Advanced Algebra – Factoring **Name** _____
Assignment # _____

Factor the GCF.

1. $8x^2 + 12x$
2. $12a^2b - 18ab^2$
3. $-6c^2d - 10c$
4. $x^{5a} + x^{2a}$
5. $-y^2 - 10$
6. $y^{7n} + y^{3n}$

Factor by grouping.

7. $x(y - 4) + 3(y - 4)$
8. $t(k + 3) - 4(k + 3)$
9. $c(d - 4) + 5(4 - d)$
10. $ab + 7b^2 + 3a + 21b$
11. $ax + bx - ay - by$
12. $6 + 2y + 3x^2 + x^2y$
13. $2ax - 3ay - 2bx + 3by$
14. $4a^2x + 2a^2y - 6bx - 3by$
15. $xy - 5x + y - 5$

Factor. Use a trinomial pattern.

16. $a^2 + 14a + 49$
17. $x^2 + 28x + 4$
18. $b^2 + 2bc - 15c^2$

19. $y^2 - 12y - 28$

20. $g^2 + 13g + 36$

21. $n^2 - 9n + 14$

22. $x^2 + x - 6$

23. $t^2 - 3t - 40$

24. $y^2 - 10y + 9$

Factor each trinomial where $a \neq 1$.

25. $6x^2 - 7x + 2$

26. $4x^2 + 12x + 9$

27. $4x^2 - 13x - 12$

28. $2x^2 - 5x - 7$

29. $3x^2 - 17x - 6$

30. $4x^2 + 9x + 5$

Factor. Use difference of two squares.

31. $x^2 - 121$

32. $81 - a^2$

33. $49c^2 - 64$

34. $g^2 - h^2$

35. $49x^2 - 81y^2$

36. $25c^2 - 36$

Advanced Algebra – Factoring **Name** _____
Assignment # _____

Factor the GCF.

1. $8x^2 + 12x$

$4x(2x+3)$

2. $12a^2b - 18ab^2$

$6ab(2a-3b)$

3. $-6c^2d - 10c$

$-2c(3cd+5)$

4. $x^{5a} + x^{2a}$

$x^{2a}(x^{3a}+1)$

5. $-y^2 - 10$

$-1(y^2+10)$

6. $y^{7n} + y^{3n}$

$y^{3n}(y^{4n}+1)$

Factor by grouping.

7. $x(y-4) + 3(y-4)$

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

8. $t(k+3) - 4(k+3)$

$(t-4)(k+3)$

9. $c(d-4) + 5(4-d)$

$(c-5)(d-4)$

10. $ab + 7b^2 + 3a + 21b$

$b(a+7b)+3(a+7b)$

$(b+3)(a+7b)$

11. $ax + bx - ay - by$

$x(a+b)-y(a+b)$

$(x-y)(a+b)$

12. $6 + 2y + 3x^2 + x^2y$

$2(3+y)\quad x^2(3+y)$

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

13. $2ax - 3ay - 2bx + 3by$

$a(2x-3y)-b(2x-3y)$

$(a-b)(2x-3y)$

14. $4a^2x + 2a^2y - 6bx - 3by$

$2a^2(2x+y)-3b(2x+y)$

$(2a^2-3b)(2x+y)$

15. $xy - 5x + y - 5$

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

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

Factor. Use a trinomial pattern.

16. $a^2 + 14a + 49$

$(a+7)^2$

17. $x^2 + 28x + 4$

18. $b^2 + 2bc - 15c^2$

$(b+5c)(b-3c)$

19. $y^2 - 12y - 28$

$(y-14)(y+2)$

20. $g^2 + 13g + 36$

$(g+9)(g+4)$

21. $n^2 - 9n + 14$

$(n-7)(n-2)$

22. $x^2 + x - 6$

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

23. $t^2 - 3t - 40$

$(t-8)(t+5)$

24. $y^2 - 10y + 9$

$(y-9)(y-1)$

Factor each trinomial where $a \neq 1$.

25. $6x^2 - 7x + 2$

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

26. $4x^2 + 12x + 9$

$(2x+3)(2x+3)$

$(2x+3)^2$

27. $4x^2 - 13x + 12$

-48, -16, -13, -3

$4x^2 - 16x - 3x + 12$

$4x(x-4) - 3(x-4)$

$(4x-3)(x-4)$

28. $2x^2 - 5x - 7$

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

29. $3x^2 - 17x - 6$

$(3x+1)(x-6)$

30. $4x^2 + 9x + 5$

20, 5, 4, 9

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

Factor. Use difference of two squares.

31. $x^2 - 121$

$(x-11)(x+11)$

32. $81 - a^2$

$(9-a)(9+a)$

33. $49c^2 - 64$

$(7c+8)(7c-8)$

34. $g^2 - h^2$

$(g-h)(g+h)$

35. $49x^2 - 81y^2$

$(7x-9y)(7x+9y)$

36. $25c^2 - 36$

$(5c-6)(5c+6)$