

1. How do you solve equations if they have parentheses? Write a description of how you remove the parentheses in each type of problem shown below.
- a. $3(x + 1) = -12$ b. $5 - 2(x - 3) = 11$ c. $12 - (x + 4) = -20$
2. How do you solve equations if they have variables (x) in different locations in the equation? Write a description of how you combine variables in each type of problem shown below.
- a. $3x - 7 = 5x + 21$ b. $4x - 2(x + 3) = -10$ c. $-2x + 5 = 3x - 25$
3. Consider the inequality: $5x + 1 \geq -14$.
- a. Show that $x = 4$ is a solution to the inequality.
- b. Show that $x = -4$ is not a solution to the inequality.
- c. Solve the equation $5x + 1 = -14$ for x . Is this answer a solution to the inequality above? Explain why or why not.
- d. Explain why the solution to part (c) is the SMALLEST possible solution to the inequality $5x + 1 \geq -14$.

1. **Challenge:** Consider the inequality $x^2 + 5x - 50 \leq 0$.
- Use Factoring the Zero Product Property to find the boundary points for the inequality.
 - Choose 3 test points, one smaller than the least boundary point, one between the two boundary points and one larger than the greatest boundary point.
 - Use your results to parts (a) and (b) to show all of the solutions on the number line below. Write the solutions as an inequality.
 - Use a similar strategy as above to find the solutions to the inequality $5(x - 2)^2 + 3 > 48$.
2. **Challenge:** A model rocket is launched from the ground with an initial velocity of 200 feet per second. The function that describes the rocket's height over time (x) is $h(x) = -16x^2 + 200x$. The rocket will not be visible above 500 feet because of clouds.
- Write an inequality to describe when the rocket cannot be seen.
 - Solve the inequality and explain what this tells you about the rocket's path.