

# **Algebra II**

7-2

Word Problems

- 1) Each side of a square is 4 m long. When each side is increased by  $x$  m, the area is doubled. Find the value of  $x$ .

$$(4+x)(4+x) = 2(16)$$

$$16 + 8x + x^2 = 32$$

$$x^2 + 8x - 16 = 0$$

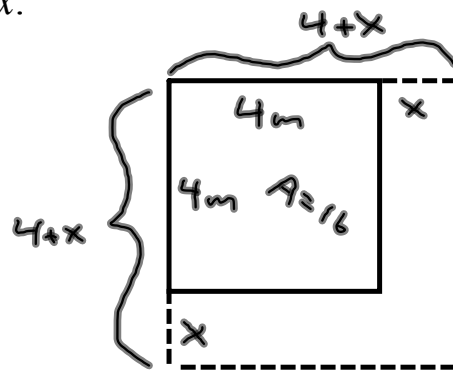
$$\frac{-8 \pm \sqrt{64 - 4(1)(-16)}}{2(1)}$$

$$\frac{-8 \pm \sqrt{64 + 64}}{2} = \frac{-8 \pm \sqrt{128}}{2} = \frac{-8 \pm 8\sqrt{2}}{2}$$

$$-4 \pm 4\sqrt{2}$$

$$\boxed{1.66\text{m}}$$

$$-8.66$$



- 7) A walkway of uniform width has area  $72 \text{ m}^2$  and surrounds a swimming pool that is  $8 \text{ m}$  wide and  $10 \text{ m}$  long. Find the width of the walkway.

Frame

Area = Whole - hole

$$72 = (8+2x)(10+2x) - 80$$

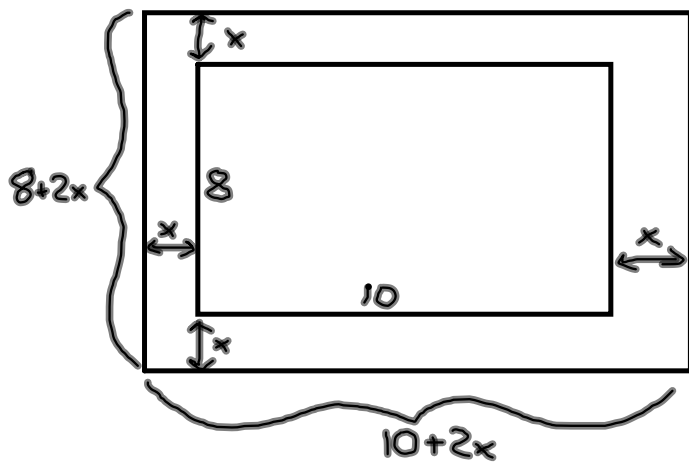
$$0 = 80 + 36x + 4x^2 - 152$$

$$0 = \frac{4x^2}{4} + \frac{36x}{4} - \frac{72}{4}$$

$$0 = x^2 + 9x - 18$$

$$\frac{-9 \pm \sqrt{81 - 4(1)(-18)}}{2(1)} = \frac{-9 \pm \sqrt{81 + 72}}{2} = \frac{-9 \pm \sqrt{153}}{2} = \frac{-9 \pm 3\sqrt{17}}{2} \quad \boxed{1.68} \text{ m}$$

$-10.68$



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2-14  
even