

ACTIVITY: QUADRATIC MITTENS

Name: Key Dec. 12

1. Find two given zeros of the quadratic equation below.

$$\frac{x+2}{2x+1} = \frac{x-2}{3}$$

$$3(x+2) = (2x+1)(x-2)$$

$$3x+6 = 2x^2 + 1x - 4x - 2$$

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

$$0 = \frac{2x^2 - 6x - 8}{2}$$

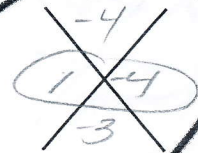
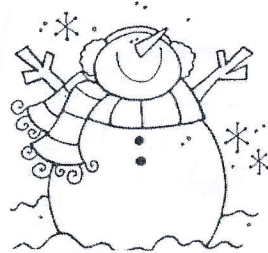
$$0 = 2(x^2 - 3x - 4)$$

$$0 = 2(x+1)(x-4)$$

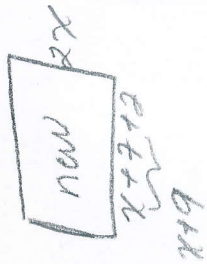
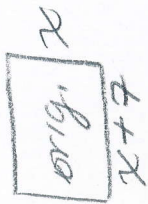
$$0 \neq 2 \quad | \quad x = -1 \quad | \quad x = 4$$

The zeros are:

$$x = \{-1, 4\}$$



2. The length of a rectangle is 7 units more than its width. If the width is doubled and the length is increased by 2, the area is increased by 42 sq. units. Find the dimensions of the original rectangle.



$$A_{orig} + 42 = A_{new}$$

$$x(x+7) + 42 = 2x(x+9)$$

$$x^2 + 7x + 42 = 2x^2 + 18x$$

$$-x^2 - 11x - 42 = 0$$

$$0 = x^2 + 11x - 42$$

$$0 = (x - 3)(x + 14)$$

$$x - 3 = 0$$

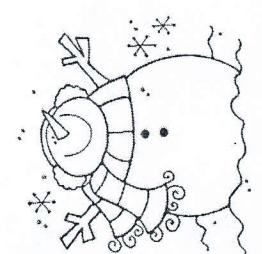
$$\begin{array}{r} x + 3 \\ + 3 \\ \hline x = 3 \end{array}$$

~~$x = -14$~~
 reject
 b/c you
 can't have
 a neg. side

$$x = 3$$

$$x + 7 = 10$$

Answer:
 Width = 3
 Length = 10



3. The product of two consecutive integers is 5 more than three times the larger. Find the integers.

Let:

$$1^{st} \text{ C.I.} = x$$

$$2^{nd} \text{ C.I.} = x+1$$

$$x(x+1) = 3(x+1) + 5$$

$$x^2 + x = 3x + 3 + 5$$

$$x^2 + x = 3x + 8$$

$$\begin{array}{r} x^2 + x \\ - 3x - 8 \\ \hline -2x - 8 \end{array}$$

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

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

$$x - 4 = 0$$

$$\begin{array}{r} x - 4 \\ + 4 \\ \hline x = 4 \end{array}$$

$$x + 2 = 0$$

$$\begin{array}{r} x + 2 \\ - 2 \\ \hline x = -2 \end{array}$$



Answer:
 $\{4, 5\}$ or
 $\{-2, -1\}$