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1. The hypotenuse of a right triangle is 25 cm. The difference between the lengths of the other two sides of the triangle is 5 cm. Find the lengths of these sides.
Solution:

Let the length of one side of the right triangle be x cm
So, the other side will be = (x + 5) cm [as they differ by 5cm]
And given that hypotenuse = 25 cm
On applying Pythagoras Theorem, we have
$x^2 + (x + 5)^2 = 25^2$
$x^2 + x^2 + 10x + 25 = 625$
$2x^2 + 10x + 25 - 625 = 0$
$2x^2 + 10x - 600 = 0$
$x^2 + 5x - 300 = 0$
$x^2 - 15x + 20x - 300 = 0$ [By factorisation method]
$x(x - 15) + 20(x -15) = 0$
$(x - 15)(x + 20) = 0$
$x = 15$ or $x = - 20$ (neglected) As the side of triangle can never be negative.
Thus, when $x = 15 \Rightarrow x + 5 = 15 + 5 = 20$
Hence, the length of side of right triangle is 15 cm and other side is 20 cm

2. The diagonal of a rectangular field is 60 meters more than the shorter side. If the longer side is 30 meters more than the shorter side, find the sides of the field.
Solution:

Let's consider the length of smaller side of rectangle as x metres
Then, the larger side will be (x + 30) metres and diagonal will be = (x + 60) metre [From given relation]
Now, by using Pythagoras theorem we have,
$x^2 + (x + 30)^2 = (x + 60)^2$
$x^2 + x^2 + 60x + 900 = x^2 + 120x + 3600$
$2x^2 + 60x + 900 - x^2 - 120x - 3600 = 0$
$x^2 - 60x - 2700 = 0$
$x^2 - 90x + 30x - 2700 = 0$ [By factorisation method]
$x(x - 90) + 30(x - 90) = 0$
$(x - 90)(x + 30) = 0$
$x = 90$ or $x = -30$ (this is neglected as the side of a rectangle can never be negative)
Therefore, we only take $x = 90$,
$\Rightarrow$ $x + 30 = 90 + 30 = 120$
Thus, the length of smaller side of rectangle is 90 metres and the larger side is 120 metres.