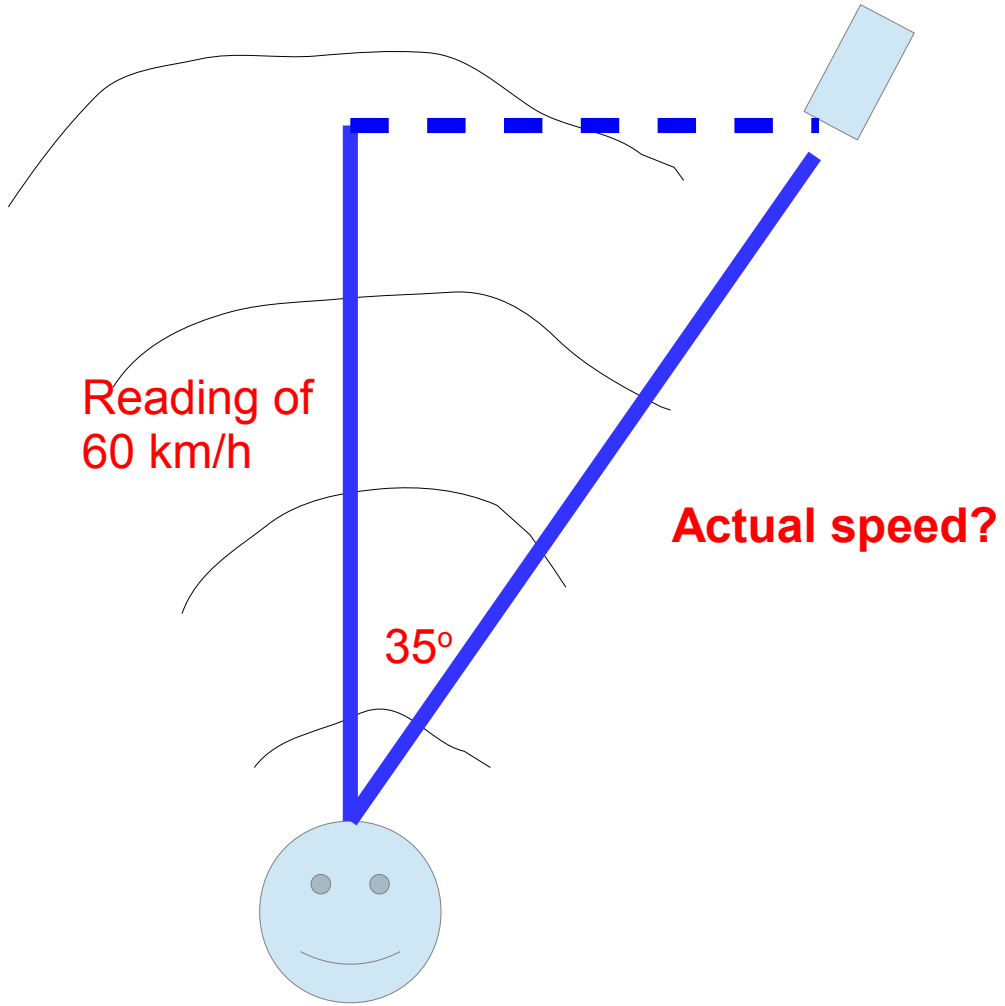
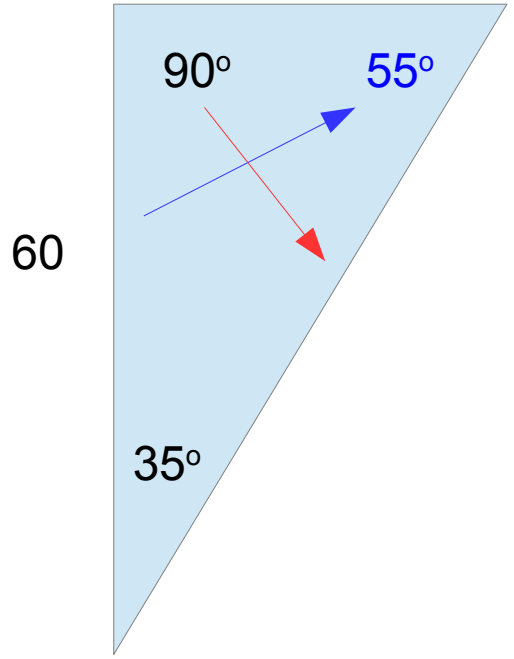
When police officers use radar to catch speeding vehicles, a signal is sent straight and returned back to the radar



