Algebra 1

Name

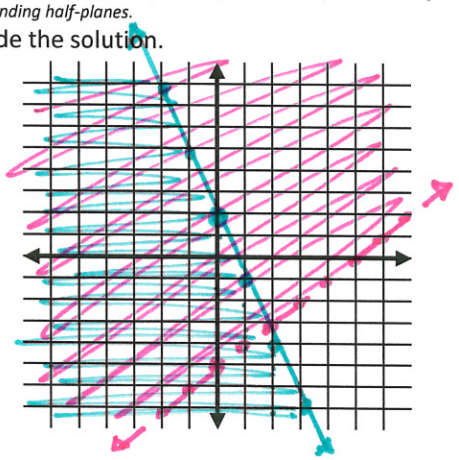
Unit 5 REVIEW– Linear Inequalities and Systems

A-REI.12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

1) Graph the system of inequalities and shade the solution.

$y \leq -3x + 2$

$y > x - 5$



$(0,0)\quad 0 \leq -3(0)+2$

$0 \leq 2$ ✓

$(0,0)\quad 0 > 0-5$

$0 > -5$ ✓

A-CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
A-CED.1. Create inequalities in one variable and use them to solve problems.

2) A club is selling bracelets and earrings as a fundraiser. They need to make at least \$1500. They can order up to 200 items. Each bracelet costs \$5 and each pair of earrings costs \$10.

$x \rightarrow$ bracelets

$y \rightarrow$ earrings

constraints – no negatives

a) Write a system of inequalities to represent the situation, include any related constraints.

$5x + 10y \geq 1500 \rightarrow y \geq -\frac{1}{2}x + 150$

$x + y < 200 \rightarrow y \leq -x + 200$

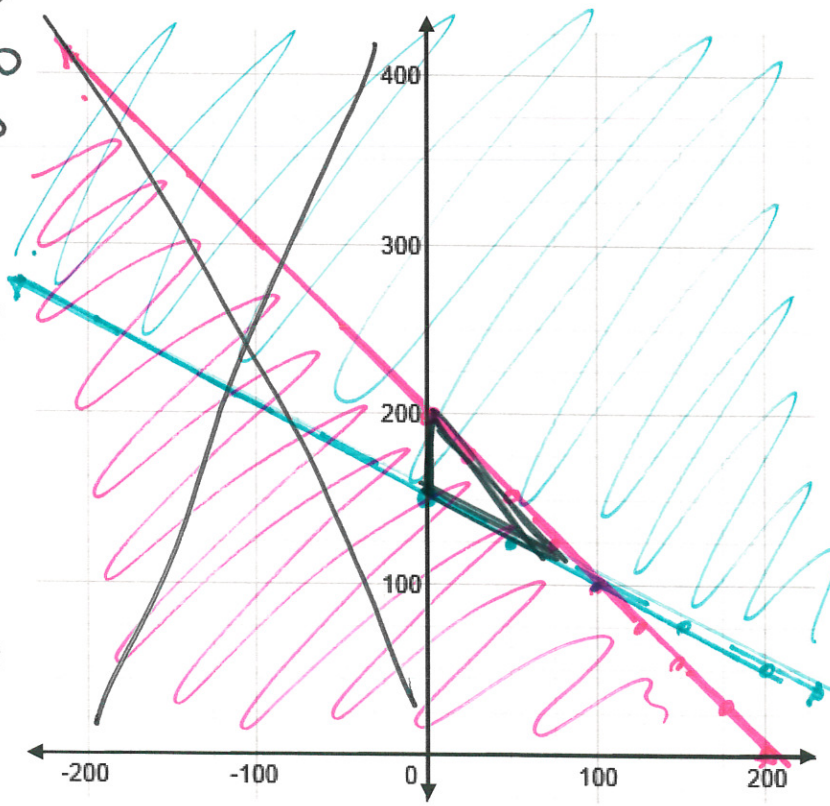
$(0,0)\quad 0 \geq 150$

$(0,0)\quad 0 \leq -0 + 200$

$0 \leq 200$

A-REI.12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

b) Graph the inequalities.



