

a, b, c are only numbers

Name: _____ Date: _____ Period: _____

Factoring Trinomials with a Lead Coefficient of 1

$$ax^2 + bx + c$$

What two numbers **multiplied** together (factors) equal **ac** and **added** together equal **b**?

1. $m^2 + 12m + 32 = (\cancel{m+4})(\cancel{m+8})$

$a = \underline{1}, b = \underline{12}, c = \underline{32}, ac = \underline{32}$

$\underline{4} * \underline{8} = \underline{32} = ac$

$\underline{4} + \underline{8} = \underline{12} = b$

$$\begin{array}{r} +32 \\ +32 \\ 216 \\ \hline 48 \end{array}$$

$(m+4)(m+8)$

2. $x^2 - 22x + 121 = () ()$

$a = \underline{1}, b = \underline{-22}, c = \underline{121}, ac = \underline{121}$

$\underline{-11} * \underline{-11} = \underline{121} = ac$

$\underline{-11} + \underline{-11} = \underline{-22} = b$

$$\begin{array}{r} 121 \\ -11 \\ -11 \end{array}$$

$(x-11)(x-11)$
 $(x-11)^2$

3. $a^2 + 8a - 9 = () ()$

$a = \underline{1}, b = \underline{8}, c = \underline{-9}, ac = \underline{-9}$

$\underline{+9} * \underline{-1} = \underline{-9} = ac$

$\underline{+9} + \underline{-1} = \underline{8} = b$

$$\begin{array}{r} -9 \\ +9 \\ -1 \end{array}$$

$(a+9)(a-1)$

4. $x^2 - 7x - 8 = () ()$

$a = \underline{1}, b = \underline{-7}, c = \underline{-8}, ac = \underline{-8}$

$\underline{+1} * \underline{-8} = \underline{-8} = ac$

$\underline{+1} + \underline{-8} = \underline{-7} = b$

$$\begin{array}{r} -8 \\ +2 \\ -4 \\ +1 \\ -8 \end{array}$$

$(x-8)(x+1)$

difference of squares

5. $x^2 - 25 = () ()$

$a = 1, b = 0, c = -25, ac = -25$

$5 * -5 = -25 = ac$

$5 + -5 = 0 = b$



$(x-5)(x+5)$

* must be opposite pairs for 'b' = 0

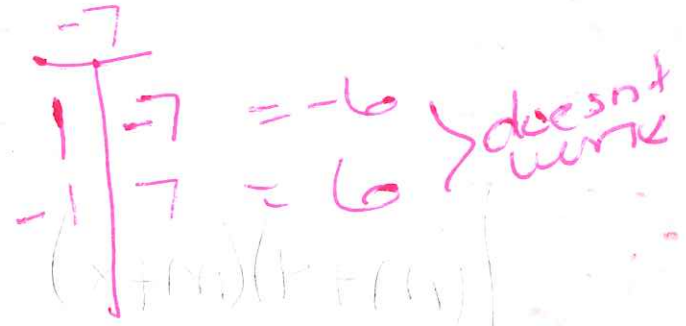
$2(x^2 + 5x - 7)$

6. $2x^2 + 10x - 14 = () ()$

$a = 1, b = 5, c = -7, ac = -7$

$1 * -7 = -7 = ac$

$1 + -7 = -6 \neq b$



$(1+x)(x-x)$

$(1-x)(1+x)$