V. Solving Quadratic Equations by Factoring → Equation must be equal to 0 and factored completely

A. $(x-4)(3x-1)=0$

$x-4=0$ $\qquad$ $3x-1=0$
$+4+4$ $\qquad$ $\frac{3x}{3}=\frac{1}{3}$
$x=4$ $\qquad$ $x=1/3$

$x=\underline{4,\ 1/3}$

B. $x^2-5x-6=0$

A M

$(x-6)(x+1)=0$

$x-6=0$ $\qquad$ $x+1=0$

$x=6$ $\qquad$ $x=-1$

$x=\underline{6,-1}$

C. $3x^2-5x+2=0$

$x^2-5x+6=0$

$\left(x-\frac{3}{3}\right)\left(x-\frac{2}{3}\right)=0$

$(x-1)(3x-2)=0$

$x=1 \quad x=2/3$

$x=\underline{1,\ 2/3}$

D. $x^2-3x=0$

$x(x-3)=0$

$x=0 \qquad x=3$

$x=\underline{0,\ 3}$

E. $x^2=36$

$x^2-36=0$

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

$x=6 \quad x=-6$

$\sqrt{x^2}=\sqrt{36}$

$x=\pm 6$

$x=\underline{6,-6}$

F. $x^3-3x^2=10x$

$x^3-3x^2-10x=0$

$x(x^2-3x-10)=0$

$x(x-5)(x+2)=0$

$x=0 \quad x=5 \quad x=-2$

$x=\underline{0,5,-2}$

pg 34

FACTOR COMPLETELY:

1. $15x^2y - 10xy^2$	**2.** $2x^3y - x^2y + 5xy^2$ $xy(2x^2-x+5y)$	**3.** $7k^2 + 9k$ $k(7k+9)$
4. $2p^3 + 5p^2 + 6p + 15$	**5.** $m^3 - m^2 + 2m - 2$	**6.** $12xy - 28x - 15y + 35$ $4x(3y-7)-5(3y-7)$ $(4x-5)(3y-7)$
7. $16r^2 - 169$	**8.** $x^2 - 49$	**9.** $2y^2 - 242$
10. $x^2 + 64$ Prime	**11.** $x^4 - 81$ $(x^2-9)(x^2+9)$ $(x-3)(x+3)(x^2+9)$	**12.** $25 - 4x^2$
13. $4x^6 - 4x^2$	**14.** $45x^2 - 80y^2$	**15.** $16 - 81x^2$ $(4-9x)(4+9x)$
16. $x^2 - 9x + 8$	**17.** $x^2 - 3x - 10$ $(x-5)(x+2)$	**18.** $x^2 + 5x - 14$
19. $x^2 - 7x - 18$ $(x-9)(x+2)$	**20.** $y^2 + 20y + 96$ $(y+12)(y+8)$	**21.** $x^2 - 8x + 16$ $(x-4)(x-4)$ $(x-4)^2$
22. $x^2 + 16x + 63$ $(x+9)(x+7)$	**23.** $2x^3 + 32x^2 + 128x$	**24.** $k^3 - 2k^2r - 3kr^2$ $k(k^2-2kr-3r^2)$

pg.35

Factor completely:

1. $3x^2 + 8x + 4$

$x^2 + 8x + 12$

$(x+2)(x+6)$
    $\frac{}{3}$ $\frac{}{3}$

$\boxed{(3x+2)(x+2)}$

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

3. $8x^2 + 65x + 8$

4. $15x^2 - 19x + 6$

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

$x^2 - 31x - 140$

$(x - 35)(x+4)$
    $\frac{}{7}$ $\frac{}{7}$

$\boxed{(x-5)(7x+4)}$

6. $5x^2 - x - 18$

7. $3x^3 - 5x^2 + 2x$

$x(3x^2 - 5x + 2)$

$x(x^2 - 5x + 6)$

$x(x - \frac{2}{3})(x - \frac{3}{3})$

$\boxed{x(3x-2)(x-1)}$

8. $9x^2 - 5x - 10$

$x^2 - 5x - 90$

Prime

pg 36

Math 2 – Honors
Unit 2 – Quadratic Function
Lesson 6 – More Practice with Factoring

