

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

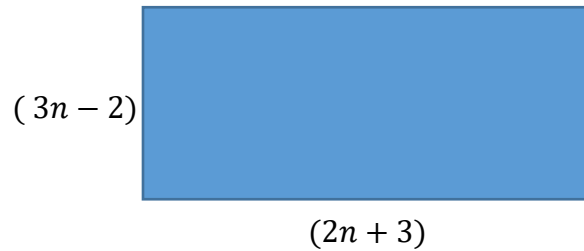
11.  $x^2 - 11x + 19 = -5$

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? \_\_\_\_\_

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

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

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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:

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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: \_\_\_\_\_