Kuta Software - Infinite Algebra 2

Name_____

Factoring Quadratic Expressions

Date_____ Period____

Factor each completely.

1) $x^2 - 7x - 18$

	x	-9
x	x^2	$-9x$
2	$2x$	-18

$= (x-9)(x+2)$

2) $p^2 - 5p - 14$

	p	-7
p	p^2	$-7p$
$+2$	$2p$	-14

$= (p-7)(p+2)$

3) $m^2 - 9m + 8$

	m	-1
m	m^2	$-1m$
-8	$-8m$	8

$= (m-1)(m-8)$

4) $x^2 - 16x + 63$

	x	-9
x	x^2	$-9x$
-7	$-7x$	63

$= (x-9)(x-7)$

5) $7x^2 - 31x - 20$

	$7x$	$+4$
x	$7x^2$	$4x$
-5	$-35x$	-20

$= (7x+4)(x-5)$

6) $7k^2 + 9k$

$k(7k+9)$

7) $7x^2 - 45x - 28$

	$7x$	4
x	$7x^2$	$4x$
-7	$-49x$	-28

$= (7x+4)(x-7)$

8) $2b^2 + 17b + 21$

	$2b$	3
b	$2b^2$	$3b$
7	$14b$	21

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

9) $5p^2 - p - 18$

	$5p$	$+9$
p	$5p^2$	$9p$
-2	$-10p$	-18

$= (5p+9)(p-2)$

10) $28n^4 + 16n^3 - 80n^2 = 4(7n^4 + 4n^3 - 20n^2)$

$= 4n^2(7n^2 + 4n - 20)$

	$7n$	-10
n	$7n^2$	$-10n$
$+2$	$14n$	-20

$= 4n^2(n+2)(7n-10)$

11) $3b^3 - 5b^2 + 2b$ $= b(3b^2 - 5b + 2)$

	$3b - 2$
b	$3b^2$ | $-2b$
-1	$-3b$ | 2

$= b(b-1)(3b-2)$

12) $7x^2 - 32x - 60$

	$7x + 10$
x	$7x^2$ | $10x$
-6	$-42x$ | -60

$= (7x+10)(x-6)$

13) $30n^2b - 87nb + 30b$ $= 3b(10n^2 - 29n + 10)$

	$5n - 2$
$2n$	$10n^2$ | $-4n$
-5	$-25n$ | 10

$= 3b(2n-5)(5n-2)$

14) $9r^2 - 5r - 10$

$45 \cdot 2$
$9 \cdot 10$

$3 \cdot 3 - 5 \cdot 2$
$15 \cdot 6$
$30 \cdot 3$

	$9r$	5
$3r$	$9r^2$	
2		-10

Not factorable

15) $9p^2r + 73pr + 70r$ $= r(9p^2 + 73p + 70)$

	$9p$	10
p	$9p^2$	$10p$
7	$63p$	70

$= r(p+7)(9p+10)$

16) $9x^2 + 7x - 56$

$8 \cdot 7 = 56$

	$9x^2$	
		-56

Not factorable

17) $4x^3 + 43x^2 + 30x$ $= x(4x^2 + 43x + 30)$

	$4x$	3
x	$4x^2$	$3x$
10	$40x$	30

$= x(4x+3)(x+10)$

18) $10m^2 + 89m - 9$

	$10m - 1$
m	$10m^2$ | $-1m$
9	$90m$ | -9

$= (10m-1)(m+9)$

Critical thinking questions:

19) For what values of b is the expression factorable?
$x^2 + bx + 12$

$12 = 1 \cdot 12$
$2 \cdot 6$
$3 \cdot 4$

So $b = \pm 13, \pm 8, \pm 7$

20) Name four values of b which make the expression factorable:
$x^2 - 3x + b$

Infinite possibilities.

$b = -4$ $(-4 + 1 = -3)$
$b = -10$ $(-5 + 2 = -3)$
$b = 0$ $(-3 + 0 = -3)$
$b = -18$ $(-6 + 3 = -3)$