Name _____ Date _____ Period _____

Algebra 1 – Unit 4: FACTORING QUADRATICS STUDY GUIDE

**YOU MUST SHOW WORK FOR CREDIT!

Factor each of the following using the appropriate method:

1. $x^2 - 49$

2. $x^2 - 16x + 28$

3. $x^2 + 3x - 28$

4. $6x^2 - 11x - 2$

5. $6x^2 + 19x + 15$

6. $5x^2 - 5$

7. $5x^2 - 25$

8. $3x^2 - 12x + 12$

Find all solutions for each of the following using the Zero Product Property:

9. $(4k + 5)(k + 1) = 0$

10. $x^2 + 2x = 0$

11. $x^2 - 11x + 19 = -5$

12. $x^2 + 3x - 12 = 6$

13. $7x^2 = 14x - 7$

14. $6b^2 + 18b - 18 = 6$

15. Find the **area** of the rectangle:

16. A rectangle has an **area** represented by $x^2 - 4x - 12$ square feet. If the length is $(x + 2)$ feet, what is the width of the rectangle?

17. When solving using the Quadratic Formula, how many solutions will you have when the discriminant is a positive number? _____

A negative number? _____

Zero? _____

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve problems 18, 19, & 20 using the QUADRATIC FORMULA.

18. $x^2 + 5x + 6 = 0$ **Now FACTOR this same problem**:

a =

b=

c=

Solution(s): _____

19. $2x^2 - 3 = 5x$ **Now FACTOR this same problem:**

a =

b=

c=

Solution(s): _____

20. $2x^2 + 4x = 1$ **Now FACTOR this same problem:**

a =

b=

c=

Solution(s): _____

21. Is $4x^2 - 100 = 0$ a quadratic equation? _____ Why/why not?_____

_____

What are its roots? _____

22. Which of the following is a quadratic equation?

(1) $x^2 + 6 = 0$ (3) $2x^3 - 32 = x$

(2) $2x - 10 = 15$ (4) $x + 2 = 10$

23. Solve the following quadratic equations using Completing the Square. Show all steps! (If possible, simplify the radicand!)

a. $x^2 - 6x - 16 = 0$

b. $x^2 + 8x - 2 = 0$

24. Which method do you prefer to factor the following quadratic trinomial, Factoring with Bottoms Up! or Completing The Square? Why?

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

_____
_____
_____

25. Create a quadratic equation for which the only solution (x=) is 4: _____
(**Hint: What do your binomials need to look like when you set them equal to zero?)

26. Describe in words how you can identify a perfect square trinomial:

_____
_____

Give an example of a perfect square trinomial: _____

27. What is the value of "c" that makes $x^2 + 4x + c$ a perfect square trinomial?

c = _____

28. What are all of the values of "b" that will create a perfect square trinomial for the equation:

$$x^2 + bx + 100$$

Answer: _____