

Name: _____ Date: _____

Solve Special Cases When (a) does not = 1

© **Factoring:** Writing the polynomial as a product.

Steps:

$$\begin{matrix} a & b & c \\ 2x^2 - 5x + 3 \end{matrix}$$

Steps	Examples
Draw an X	
Multiply a and c.	$a \cdot c = 2 \cdot 3 = 6$
Place the product on top of your X	
Put b on the bottom of your x	
Think of the factors that multiply to be your top number but add to be your bottom number. Place the correct factors on the sides of your x.	
Re-write your quadratic in the form $x^2 \pm x \pm x + c$	$(2x^2 - 2x)(-3x + 3)$
Finish your problem by factoring by grouping. Find your GCF for the first and last two terms	$2x(x - 1) - 3(x - 1)$
Write your final answer as a product of two binomials	$(2x - 3)(x - 1)$

Examples:

$$3x^2 - 10x + 3$$

$$6x^2 - 21x + 15$$

$$4x^2 - 15x + 9$$

$$(3x^2 - 9x)(-1x + 3)$$

$$3x(x-3) - 1(x-3)$$

$$(3x-1)(x-3)$$

$$\begin{array}{r} -9 \quad -1 \\ \times \\ -10 \\ + \end{array}$$

$$6x^2 - 21x + 15$$

$$(6x^2 - 6x)(-15x + 15)$$

$$6x(x-1) - 15(x-1)$$

$$(6x-15)(x-1)$$

$$\begin{array}{r} * \\ 90 \\ -6 \quad -15 \\ \times \\ -21 \\ + \end{array}$$

$$4x^2 - 15x + 9$$

$$(4x^2 - 12x)(-3x + 9)$$

$$4x(x-3) - 3(x-3)$$

$$(4x-3)(x-3)$$

$$\begin{array}{r} * \\ 36 \\ -12 \quad -3 \\ \times \\ -15 \\ * \end{array}$$

Factoring Classwork (a not equal to 1)

Date _____

Period _____

Factor each completely.

1) $2v^2 + 13v + 20$

$$(2v^2 + 8v) + (5v + 20)$$

$$2v(v+4) + 5(v+4)$$

$$(2v+5)(v+4)$$

2) $7a^2 - 26a - 45$

$$(7a^2 - 35a) + (9a - 45)$$

$$7a(a-5) + 9(a-5)$$

$$(7a+9)(a-5)$$

3) $5p^2 - 6p - 8$

$$(5p^2 - 10p) + (4p - 8)$$

$$5p(p-2) + 4(p-2)$$

$$(5p+4)(p-2)$$

4) $7b^2 - b - 6$

$$(7b^2 - 7b) + (6b - 6)$$

$$7b(b-1) + 6(b-1)$$

$$(7b+6)(b-1)$$

5) $3k^2 - 26k - 40$

$$(3k^2 - 30k) + (4k - 40)$$

$$3k(k-10) + 4(k-10)$$

$$(3k-4)(k-10)$$

6) $2k^2 - 9k - 18$

$$(2k^2 - 12k) + (3k - 18)$$

$$2k(k-6) + 3(k-6)$$

$$(2k+3)(k-6)$$

7) $7v^2 - 48v + 36$

$$(7v^2 - 42v) + (6v + 36)$$

$$7v(v-6) + 6(v+6)$$

$$(7v-6)(v-6)$$

8) $5v^2 + 56v + 60$

$$(5v^2 + 50v) + (6v + 60)$$

$$5v(v+10) + 6(v+10)$$

$$(5v+6)(v+10)$$

9) $7x^2 - 12x - 27$

$$(7x^2 - 21x) + (9x - 27)$$

$$7x(x-3) + 9(x-3)$$

$$(7x+9)(x-3)$$

10) $3b^2 - b - 10$

$$(3b^2 - 6b) + (5b - 10)$$

$$3b(b-2) + 5(b-2)$$

$$(3b+5)(b-2)$$