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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. $\quad 3(x+1)=-12$
b. $\quad 5-2(x-3)=11$
c. $\quad 12-(x+4)=-20$
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. $3 x-7=5 x+21$
b. $\quad 4 x-2(x+3)=-10$
c. $\quad-2 x+5=3 x-25$
3. Consider the inequality: $5 x+1 \geq-14$.
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 $5 x+1=-14$ 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 $5 x+1 \geq-14$.
e. Determine 3 three other solutions to the inequality $5 x+1 \geq-14$. Mark all of the solutions you have found so far on the number line below:

f. Use your answer to parts (d) and (e) to show all of the solutions on the number line above. Write the solutions as an inequality.
4. For each inequality below,
i. Find the boundary point.
ii. Choose and test a point.
iii. Use the boundary point and your test point to shade the solutions on a number line.
iv. Write the solution as an inequality (using <, >, $\leq, \geq$ ).
a. $\quad 10-3 x \leq-20$
b. $4-2(x+1)>6 \quad$ c. $\quad-5 x+13<5(2-x)$
d. $\quad 1-(2 x+3)>8$
e. $\quad 10 x-3 \geq 7 x+3(x-1)$
5. Mason is working during April as a salesman at a computer retail store. He is paid a flat salary of $\$ 500$ plus $\$ 12$ for every computer he sells. He finds that he must earn at least $\$ 1500$ to pay for his April expenses.
a. Can Mason cover his monthly expenses if he sells 20 computers? If he sells 75 computers? Show how you found your answer.
b. Write and solve an inequality to represent Mason's situation.
c. What does your solution tell you about Mason's job and how many computers he sells?
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6. Challenge: Consider the inequality $x^{2}+5 x-50 \leq 0$.
a. Use Factoring the Zero Product Property to find the boundary points for the inequality.
b. 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.
c. 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.
d. Use a similar strategy as above to find the solutions to the inequality $5(x-2)^{2}+3>48$.
7. 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 $(\mathrm{x})$ is $h(x)=-16 x^{2}+200 x$. The rocket will not be visible above 500 feet because of clouds.
a. Write an inequality to describe when the rocket cannot be seen.
b. Solve the inequality and explain what this tells you about the rocket's path.
