

## Warm-Up

Factor the following:

1)  $2x^2 - 8x$

$$2x(x-4)$$

-

2)  $9a^3b^4 + 12ab^5$

$$3ab^4(3a^2 + 4b)$$

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

$$(x+1)(5-x)$$

3-4

## Factoring Quadratic Expressions

Objectives: I can factor quadratic expressions in standard form.

Vocabulary: Expression, Quadratic

Factor each quadratic expression

$$44 + 126x + 40x^2$$

$$ax^2 + bx + c$$

$$40x^2 + 126x + 44$$

$$2(20x^2 + 63x + 22)$$

$20x^2$	$22$	
$4x$	$11$	$8$
$5x$	$2$	$55$
		$63$

$$2(4x+11)(5x+2)$$

$$-40 - 12x + 72x^2$$

$$72x^2 - 12x - 40$$

$$4(18x^2 - 3x - 10)$$

$6$	$-5$	$+12$
$3$	$+2$	$-15$
		$-3$

$$4(6x-5)(3x+2)$$

Factor each quadratic expression

$$9x^2 - 65x + 14$$

$$\downarrow \quad \quad \quad +14$$

$$9 \quad \quad \quad +14$$

9	-2
1	-7

$$\begin{array}{r} -63 \\ -2 \\ \hline -65 \end{array}$$

$$(9x - 2)(x - 7)$$

$$30p^2 - 27p - 21$$

$$3(10p^2 - 9p - 7)$$

$$\begin{array}{cc} 10 & -7 \\ \hline 5x & -7 \\ \hline 2x & 1 \end{array}$$

$$\begin{array}{r} -14 \\ 5 \\ \hline -9 \end{array}$$

$$3(5x - 7)(2x + 1)$$

## YOUR TURN!

Factor each quadratic expression

$3x^2 - 8x - 3$

3   -3

1x	-3
3x	1

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

$5x^2 - 22x + 8$

5   8

5	-2
1	-4

$$\begin{array}{r} -20 \\ -22 \\ \hline -22 \end{array}$$

$(5x-2)(x-4)$

Factor the quadratic expression

$$45x^2 + 24x - 189$$

$$3(15x^2 + 8x - 63)$$

$$15 \quad -63$$

5	-9	+35
3	+7	-27
		+8

$$3(5x-9)(3x+7)$$

$$60p^2 + 280p + 45$$

$$5(12p^2 + 56p + 9)$$

$$12 \quad 9$$

6	1	54
2	9	2
		56

$$5(6x+1)(2x+9)$$

## YOUR TURN!

Find 2 different values that complete each expression

$$4n^2 + \square n - 3$$

$$18x^2 + \square x + 8$$

Handwritten solutions for the first expression:

$$\begin{array}{|c|c|} \hline 4 & -3 \\ \hline 2 & 3 \\ \hline 2 & -1 \\ \hline \end{array}$$

$$\begin{array}{r} -2 \\ 6 \\ \hline 4 \end{array}$$

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

$$\begin{array}{|c|c|} \hline 4 & -3 \\ \hline 4 & 3 \\ \hline 1 & -1 \\ \hline \end{array}$$

$$\begin{array}{r} -4 \\ 3 \\ \hline -1 \end{array}$$

$$(4x+3)(x-1)$$

YOUR TURN!

Factor each quadratic expression

$$96x^2 - 76x - 77$$

