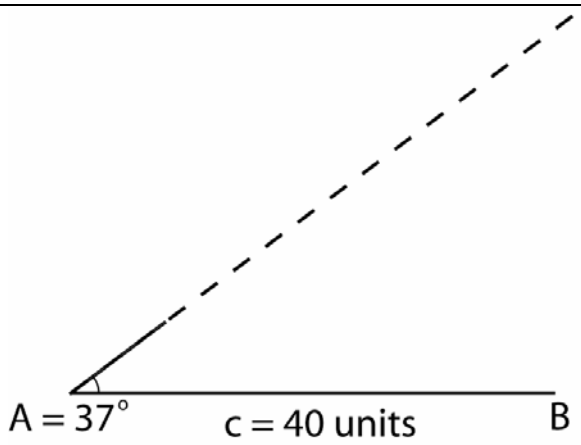
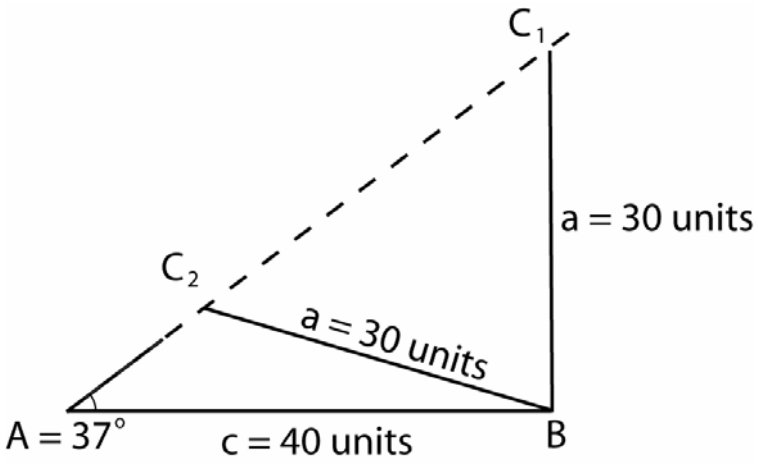
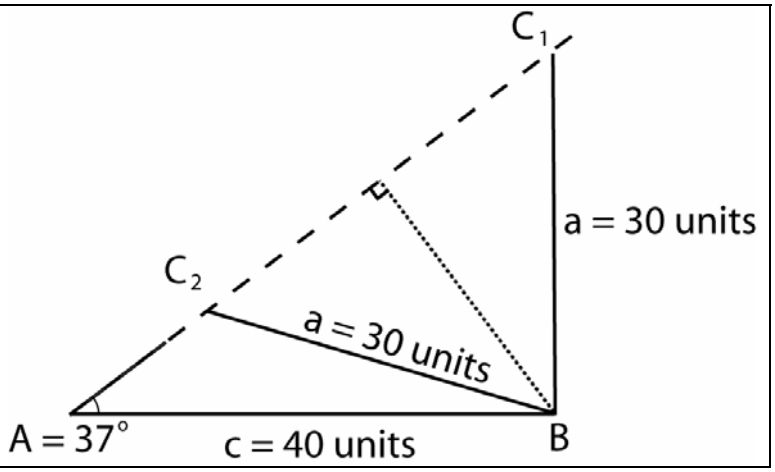
Two possible triangles:
A deeper look at the Law of Sines

Consider the following problem.

Sketch and solve the triangle with a = 30, c = 40, and $\angle A = 37°$.

The picture to the right has the side *c* and the angle *A* drawn in. The side *b* is drawn as a dashed line since I do not know its length.	
We then draw in side *a* with a length of 30 units. Notice this side could be drawn in two different positions, resulting in two possibilities for this triangle. The two possible triangles are ABC_1 and ABC_2. When we solve this triangle with the information given, we must take these two possibilities into account and solve them both separately.	

Here, I drew in the perpendicular segment from angle *B* to side *b* (dotted line). Notice the triangle C_1BC_2 is an isosceles triangle with this dotted line as its perpendicular bisector. This helps you draw it yourself.	

Try to solve the triangle for the two different possibilities.