

IM2 Problem Set 2.4 - Working in Multiple Triangles

BIG PICTURE of this UNIT:	<ul style="list-style-type: none"> • How do I determine the measure of angles in geometric shapes, without direct measurement? • How do I solve for sides or angles in right triangles? • How can I solve problems that require geometric models using right triangles??
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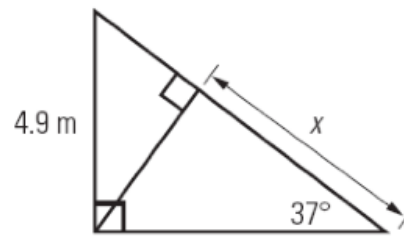
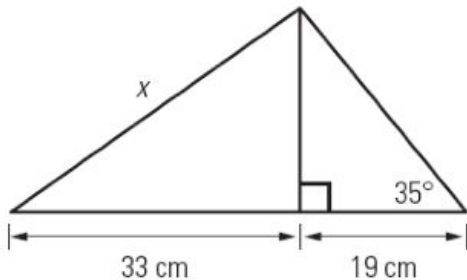
Part 1 - Skills Review

For those of you NOT ready or confident of working with the trig ratios YET, [follow this link](#) and work through more practice questions from this worksheet

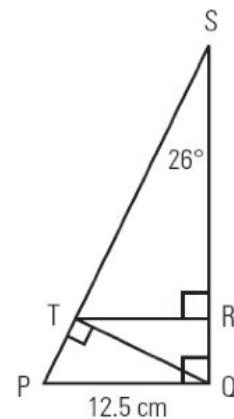
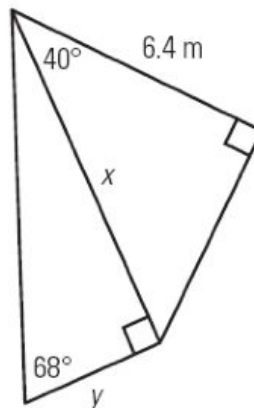
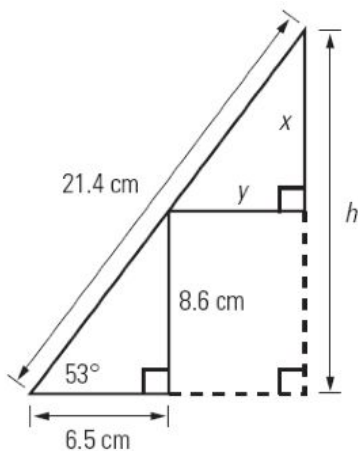
(<http://cdn.kutasoftware.com/Worksheets/Geo/9-Solving%20Right%20Triangles.pdf>)

Part 2 – Skills & Concept Practice

1. What is the length of x in each of the diagrams?

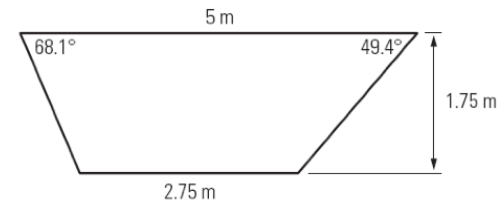


2. Calculate x , y , and h for the following diagrams (and for QS, ST and RT in the third diagram)

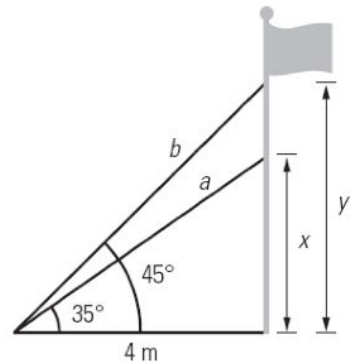


Part 3 – Skills & Concept Applications

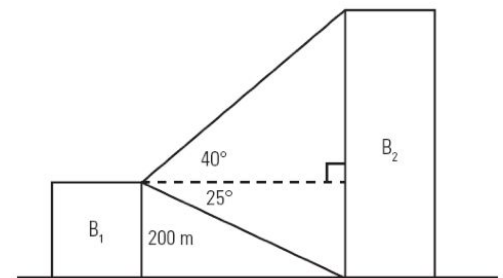
- Pauline is building a fence around her vegetable garden, shown below. What length of fence will she need to build? What is the area of the vegetable garden?



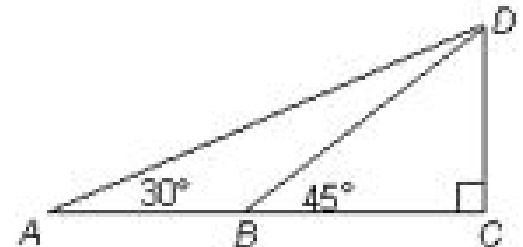
- A flagpole is supported by two guy wires, each attached to a peg in the ground 4 m from the base of the pole. The guy wires have angles of elevations of 35° and 45° .
 - How much higher up the flagpole is the top guy wire attached?
 - How long is each guy wire?



- From the top of a 200 m-tall office building, the angle of elevation to the top of another building is 40° . The angle of depression to the bottom of the second building is 25° . **How tall is the second building**



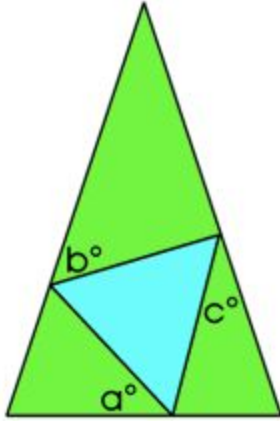
- A person observes that from point A, the angle of elevation to the top of a cliff at D is 30° . Another person at point B, notes that the angle of elevation to the top of the cliff is 45° . If the height of the cliff is 80.0 m, find the distance between A and B. Show the steps of your solution



- Mr. Smith and Mr. Santowski are trying to figure out the height of a new building recently constructed in Cairo. They call it the Super Building. Mr. Smith started from the base of the building and walked for a while... then took an angle measurement from the ground to the top of the building... the device read 80.8858° . Then Mr. Smith realized he didn't count how far he was away from the base of the building. Mr. Santowski, not wanting to walk back, said... I have an idea. Mr. Santowski walked 13 more meters away from their current location and took another angle measurement from the ground. The measuring device read 73.3289°
 - How tall is the building? Show your work.
 - How far was Mr. Smith from the base of the building when he took his first measurement

Part 4 – Challenge Problem

The green triangle is an isosceles triangle while the blue triangle is an equilateral triangle.



Find a in terms of b and c .

What can you say about the triangles if $a = b = c$?

HINTS (If you need them)

What do you know about the angles in an equilateral triangle?

What do you know about the angles that meet on a straight line?

What do you know about the angles in an isosceles triangle?

Start by filling in the diagram with the information you know.