Algebra 1 ECA Remediation Day 34

Geometric Application of Quadratic Equations

Use quadratic equations to solve word problems that involve squares and rectangles.

Example #1

Solve for x.

$x+3 = \ell$

Area = 108 sq. un.

$x+6 = w$

$\ell \cdot w = A$

$(x+3)(x+6) = 108$

FOIL

$x^2 + 6x + 3x + 18 = 108$

$x^2 + 9x + 18 = 108$

$-108 \quad -108$

$x^2 + 9x - 90 = 0$

Use quadratic formula to solve:

$a=1 \quad b=9 \quad c=-90$

$81 + 360$

$x = \frac{-9 \pm \sqrt{9^2-4(1)(-90)}}{2(1)}$

$X = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-9 \pm \sqrt{441}}{2}$

$= \frac{-9+21}{2} = \frac{12}{2} = 6 \quad$ OR $\quad \frac{-9-21}{2} = \frac{-30}{2} = -15$

$x = 6$ AND ~~-15~~

$x = 6$

* -15 is not a real solution because it would make the side lengths negative, which is impossible.