

Day 1 - Getting Ready.

Expand and simplify OR Factor

You need to have these two skills to be prepared for the next section.

1. $(x+1)(x-4)$	2. $(x+3)(x+2)$	3. $(x-1)(x-5)$	4. $(2x+1)(3x-2)$
5. $(3x-1)(2x-3)$	6. $(x+5)(4x-1)$	7. $(2x+5)(2x-5)$	8. $(2x-5)^2$
9. $(x-1)^2$	10. $(3x+2)^2$	11. $(2x+7)(x-2)+(3x+2)$	12. $(5x-2)(5x+2)-(x-3)^2$
13. $4x^5 - 10x^2 + 7x$	14. $16x^3 - 8x^2$	15. $4x^2 - 9$	16. $2x^2 - 18$
17. $25x^2 - 30x + 9$	18. $2x^2 - 12x + 18$	19. $x^2 - 2x - 35$	20. $x^2 + 7x + 12$
21. $x^2 - 17x + 16$	22. $2x^2 + 13x - 6$	23. $12x^2 + 13x + 3$	24. $15x^2 - 13x + 2$
25. $40x^2 + 47x + 12$	26. $12x^2 + 59x - 5$	27. $(4x-7)(4x+7)+(2x+)$	28. $(2x+5)(4x-1)-(2x+3)^2$

ANSWERS

Use the answers to check your work. If you get one incorrect, go back and find that mistake!

1) $x^2 - 3x - 4$	2) $x^2 + 5x + 6$	3) $x^2 - 6x + 5$	4) $6x^2 - x - 2$
5) $6x^2 - 11x + 3$	6) $4x^2 + 19x - 5$	7) $4x^2 - 25$	8) $4x^2 - 20x + 25$
9) $x^2 - 2x + 1$	10) $9x^2 + 12x + 4$	11) $11x^2 + 15x - 10$	12) $24x^2 + 6x - 13$
13) $x(4x^4 - 10x + 7)$	14) $8x^2(2x - 1)$	15) $(2x - 3)(2x + 3)$	16) $2(x - 3)(x + 3)$
17) $(5x - 3)^2$	18) $2(x - 3)^2$	19) $(x - 7)(x + 5)$	20) $(x + 3)(x + 4)$
21) $(x - 16)(x - 1)$	22) DNF	23) $(4x + 3)(3x + 1)$	24) $(3x - 2)(5x - 1)$
25) $(8x + 3)(5x + 4)$	26) $(12x - 1)(x + 5)$	27) $20x^2 + 20x - 24$	28) $4x^2 + 6x - 14$

Task 1: Investigating How to Solve by Graphing and Factoring

- Use the DESMOS to graph the parabola. Just provide a sketch on the paper, showing the zeros.
- Use the graph to determine the zeros.
- Factor the equation according to the type of expression (common, simple, tricky, difference of squares).

Standard Equation	Graph	Zeros/Solutions/ X-Intercepts	Factored Equation
$y = x^2 - 8x + 12$			
$y = x^2 - 49$			
$y = x^2 + 3x$			
$y = 2x^2 + 5x - 3$			

What is the relationship between the zeros/solutions/x-intercepts and the factors?

- Hint:
- if the factor was $(x - 6)$, what would the corresponding zero be? _____
 - if the factor was $(x + 4)$, what would the corresponding zero be? _____
 - if the factor was x , what would the corresponding zero be? _____
 - if the factor was $(2x - 3)$, what would the corresponding zero be? _____

Day 1: Factored Form.

We have already seen two different forms of the equation of a quadratic relation:

1. _____

2. _____

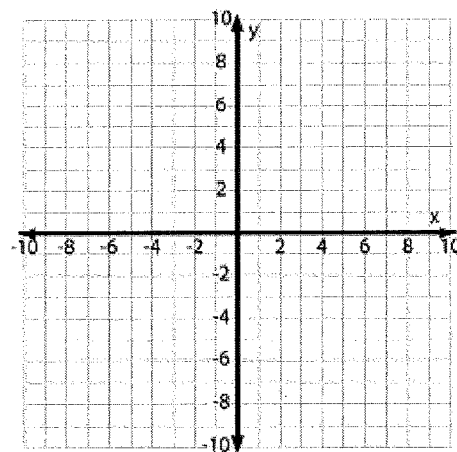
We will now investigate the third form called: _____

$$y = a (x - r) (x - s)$$

Graph the following quadratic relation using a table of values:

$$y = 2 (x + 1) (x - 3)$$

x	y
-3	
-2	
-1	
0	
1	
2	
3	
4	



Locate the x-intercepts. What do you notice about the x-intercepts and the equation of the quadratic relation?

Why is this true?

To solve for x-intercepts, we set _____ and solve!

If $ab = 0$, then _____

If $(a + b) (c + d) = 0$, then _____

A quadratic equation in the form $y = a (x - r) (x - s)$ gives us the x-intercepts.

The x-intercepts are also known as: _____

1. State the x-intercepts of each of the following:

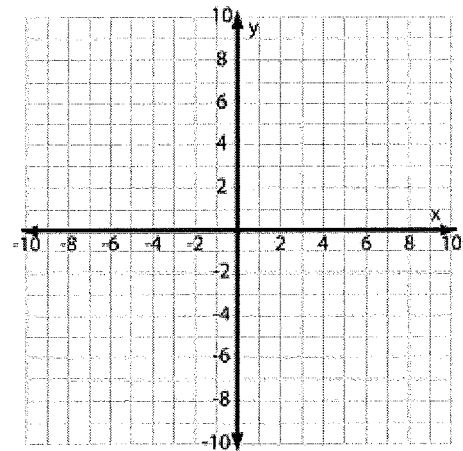
a) $y = -4(x - 2)(x + 6)$

b) $y = \frac{2}{5}(x + 3)(x - 8)$

c) $y = 3x(2x - 1)$

2. Graph the following quadratic relation:

a) $y = \frac{1}{3}(x - 1)(x + 5)$



b) $y = -4x(x + 2)$

