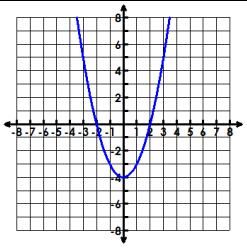
Name: _____ Date: _____

You need to know & be able to do	Things to remember	Example Problems	
Factor by GCF	**ALWAYS LOOK FOR A GCF FIRST IN WHATEVER TYPE OF FACTORING YOU ARE DOING** Factor out what all terms have in common Divide the coefficients by the GCF and take away the variables	1. $6x + 24$	2. $16a^2b^2 + 20a^2$
		3. $9x^4 – 15x^3 + 3x^2$	4. $20x + 30y$
Factor by Grouping	**USE WITH 4 TERMS** Group the 1st 2 terms and the last 2 terms Factor out the GCF of each group If the "leftovers" match write your factors If the "leftovers" don't match it is prime	5. $18a^3 – 21a^2 + 30a – 35$	6. $35uv + 14u – 40v – 16$
		7. $5x^2 + 2x + 5x + 2$	8. $4x^2 + 10x – 6x – 15$
Factor when a = 1	**USE WITH 3 TERMS** Play X Game [a·c goes at the top and b at the bottom, find numbers that multiply to give you the top and add to give you the bottom Write your factors	9. $x^2 + 7x + 6$	10. $x^2 + 11x + 24$
		11. $x^2 - 7x + 10$	12. $2x^2 + 2x - 12$
Factor when a > 1	**USE WITH 3 TERMS** Play X Game Grouping- keep 1st term the same and last term the same and break up middle term using the numbers from X	13. $5x^2 + 6x + 1$	14. $3x^2 -10x + 7$

	Game, then factor by grouping Slip and Divide- write your factors using the numbers from X Game then divide both factors by a. Simplify if you can, if not, then move the a to the front of the factor (in front of the x, not the parenthesis)	15. $5x^2 + 12x + 4$	16. $18x^2 + 24x - 10$
Difference of Squares	**USE WITH 2 TERMS** **Must be a Binomial, Must be Subtraction, Both terms must be Perfect Squares** $a^2 - b^2 = (a+b)(a-b)$; where a is the square root of the 1st term and b is the square root of the 2nd term Watch out for double difference of squares	17. $x^2 - 25$	18. $x^2 - 49$
		19. $2x^2 - 32$	20. $x^4 - 81$
Discriminant	Find the number and type of solutions. $b^2 - 4ac$ Positive: 2 real solutions Negative: No real solutions Zero: 1 Real solutions	21. 	22. $x^2 + 8x + 4 = 0$
Solve a Quadratic by Factoring	Get in standard form. Factor. Set each factor equal to zero and solve.	23. $4x^2 - 9 = 0$	24 $2x^2 + x = 6$
		25. $4x^2 - 4x - 15 = 0$	26. $5x^2 + x = 4$

Solve a Quadratic by Taking Square Roots	Isolate the square. Take the square root of both sides. Don't forget the ±. Get the variable by itself.	27. $x^2 - 13 = 0$	28. $x^2 - 81 = 0$
		29. $(x-1)^2 + 4 = 20$	30. $(x+4)^2 = 121$
Solve a Quadratic by Completing the Square	Put terms with an x on the left. Make sure a = 1. Find the number that completes the square. Add it to both sides. Factor the left. Simplify the right. Take the square root of each side. Solve for x.	31. $x^2 + 2x - 4 = 0$	32. $x^2 + 8x + 4 = 0$
		33. $x^2 - 8x - 36 = 0$	34. $x^2 + 4x - 2 = 0$
Solve a Quadratic by Quadratic Formula	Put it in standard form. Identify a, b, and c. Use the formula. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	35. $x^2 + 4x - 2 = 0$	36. $x^2 + 4x - 1 = 0$
		37. $x^2 - 3x = -2$	38. $2x^2 + 2x = 12x - 1$