

# Lesson Four: Using Trigonometric Ratios to Find Angle Measures

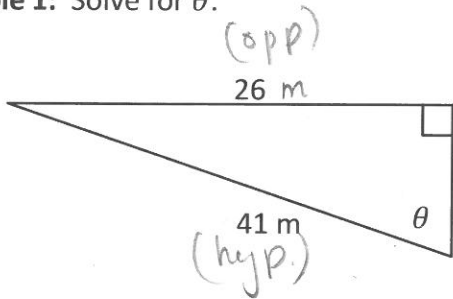
**Goals:**

- Determine the size of an unknown angle in a right triangle using the sine, cosine, or tangent ratios.

$$\sin \theta = \frac{o}{h} \quad \cos \theta = \frac{a}{h} \quad \tan \theta = \frac{o}{a}$$

Trig ratios can be used to find a missing angle in a right triangle. The trig ratio is chosen and set up in the same manner, but the calculator function is different. Your teacher will help you through the following examples.

**Example 1:** Solve for  $\theta$ .



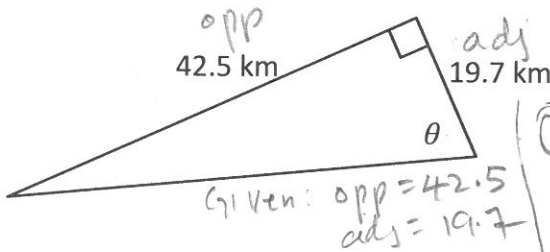
Given  
 opp. = 26  
 hyp. = 41  
 Find =  $\theta$

Since the given are:  
 opposite side and hypotenuse  
 use  $\sin \theta = \frac{\text{opp.}}{\text{hyp.}}$  to find angle

$$\sin \theta = \frac{26}{41}$$

② Using calculator press:  
 $\boxed{2\text{nd}} \boxed{\sin} \boxed{26} \boxed{\div} \boxed{41} \boxed{)} \text{ENTER}$   
 $\theta = 39.36^\circ$

**Example 2:** Solve for  $\theta$ .



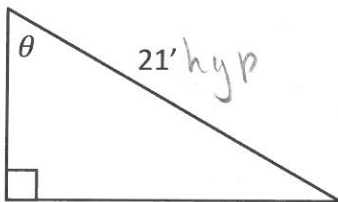
Given: opp = 42.5  
 adj = 19.7

① Using:  $\tan \theta = \frac{\text{opp}}{\text{adj}}$

$$\tan \theta = \frac{42.5}{19.7}$$

② Using calculator:  
 $\boxed{2\text{nd}} \boxed{\tan} \boxed{42.5} \boxed{\div} \boxed{19.7} \boxed{)} \text{ENTER}$   
 $\theta = 65.13^\circ$

**Example 3:** Solve for  $\theta$ .



Given:  
 opp. = 13'  
 hyp = 21  
 Find  $\theta$ :

① using:  $\sin \theta = \frac{\text{opp.}}{\text{hyp}}$

$$\sin \theta = \frac{13}{21}$$

② Calculator:  $\boxed{2\text{nd}} \boxed{\sin} \boxed{13} \boxed{\div} \boxed{21} \boxed{)} \text{ENTER}$   
 $\theta = 38.25^\circ$