MFM2PI – *Unit 5: Trigonometry – Objective #5*  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Finding Side Lengths** |
| * Find the sides of a right angle triangle using the three primary trig ratios |

1. **Finding Side Lengths**

***Use the Primary Trig Ratios if you are …***  
  
Given:  
  
Need:

In cases where you are given an angle (besides the 90°) and  
one side length, you can find the length of a second side by  
using the primary trig ratios.

How to Find Side Lengths

1. Choose the given angle (**not** 90°) as your reference angle
2. From that reference angle, identify and label the  
   hypotenuse, opposite, and adjacent sides
3. Choose the primary trig ratio that uses both the side you are given and the side that you need
4. Write the primary trig ratio using that information – don’t forget to include the reference angle as well!
5. Solve for the missing side by cross-multiplying and then isolating the variable

*In the following triangles, find the length of side* ***k****, to the nearest tenth of a unit.*

*K*

*P*

*L*

*23°*

*48 cm*

3.9 km

*Z*

*K*

*M*

*17°*

In some cases, the variable will not be isolated after cross-multiplying; this usually happens when the unknown value is in the denominator of the trig ratio. You will have to complete one additional step to isolate the variable.

*In the following triangles, find the length of side* ***i****, to the nearest tenth of a unit.*

*22 mm*

*11.7 m*

*I*

*31°*

*58°*

*Y*

*I*

*P*

*B*

*F*