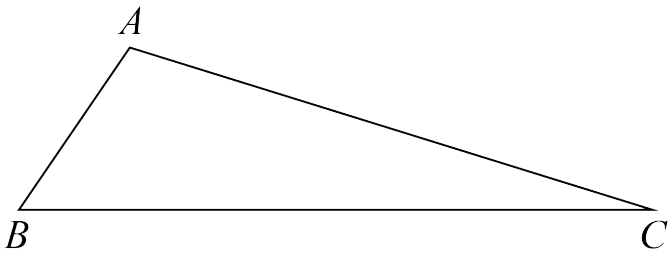
Problem of the Week

Problem E

An Altitude Adjustment

Celestyn drew a triangle and labeled its vertices A, B, and C.



He then drew the altitude from A to point Q on the line through BC, the altitude from B to point R on the line through AC, and the altitude from C to point S on the line through AB. After measuring, he determined that $AQ = 21$ cm, $BR = 24$ cm, and $CS = 56$ cm.

Determine the measure, in degrees, of $\angle ABC$ and the lengths, in centimetres, of AB, BC, and CA.