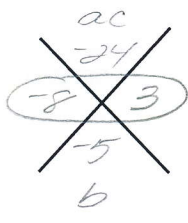
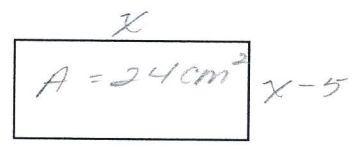


HW:

# Quadratic Word Problems

Credited for you by Ms. Nhotsoubanh

1. A rectangle's width is five less than its length. Its area is 24 square centimeters. Find its dimensions.



$$A = LW$$

$$24 = x(x-5)$$

$$24 = x^2 - 5x$$

$$\begin{array}{r} -24 \phantom{000} \\ \underline{-24 \phantom{000}} \\ 0 = x^2 - 5x - 24 \end{array}$$

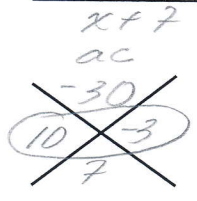
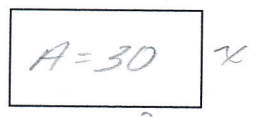
$$0 = (x-8)(x+3)$$

$$x = 8 \quad | \quad x = -3$$

reject  $x = -3$   
b/c you can not have a negative side

Answer:  
Width = 3cm  
Length = 8cm

2. The length of a rectangle is 7 more than the width. Its area is 30. Find the dimensions of the rectangle.



$$A = LW$$

$$30 = x(x+7)$$

$$30 = x^2 + 7x$$

$$\begin{array}{r} -30 \phantom{000} \\ \underline{-30 \phantom{000}} \\ 0 = x^2 + 7x - 30 \end{array}$$

$$0 = (x+10)(x-3)$$

$$x = -10 \quad | \quad x = 3$$

reject  $x = -10$   
b/c you can not have a negative side

Answer:  
Width = 3  
Length = 10

Name: Key  
Alg. I H - Dec. 2

Glue on page 45

3. Cassandra has two sisters. One of the sisters is 7 years older than Cassandra. The other sister is 3 years younger than Cassandra. The product of Cassandra's sisters' ages is 24. How old is Cassandra?

Let Cassandra's age =  $x$   
 Older sister's age =  $x+7$   
 Younger sister's age =  $x-3$

Equation:  $(x+7)(x-3) = 24$

$$x(x-3) + 7(x-3) = 24$$

$$x^2 - 3x + 7x - 21 = 24$$

$$x^2 + 4x - 21 = 24$$

$$\underline{-24 \quad -24}$$

$$x^2 + 4x - 45 = 0$$

$$(x+9)(x-5) = 0$$

b/c you're getting  $x=9$  or  $x=5$   
 neg ham

4. Find two consecutive odd integers such that the square of the first, added to 3 times the second, is 24.

Let 1st COI =  $x = 3$   
 2nd COI =  $x+2 = 5$

Equation:  $x^2 + 3(x+2) = 24$

$$x^2 + 3x + 6 = 24$$

$$\underline{-24 \quad -24}$$

$$x^2 + 3x - 18 = 0$$

$$(x+6)(x-3) = 0$$

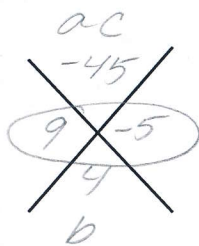
$$x = -6$$

$$x = 3$$

reject

b/c it's not odd

The 2 consecutive odd #s are 3 & 5



ANSWER: Cassandra is 5 years old.

5. Eight more than the square of a number is the same as 6 times the number. Find the number.

Let  $x =$  a number

Equation:  $x^2 + 8 = 6x$

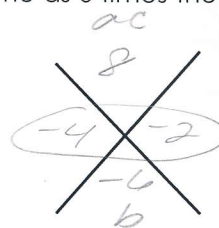
$$\underline{-6x \quad -6x}$$

$$x^2 - 6x + 8 = 0$$

$$(x-4)(x-2) = 0$$

$$x = 4 \quad x = 2$$

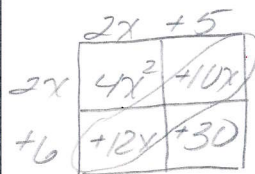
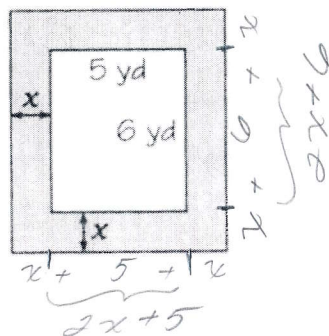
$$x = \{4, 2\}$$



The numbers are 4 & 2.

The deck is 8 yd

6. A rectangular pool measures 5 yd by 6 yd. A concrete deck of uniform width is constructed around the pool. The deck and pool together cover an area of 72 square yd. How wide is the deck?



$$4x^2 + 22x + 30$$

$$\underline{-30 \quad -30}$$

9 yd  $\rightarrow$  length

$$A = LW$$

$$72 = (2x+5)(2x+6)$$

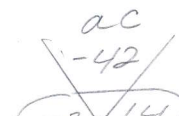
$$72 = 4x^2 + 22x + 30$$

$$\underline{-72 \quad -72}$$

$$0 = 4x^2 + 22x - 42$$

$$0 = 2(2x^2 + 11x - 21)$$

$$2 \neq 0 \quad (x-3)(x+7) = 0$$



$$\underline{-11 \quad -11}$$

$$a > 1$$

$\div$  by  $a$

$$(2x-3)(x+7) = 0$$

$$2x-3=0 \quad x=-7$$

$$\underline{+3 \quad +3}$$

$$x = \frac{3}{2}$$

width  $\rightarrow$  8 yd