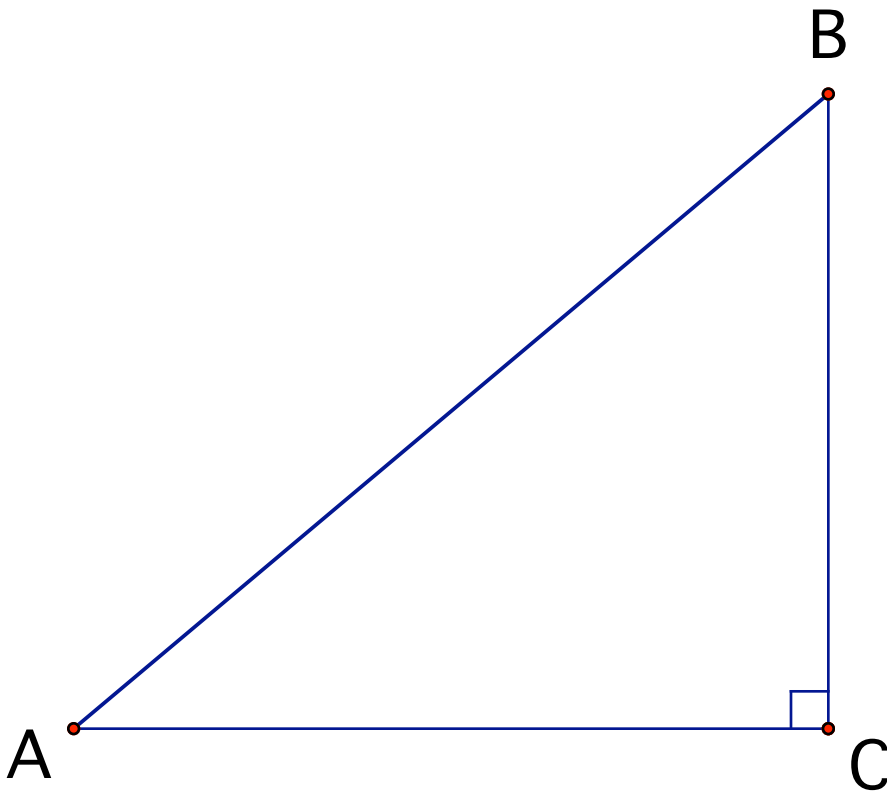
## Trigonometric Ratios- Solving for Sides

### Goals

Develop an understanding of the meaning of trigonometric ratios as applied to right triangles.

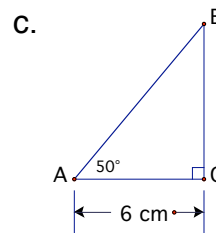
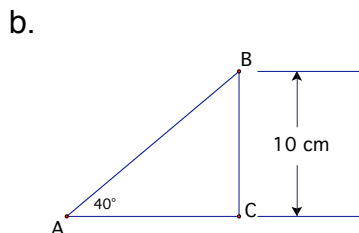
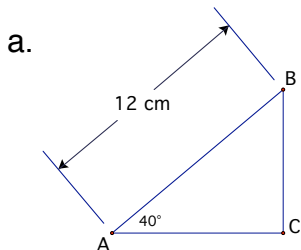
In the previous lessons you learned some “magic” related to right triangles and have perfected your magical abilities to solve right triangles when the length of two sides were known. In this lesson you will reverse that process.

1. I have (or will) draw a large right triangle on the board which has an acute angle of  $40^\circ$ . I will then tell you the length of one other side. Use the triangle below to help you figure out the lengths of the other sides of the triangle on the board.



## Geometry: Chapter 9-Lesson 4— Trigonometric Ratios, Solving for Sides

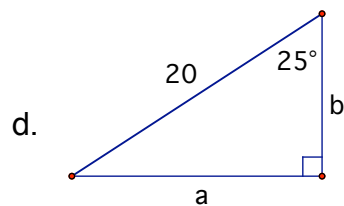
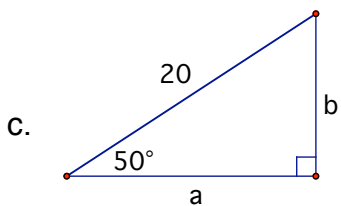
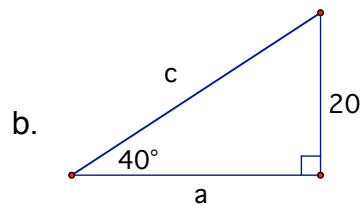
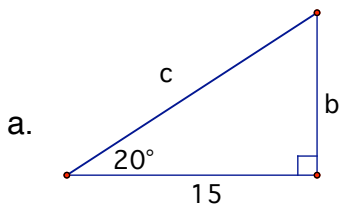
Solve these right triangles.



2. Suppose you have a right triangle with an acute angle of  $40^\circ$ . What ratios will always be the same? Why?

### Geometry: Chapter 9-Lesson 4— Trigonometric Ratios, Solving for Sides

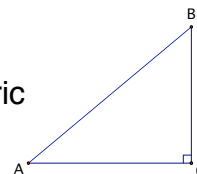
3. Solve the following triangles. Use your table of ratios for the sides of right triangles to help.



## Geometry: Chapter 9-Lesson 4— Trigonometric Ratios, Solving for Sides

### Practice

Solve for the missing values. Use the accompanying table of trigonometric ratios or the “Trig-O-Meter” from our website to help. Make sketches and show clear work for each problem.



	AB (Hypotenuse)	BC (Opposite)	AC (Adjacent)	Ratio Used	Ratio's Value	$m\angle A^\circ$	$m\angle B^\circ$
1	7			$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		40	
2	7			$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		20	
3		7		$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		20	
4		6.5		$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		50	
5			6.8	$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		70	
6			6.8	$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$			20
7	10			$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		25	
8		6		$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$		25	
9			7	$\frac{O}{H} - \frac{A}{H} - \frac{O}{A}$			40