Algebra 1 Name _____

PC #2 Review WS - Unit 6 Factoring

Factor the GCF out of each expression.

1) $-2b^2 + b^3$ $b^3 - 2b^2$

$b^2(b-2)$

2) $-9n + 6$

$-3(3n-2)$

3) $-16b^3 - 8b^2 + 12b$

$-4b(4b^2 + 2b - 3)$

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

$2(3x^2 + 4x + 2)$

Factor each completely.

5) $a^2 + 15a + 54$

54: 1×54, 2×27, 3×18, 6×9

$(a^2 + 6a) + (9a + 54)$

$a(a+6) + 9(a+6)$

$(a+9)(a+6)$

	a	6
a	a^2	6a
9	9a	54

$(a+6)(a+9)$

6) $x^2 - 3x - 10$

−10: 1×10, 2×5

$(x^2 + 2x) + (-5x - 10)$

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

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

	x	2
x	x^2	2x
−5	−5x	−10

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

7) $x^2 + 17x + 72$

72: 1×72, 2×36, 3×24, 4×18, 6×12, 8×9

$(x^2 + 8x) + (9x + 72)$

$x(x+8) + 9(x+8)$

$(x+9)(x+8)$

	x	8
x	x^2	8x
9	9x	72

$(x+9)(x+8)$

8) $m^2 - 3m - 18$

−18: 1×18, 2×9, 3×−6

$(m^2 + 3m) + (-6m - 18)$

$m(m+3) - 6(m+3)$

$(m-6)(m+3)$

	m	3
m	m^2	3m
−6	−6m	−18

$(m-6)(m+3)$

9) $3x^2 + 11x - 20$

−60: 1×60, 2×30, 3×20, 4×15, 5×12, 6×10

$(3x^2 - 4x) + (15x - 20)$

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

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

	3x	−4
x	$3x^2$	−4x
5	15x	−20

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

10) $3a^2 - a - 2$

−6: 1×6, 2×−3

$(3a^2 + 2a) + (-3a - 2)$

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

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

	3a	2
a	$3a^2$	2a
−1	−3a	−2

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

11) $2n^2 + 11n + 5$

10: 1×10, 2×5

$(2n^2 + 1n) + (10n + 5)$

$n(2n+1) + 5(2n+1)$

$(n+5)(2n+1)$

	2n	1
n	$2n^2$	1n
5	10n	5

$(2n+1)(n+5)$

12) $42r^2 + 204r + 144$

168: 1×168, 2×84, 3×56, 4×42, 6×28, 7×24, 8×21, 12×14

GCF = 6

$6(7r^2 + 34r + 24)$

$(7r^2 + 6r) + (28r + 24)$

$r(7r+6) + 4(7r+6)$

$6(r+4)(7r+6)$

	7r	6
r	$7r^2$	6r
4	28r	24

$6(7r+6)(r+4)$

13) $16k^2 - 25$

$16k^2 + 0k - 25$

$(16k^2 - 20k) + (20k - 25)$

$4k(4k-5) + 5(4k-5)$

$(4k+5)(4k-5)$

	$4k$	5
$4k$	$16k^2$	$20k$
-5	$-20k$	-25

14) $p^2 - 4$

$p^2 + 0p - 4$

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

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

$(p+2)(p-2)$

	p	-2
p	p^2	$-2p$
2	$2p$	-4

15) $4n^2 + 12n + 9$

$(4n^2 + 6n) + (6n + 9)$

$2n(2n+3) + 3(2n+3)$

$(2n+3)(2n+3)$

$(2n+3)^2$

	$2n$	3
$2n$	$4n^2$	$6n$
3	$6n$	9

16) $16r^2 + 24r + 9$

$(16r^2 + 12r) + (12r + 9)$

$4r(4r+3) + 3(4r+3)$

$(4r+3)(4r+3)$

$(4r+3)^2$

	$4r$	3
$4r$	$16r^2$	$12r$
3	$12r$	9

17) $7x^3 - 2x^2 - 49x + 14$

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

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

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

	$7x$	-2
x^2	$7x^3$	$-2x^2$
-7	$-49x$	14

18) $4r^3 - 14r^2 - 6r + 21$

$2r^2(2r-7) - 3(2r-7)$

$(2r^2-3)(2r-7)$

$(2r-7)(2r^2-3)$

	$2r$	-7
$2r^2$	$4r^3$	$-14r^2$
-3	$-6r$	21

19) $2a^3 + 3a^2 + 16a + 24$

$a^2(2a+3) + 8(2a+3)$

$(a^2+8)(2a+3)$

$(2a+3)(a^2+8)$

	$2a$	3
a^2	$2a^3$	$3a^2$
8	$16a$	24

20) $x^3 - 3x^2 + 3x - 9$

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

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

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

	x	-3
x^2	x^3	$-3x^2$
3	$3x$	-9

Solve each equation by factoring.

21) $x^2 + x - 42 = 0$

$(x^2 - 6x) + (7x - 42) = 0$

$x(x-6) + 7(x-6) = 0$

$(x+7)(x-6) = 0$

$x+7=0$ $\quad x-6=0$

$x = -7, 6$

	x	-6
x	x^2	$-6x$
7	$7x$	-42

22) $3m^2 + 14m - 42 = 7$

$3m^2 + 14m - 49 = 0$

$(3m^2 - 7m) + (21m - 49) = 0$

$m(3m-7) + 7(3m-7) = 0$

$(m+7)(3m-7) = 0$

$m+7=0$ $\quad 3m-7=0$

$m = -7, \frac{7}{3}$

	$3m$	-7
m	$3m^2$	$-7m$
7	$21m$	-49

23) $7a^2 - 11a - 2 = 4$

$7a^2 - 11a - 6 = 0$

$(7a^2 + 3a) + (-14a - 6) = 0$

$a(7a+3) - 2(7a+3) = 0$

$(a-2)(7a+3) = 0$

$a-2=0$ $\quad 7a+3=0$

$a = 2, -\frac{3}{7}$

	$7a$	3
a	$7a^2$	$3a$
-2	$-14a$	-6

24) $n^2 - 4n - 15 = 6$

$n^2 - 4n - 21 = 0$

$(n^2 + 3n) + (-7n - 21) = 0$

$n(n+3) - 7(n+3) = 0$

$(n-7)(n+3) = 0$

$n-7=0$ $\quad n+3=0$

$n = 7, -3$

	n	3
n	n^2	$3n$
-7	$-7n$	-21