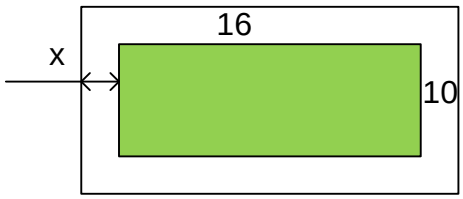
Answer on Question#43917 – Math – Geometry

A rectangular garden 10 m by 16 m is to be surrounded by a concrete walk of uniform width. Given that the area of the walk is 120 square meters, assuming the width to be x, form an equation in x and solve it to find the value of x.

Solution:



The area of the walk is:

$A = (16 + 2x)(10 + 2x) - 16 \cdot 10 = 160 + 32x + 20x + 4x^2 - 160 = 52x + 4x^2$

So

$52x + 4x^2 = 120$

$4x^2 + 52x - 120 = 0$

$x^2 + 13x - 40 = 0$

$x = \frac{-13 \pm \sqrt{169 + 160}}{2} = \frac{-13 \pm \sqrt{329}}{2}$

x must be positive

$x = \frac{-13 + \sqrt{329}}{2} \approx 2{,}6\, meters$

Answer: the width of the walk must be $2,6\ meters$