

SURVEY TEAM Teaching Guidelines

<p>Subject: Mathematics</p> <p>Topics: Trigonometric ratios</p> <p>Grades: 9 – 12</p>
<p>Concepts:</p> <ul style="list-style-type: none"> • Triangulation
<p>Knowledge and Skills:</p> <ul style="list-style-type: none"> • Can solve real world problems involving trigonometric ratios

Procedure: This activity is best done by students individually or working in teams of 2.

Distribute the handout and discuss it. Ensure that students understand what is called for.

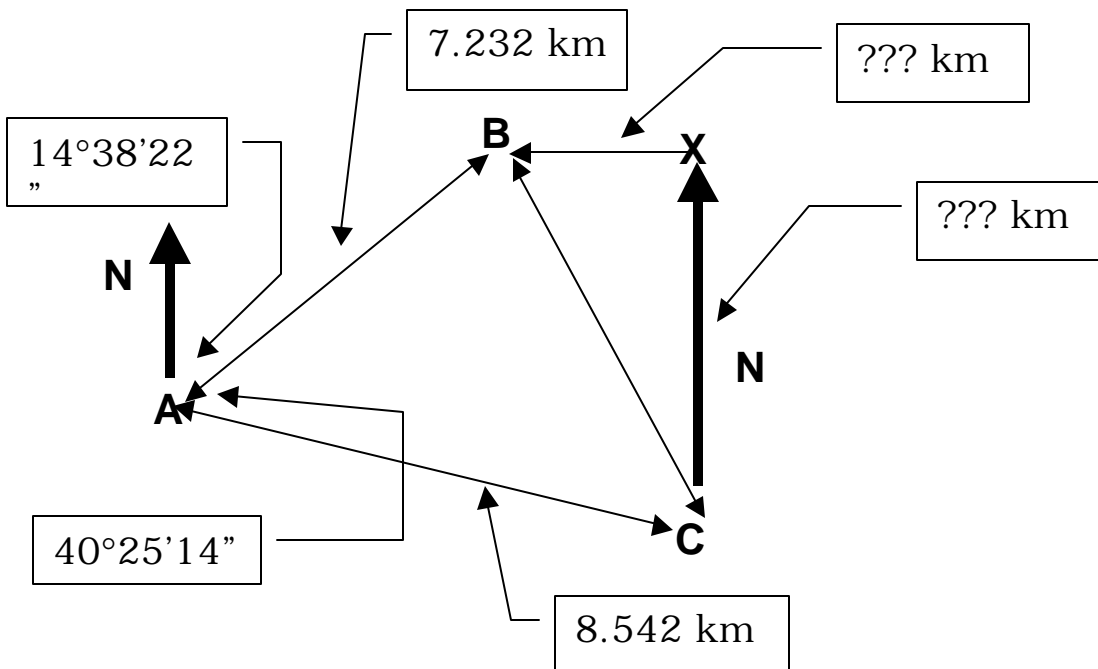
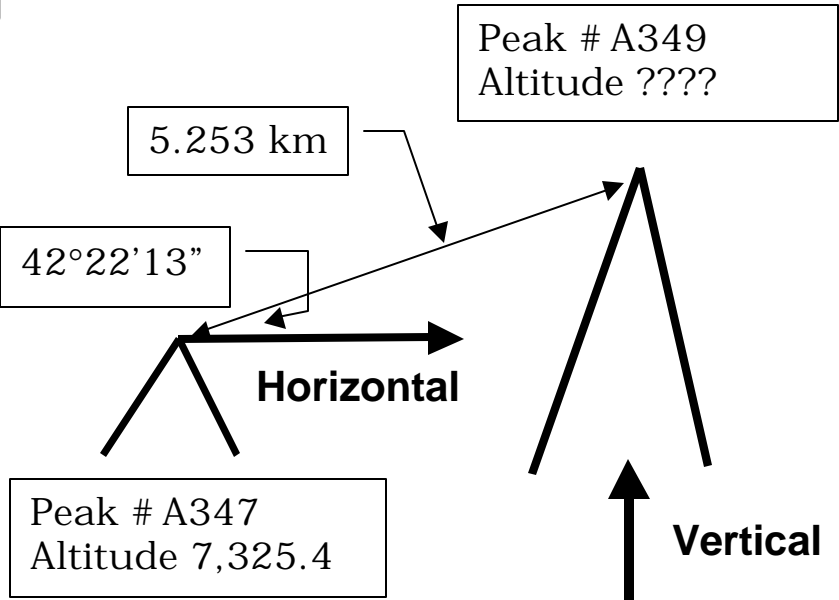
#1: $7,325.4 + 5,253 \cdot \sin(42^\circ 22' 13'') = 10,865.5$ m.

