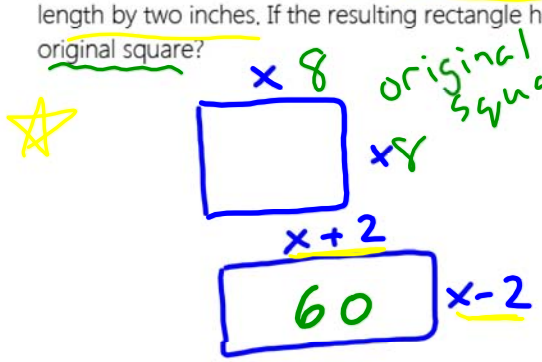
Example 3: A square has one side increased in length by two inches and an adjacent side decreased in length by two inches. If the resulting rectangle has an area of 60 square inches, what was the area of the original square?



original square

$(x+2)(x-2) = 60$

$x^2 - 2x + 2x - 4 = 60$

$x^2 - 4 = 60$

$-60 \quad -60$

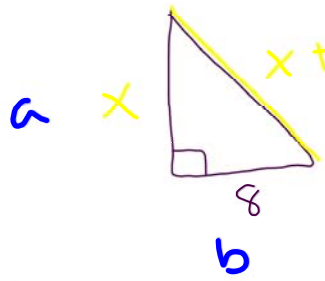
$x^2 - 64 = 0$

$(x+8)(x-8) = 0$

$x = \cancel{-8}$ $\quad x = 8$

Example 4: The length of the shortest side of a right triangle is 8 inches. The lengths of the other two sides are represented by consecutive odd integers. Which equation could be used to find the lengths of the other sides of the triangle?

1) $8^2 + (x+1) = x^2$
2) $x^2 + 8^2 = (x+1)^2$
3) $8^2 + (x+2) = x^2$
4) $x^2 + 8^2 = (x+2)^2$

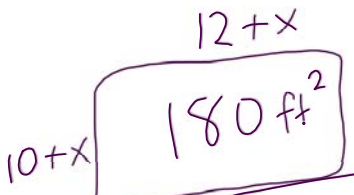


$a^2 + b^2 = c^2$

$x^2 + 8^2 = (x+2)^2$

Example 5: Joe has a rectangular patio that measures 10 feet by 12 feet. He wants to increase the area by 50% and plans to increase each dimension by equal lengths, x. Which equation could be used to determine x?

1) $(10+x)(12+x) = 120$
2) $(10+x)(12+x) = 180$
3) $(15+x)(18+x) = 180$
4) $(15)(18) = 120 + x^2$



$(12+x)(10+x) = 180$