

a) Squaring both sides:

$$a^2 + 2ab + b^2 = 144 - 24c + c^2$$

b) So Area of the triangle =  $36 - 6c$

c)  $a + b = 12 - c$

d) So  $2ab = 144 - 24c$

e) Area of the triangle =  $\frac{ab}{2}$

f) By Pythagoras' Theorem,  $a^2 + b^2 = c^2$

g)  $a + b + c = 12$

h) Dividing by 2:  $ab = 72 - 12c$