#2: $CX = 4.410$ km, $BX = 3.429$ km (To solve, first use law of cosines to find $BC = 5.586$ km. Then use law of cosines again to find angle $ACB = 57^\circ 04' 39''$. Considering segment AC as a transversal cutting the two parallel “North” rays, angle BCX can be found to be $37^\circ 51' 45''$. Definitions of sine and cosine ratios are then applied to triangle BCX to find CX and BX.)

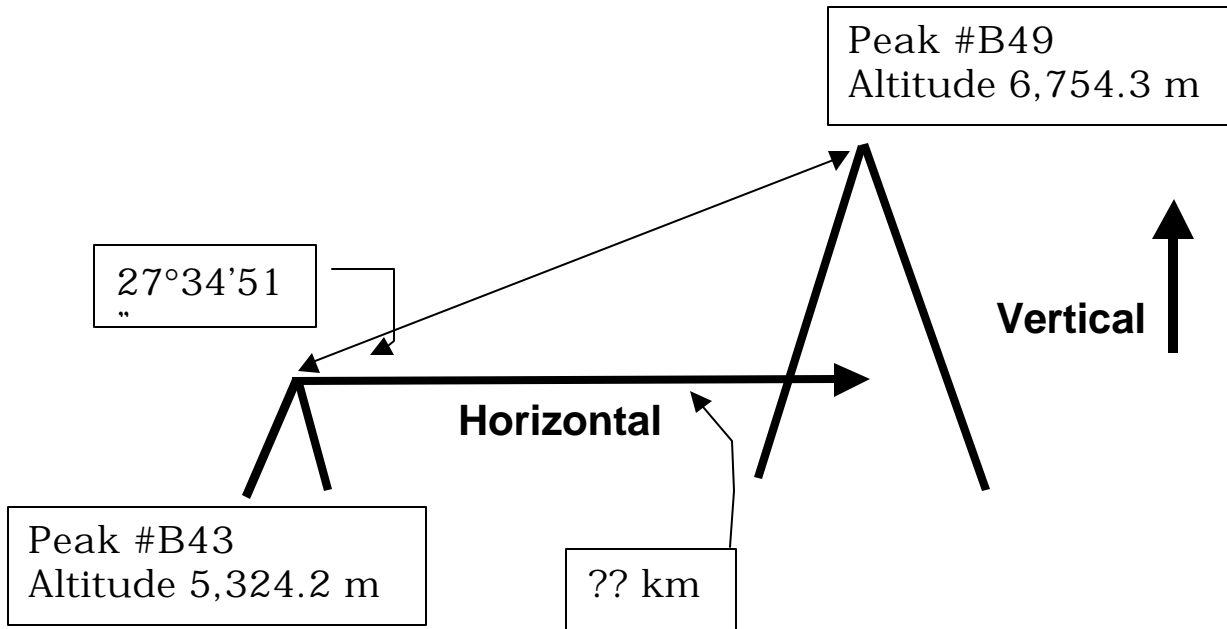
#3: $(6754.3 - 5324.2) / \tan(27^\circ 34' 51'') = 2,737.8$ m.

School-to-Career Connection: Ask a surveyor from a local USGS office or other land survey office to visit you class and discuss his or her work.

The last survey team didn't get a chance to finish up their last three calculations before they went out again. Here are the notes. Could you fill in the missing numbers for me?
Need it by _____.



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