Name_____
Date: _____ Pd: _____

Part I – GCF

1. $2z^2 + 16 = 2(z^2 + 8)$	6. $6c^4 - 9c = 3c(2c^3 - 3)$
2. $8g^2 + 20g = 4g(2g + 5)$	7. $-9a^6 - 27a^5 - 12a^3 = 3a^3(-3a^3 - 9a^2 - 4)$
3. $8r^3 - 36r - 4 =$	8. $18c^2 + 4c =$
4. $28s^2 + 20s =$	9. $-8y^6 + 4y^4 + 8 =$
5. $16x^3 + 4x^2 + 36x =$	10. $35v^6 - 15v^3 - 15v^2 =$

Part II – Difference of Two Squares

11. $x^2 - 16 = (x-4)(x+4)$	16. $x^4 - 1$ $(x^2-1)(x^2+1)$ $(x-1)(x+1)(x^2+1)$
12. $36u^6 - 81w^2 = 9(4u^6 - 9w^2)$	17. $100k^4 - 49 = (10k^2 - 7)(10k^2 + 7)$
13. $h^2 + 36 =$ $9(2v^3 - 3w)(2v^3 + 3w)$	18. $p^8 - 25 =$
14. $64 - 25j^{10} =$	19. $4 - 36v^{12} =$
15. $9s^2 - 16t^2 =$	20. $144 + y^4 =$

Part III – Trinomial Squares

21. $x^2 + 8x + 16 = (x+4)(x+4)$	26. $x^2 - 4xy + 4y^2 =$
22. $x^2 - 14x + 49 = (x-7)(x-7)$	27. $2x^2 - 40x + 200 =$
23. $9x^2 + 18xy + 9y^2 =$	28. $12x^2 + 36xy + 27y^2 =$
24. $16x^2 - 56xy + 49y^2 =$	29. $a^4 + 14a^2 + 49 =$
25. $x^2 - 6x + 9 =$	30. $4x^4 + 4x^2 + 1 =$

Part IV – Trinomials in the form $x^2 + bx + c$

31. $x^2 - 6x - 7 = (x-7)(x+1)$	36. $x^2 + 5x + 6 =$
32. $s^2 + 12s + 35 = (x+7)(x+5)$	37. $w^2 - 6w - 5 =$
33. $p^2 - 9p + 20 =$	38. $k^2 + 3k - 4 =$
34. $b^2 + 5b - 36 =$	39. $h^2 - 9h - 36 =$
35. $p^2 - 8p - 9 =$	40. $w^2 + 2w - 15 =$

1, 2, 6, 7, 11, 12, 16, 17, 21, 31

pg. 38

Part V – Trinomials in the form $ax^2 + bx + c$

41. $2x^2 + 9x - 5 =$	46. $2a^3 - 38a^2 + 176a =$
42. $16m^2 - 48m + 11 =$	47. $2q^5 - 12q^4 - 80q^3 =$ $2q^3(q^2 - 6q - 40)$ $2q^3(q-10)(q+4)$
43. $3x^2 - 5x - 2 =$	48. $3d^2 + 18d + 15 =$ $3(d^2 + 6d + 5)$ $3(d+5)(d+1)$
44. $20c^2 - 63c + 49 =$	49. $2x^2 - x - 15 =$
45. $4u^2 + 37u + 63 =$	50. $3a^2 - 4a + 1 =$

Part VI – Grouping

51. $4x^5 + 6x^3 + 6x^2 + 9 =$	56. $7y^2 - 14y + by - 2b =$
52. $c^6 - c^4 - c^2 + 1 =$	57. $12xy + 3yz - 4x - z =$
53. $4y^5 + 6y^4 + 6y^3 + 9y^2 =$	58. $20a + 12 - 25ax - 15x =$
54. $x^{13} + x^7 + 2x^6 + 2 =$	59. $4mna + 4mnb + 5na + 5nb =$
55. $20g^3 - 4g^2 - 25g + 5 =$	60. $t^2 - 9t + 3t - 27 =$

Part VII– Mixed Factoring

61. $d^2 + d - 132 =$	66. $3n^2 - 43n + 84 =$
62. $p^2 - 100 =$	67. $f^2 + 121 =$
63. $3v^4 + 9v^3 - 12v^2 =$	68. $4x^4 + 4x^2 + 1 =$
64. $3h^2 + 44h + 121 =$	69. $18c^3 - 21c^2 - 30c + 35 =$
65. $9x^{10} + 12x^5 + 4 =$	70. $z^2 - 6z - 72 =$

pg. 39