MFM2PI – *Unit 4: Similar Triangles – Lesson 3*  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Real World Similar Triangle Problems**

1. **Recall: How to Find the Length of Similar Triangle Sides**

**D**

**B**

**F**

We calculate the missing length of a side of a similar triangle by creating  
a *proportional equation*, cross-multiplying, and solving for the missing variable.

**9**

**12**

Given the two triangles to the right are similar:  
a) write a similarity statement (*letter order is important!*), and  
b) find the missing lengths of side RW and RZ.

**Z**

**R**

**y**

**5**

**x**

**W**

**15**

1. **Using Similar Triangles for Real World Problems**

The real world is filled with opportunities to use our knowledge of similar triangles to solve challenging problems. There are two types of similar triangle problems that we will focus on during this unit.Problem Type #1: Sunshine Problems  
*Hint! You can recognize a “Sunshine Problem” because it will always mention a “shadow”!*

Example #1: There is a 7.6-metre pole that casts a shadow that is 6.1 metres long. At the same time, a nearby office building casts a shadow that is 15.8 metres long. What is the height of the office building?

Example #2: Mr. Smith travels to Egypt to visit the Great Pyramids, but he wants to figure out how tall one of the   
pyramids actually is. The pyramid casts a shadow that is 294 metres from the centre of the pyramid; at the same time, a 2-metre stick casts a shadow that is 4 metres long. How tall is the pyramid?

Problem Type #2: Reflection Problems  
*Hint! You can recognize a “Reflection Problem” because it will always mention a “mirror”!*

Example #1: Mr. Smith wants to create a scale model of his cottage, but, after travelling 4 hours to get there, he   
realizes he forgot the ladder! Remembering his similar triangles training, he takes a mirror and places it 12 metres from the base of the cottage. Then he walks backwards away from the mirror until he can see the whole cottage in the mirror, which happens at 2 metres from the mirror. If Mr. Smith is 1.7 metres tall, how tall is the cottage?

Example #2: A stray cat climbs a huge pine tree all the way to the top! The fire department wants to send a truck to the rescue, but they’re not sure how tall the tree is. A local teen takes a mirror from her purse and puts it on the ground 40 metres from the base of the pine tree. She then walks 1.4 metres away from the mirror before she can see the whole tree in it. If the teen is 1.6 metres tall, how tall is the tree?

**HW: *Worksheet – “Unit 4 Lesson 3”***