A-CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

c) List three possible combinations that will satisfy both requirements.

(25, 150) (0, 175) (3, 175)

A-CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context

d) Is it possible for the club to order exactly 200 of each item? Why or why not?

No because they are only allowed to order total 200 items, therefore cannot have 200 of each.

A-REI.3. Solve linear inequalities in one variable.

Solve the inequality and graph the solution on a number line.

3. $-4x - 2 \leq 8$

$-4x - 2 \leq 8$

$+2 \quad +2$

$\frac{-4x \leq 10}{-4}$

$x \geq -2.5$

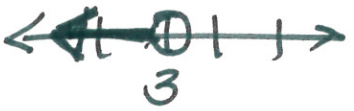
4. $6p - 1 < 3p + 8$

$6p - 1 < 3p + 8$

$3p - 1 < 8$

$\frac{3p < 9}{3}$

$p < 3$



A-REI.12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

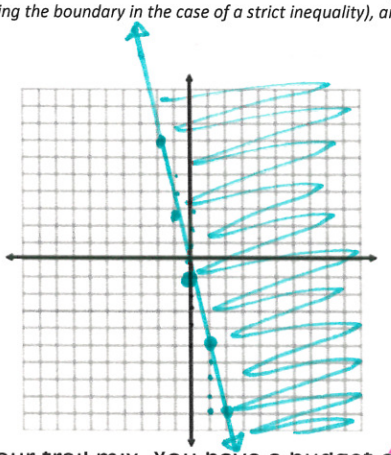
5. Graph the linear inequality: $y \geq -4x - 1$.

(1,1)

$1 \geq -4(1) - 1$

$1 \geq -4 - 1$

$1 \geq -5$



6. You need to buy almonds and cranberries to put in your trail mix. You have a budget of $18 to spend. Almonds cost $2 a bag and cranberries cost $1.50 each bag. Write and graph an inequality that models the different combinations that you can buy. Define the variables and state the constraints. Give three possible combinations that you could buy.

Variables:

x → Almonds

y → cranberries

A-CED.1. Create inequalities in one variable and use them to solve problems.
A-REI.12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

Inequality:

$2x + 1.50y \leq 18$

$2x + 1.50y \leq 18$

$-2x \quad -2x$

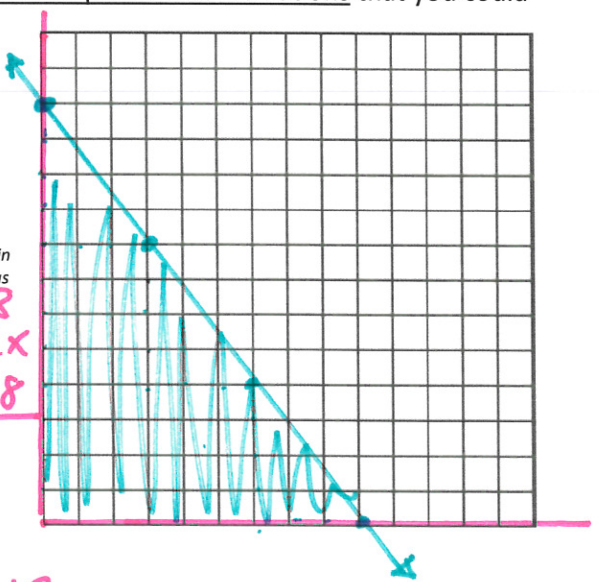
$\frac{1.50y \leq -2x + 18}{1.50}$

$y \leq -1\frac{1}{3}$

$y \leq \frac{-4}{3}x + 12$

$0 \leq \frac{-4}{3}0 + 12$

$0 \leq 12$



A-CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

Constraints:

Nonegative $

only spend $18

NO negative food

Combinations:

(1,1) (2,2) (3,3)