180 – 90 – 35 to get the missing angle (car)
Use sine law



60 / sine(55) = **73.2**

Actual speed / sine(90) = **73.2**
Actual speed / 1 = 73.2

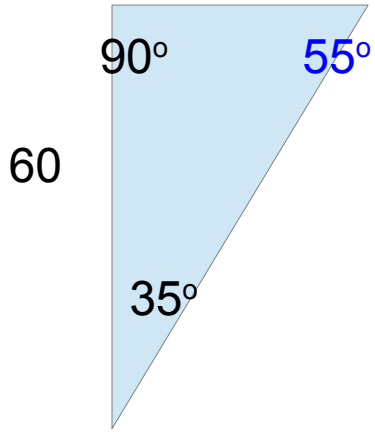
Actual speed = **73.2**

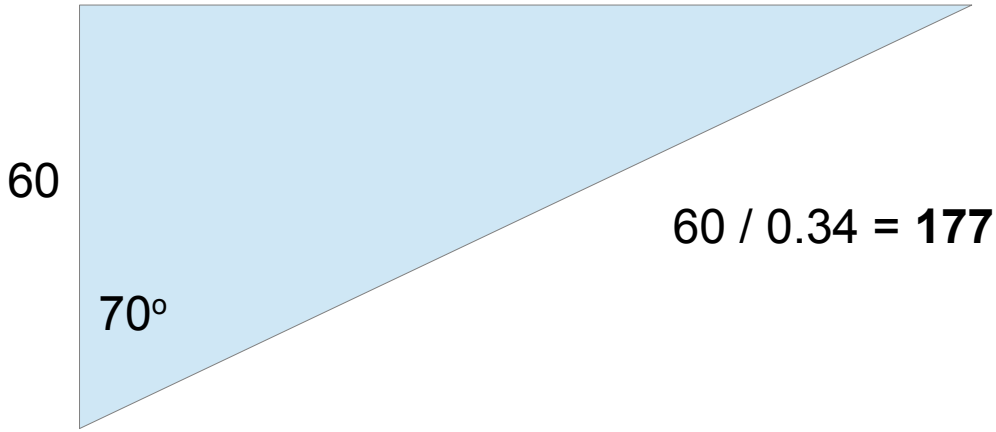
OR we could use the Cosine relationship

Cosine(35) = 0.7 --> the adjacent (reading)
Is 70% of the actual speed

If we increase the angle to 70° then

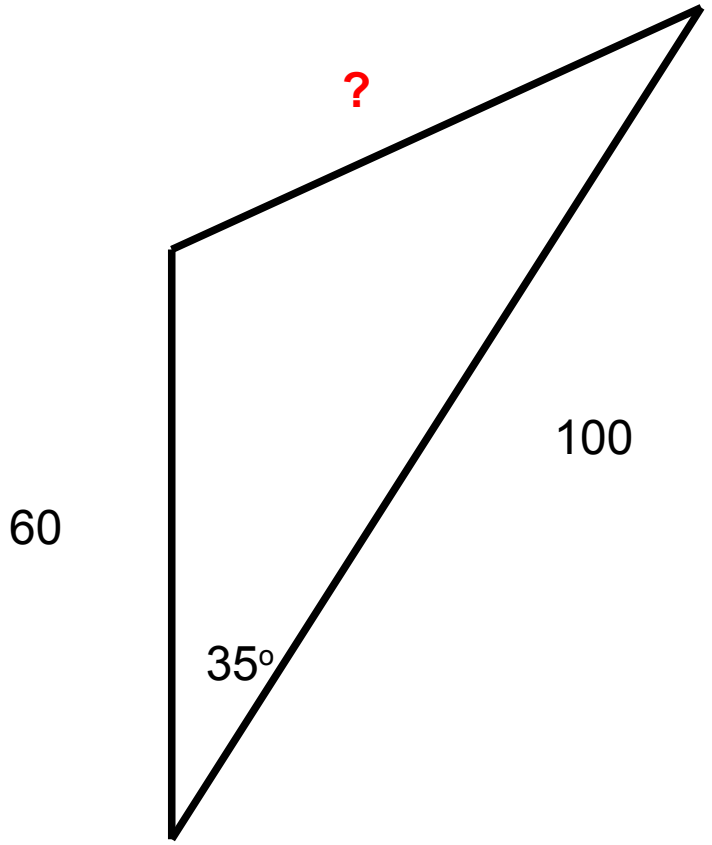
Cosine(70) = 0.34 --> the adjacent (reading)
Is 34% of the actual speed





