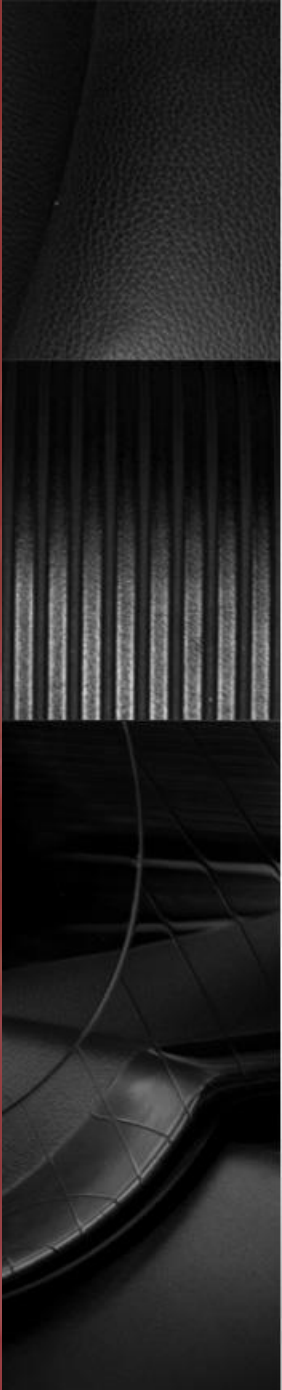


# Algebra Review: Solving Quadratic Equations by Factoring





# Warmup

- Factor the Polynomial

1.  $2x^2 - 15x - 8$

2.  $2x^2 + x - 21$



# Solving Quadratics Equations

- **Objective**: Students will be able to solve quadratic functions by factoring using the grouping method.

\***Question**: When we solve an equation, what does our answer tell us?



# Solving Quadratics Equations

- It's time to solve, but with factoring. To do that, we must do the following:
- Put all terms on one side of the equal sign, and zero on the other side.
- Completely factor the side with all the terms.
- Set each factor equal to zero, and solve for the value of  $x$  on each.

# Example: Solve by Factoring

- $x^2 + 7x + 6 = 0$
- Factor First:  $x^2 + 7x + 6$
- Factors of  $ac = 6$  That add to make  $b = 7$
- Factors list: (1 and 6), (2 and 3)
- Now  $x^2 + x + 6x + 6$
- $x(x + 1) + 6(x + 1) \longrightarrow (x + 6)(x + 1)$
- Now we set the factored part equal to zero:  $(x + 6)(x + 1) = 0$
- Next we set each part in parenthesis equal to zero separately and solve for  $x$  on each:

$$\begin{array}{cc} x + 6 = 0 & x + 1 = 0 \\ -6 & -6 & -1 & -1 \end{array}$$

Thus our two answers are  $x = -6$  and  $x = -1$

# Now try it yourself: Solve by Factoring

- $x^2 + 5x - 24 = 0$
- Factor:  $(x + 8)(x - 3) = 0$
- Set each part equal to zero:

$$x + 8 = 0 \quad x - 3 = 0$$

Thus, our answers are  $x = -8$  and  $x = 3$

## One More: Solve by factoring

- $2x^2 - 4x - 6 = 0$
- Factor:  $(2x - 6)(x + 1) = 0$
- Set each part equal to zero:

$$2x - 6 = 0 \quad x + 1 = 0$$

Thus, our answers are  $x = 3$  and  $x = -1$

## Final Check: Solve by Factoring

- $x^2 - x - 30 = 0$

- $3x^2 + 19x + 6 = 0$