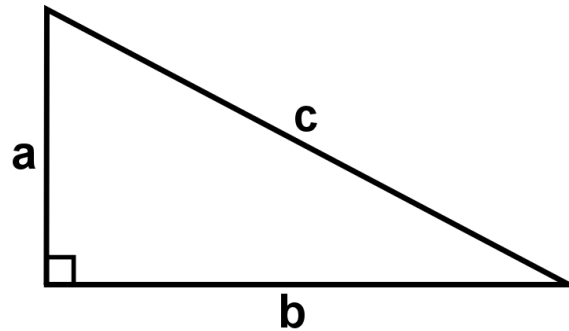


For a right-angled triangle with a perimeter of 12 units, show that the area is $36 - 6c$ units.



Once you've had a go at solving the problem, take a look below. The steps show a possible way to solve the problem, but they have all been muddled up. Can you put them in the correct order?

Squaring both sides: $a^2 + 2ab + b^2 = 144 - 24c + c^2$
So Area of the triangle = $36 - 6c$
$a + b = 12 - c$
So $2ab = 144 - 24c$
Area of the triangle = $ab/2$
By Pythagoras's theorem, $a^2 + b^2 = c^2$
$a + b + c = 12$
Dividing by 2: $ab = 72 - 12c$

Can you adapt your method, or the method above, to prove that when the perimeter is 30 units, the area is $225 - 15c$ units?

Extension

Can you find a general expression for the area of a right angled triangle with hypotenuse c and perimeter p ?