60 / 0.34 = **177 km/h actual**

Solve for the unknown using SINE law



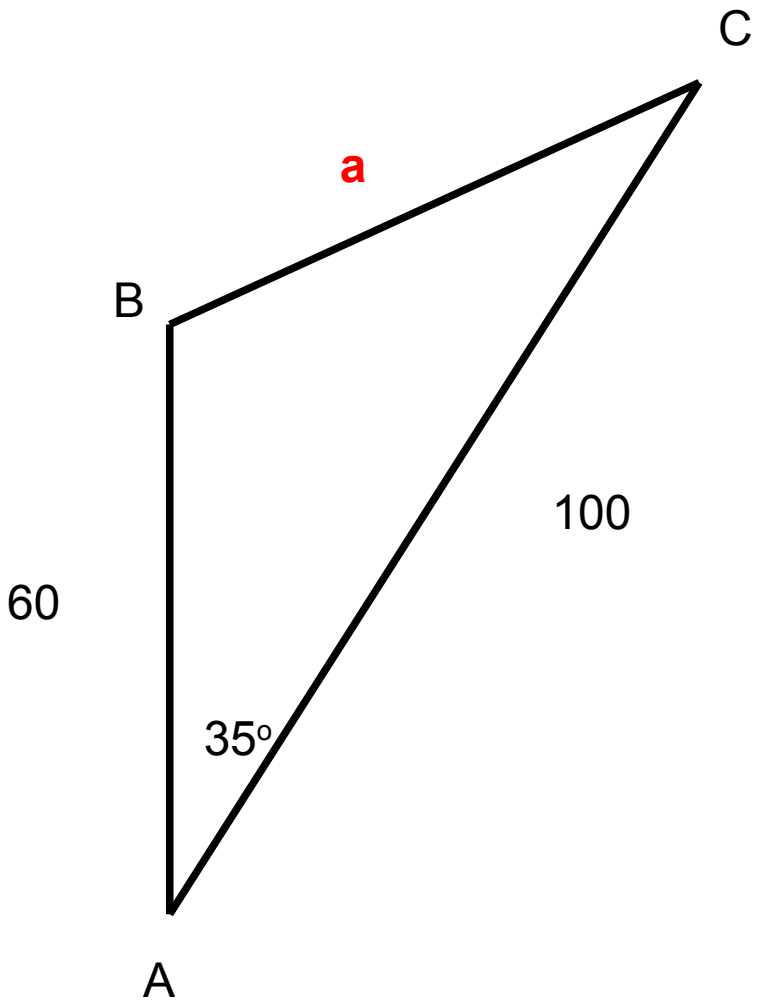
x / Sin(35) = 60 / Sine(...) = 100 / Sine (...)

There is NO way we can get the TWO unknown sides... so we don't have enough information to use the SINE Law

We introduce the COSINE Law

$$a^2 = b^2 + c^2 - 2bc*\cos(A)$$

Solve for the unknown using SINE law



We introduce the COSINE Law

$$a^2 = b^2 + c^2 - 2bc*\cos(A)$$

$a^2 = 100^2 + 60^2 - 2(100)(60)*\cos(35)$

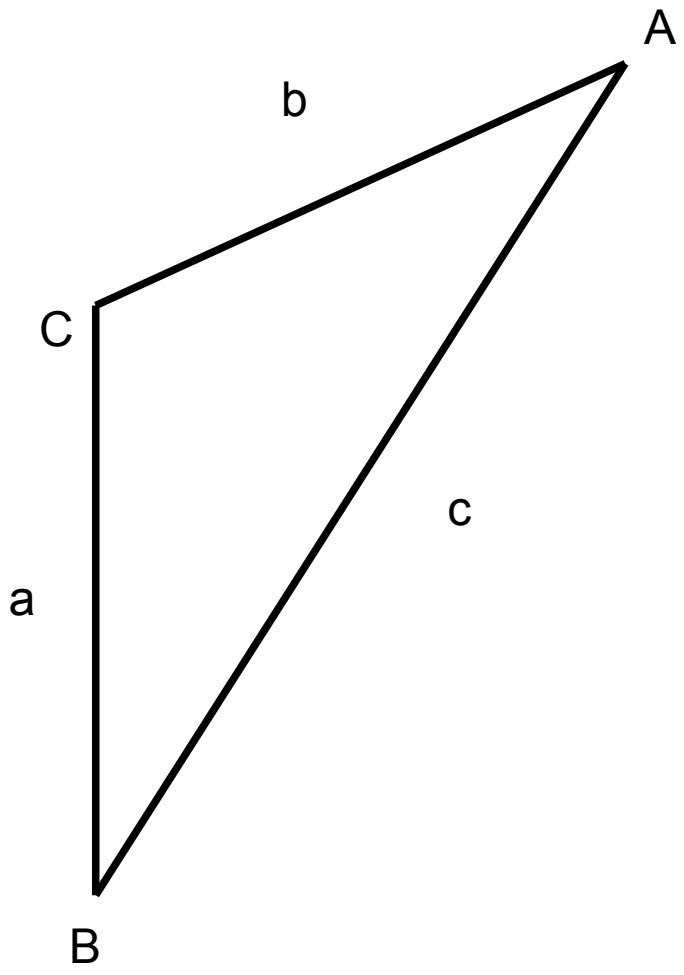
$a^2 = 3770.18$

Enter it into the TI83
As you see it

$a = \text{SQRT}(3770.18)$

$a = \mathbf{61.4}$

COSINE Law: For any triangle A,B,C



$$a^2 = b^2 + c^2 - 2bc*\cos(A)$$