

Algebra 3-4
Unit 4: factoring

Name: _____

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

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

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

	$3x$	-2
x	$3x^2$	$-2x$
$+1$	$3x$	-2

1) $(2x-4)(x+5)$

	$2x$	-4
x	$2x^2$	$4x$
$+5$	$10x$	-20

$$= 2x^2 + 6x - 20$$

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

	x	-7
$2x$	$2x^2$	$-14x$
$+3$	$3x$	-21

$$= 2x^2 - 11x - 21$$

Factor: $5x^2 - x - 18$ step 1:

	$5x^2$	
- 1st term in 1st box		
- last term in last box		-18

step 2: What pair of numbers multiplies to -90 ($5 \cdot -18$) and adds to -1 ?
 -10 and 9

step 3:

	x	-2
$5x$	$5x^2$	$-10x$
9	$9x$	-18

find GCF in rows and columns
 $(x-2)(5x+9)$

3) $2x^2 + 17x + 21$

	$2x$	$+3$
x	$2x^2$	$3x$
$+7$	$14x$	21

Mult: 42
add: 17

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

4) $3x^2 - 2x - 5$

	$3x$	-5
x	$3x^2$	$-5x$
$+1$	$3x$	-5

Mult: -15
add: -2

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

5) $5x^2 + 19x + 12$

	$5x$	$+4$
x	$5x^2$	$4x$
$+3$	$15x$	12

Mult: 60
add: 19

$$(x+3)(5x+4)$$

Factor:

6) $3x^2 - 8x + 4$

$$(3x-2)(x-2) \begin{array}{r} \times \\ \hline 3x-2 \\ -2 \\ \hline \end{array} \begin{array}{|c|c|} \hline 3x^2 & -2x \\ \hline -6x & 4 \\ \hline \end{array}$$

Mult: 12
Add: -8

7) $2x^2 + 11x + 5$

$$(2x+1)(x+5) \begin{array}{r} \times \\ \hline 2x \\ +1 \\ \hline \end{array} \begin{array}{|c|c|} \hline x+5 \\ \hline 2x^2 & 10x \\ \hline 1x & 5 \\ \hline \end{array}$$

Mult: 10
Add: 11

8) $4x^2 - 15x - 25$

$$(4x+5)(x-5) \begin{array}{r} \times \\ \hline 4x \\ +5 \\ \hline \end{array} \begin{array}{|c|c|} \hline x-5 \\ \hline 4x^2 & -20x \\ \hline 5x & -25 \\ \hline \end{array}$$

Mult: -100
Add: -15

9) $6x^2 + 7x - 49$

$$(2x-7)(3x+7) \begin{array}{r} \times \\ \hline 2x-7 \\ +7 \\ \hline \end{array} \begin{array}{|c|c|} \hline 3x+7 \\ \hline 6x^2 & -21x \\ \hline -14x & -49 \\ \hline \end{array}$$

Mult: -294
Add: 7

10) $6x^2 + 25x + 25$

$$(2x+5)(3x+5) \begin{array}{r} \times \\ \hline 2x \\ 5 \\ \hline \end{array} \begin{array}{|c|c|} \hline 3x \quad 5 \\ \hline 6x^2 & 10x \\ \hline 15x & 25 \\ \hline \end{array}$$

Mult: 150
Add: 25