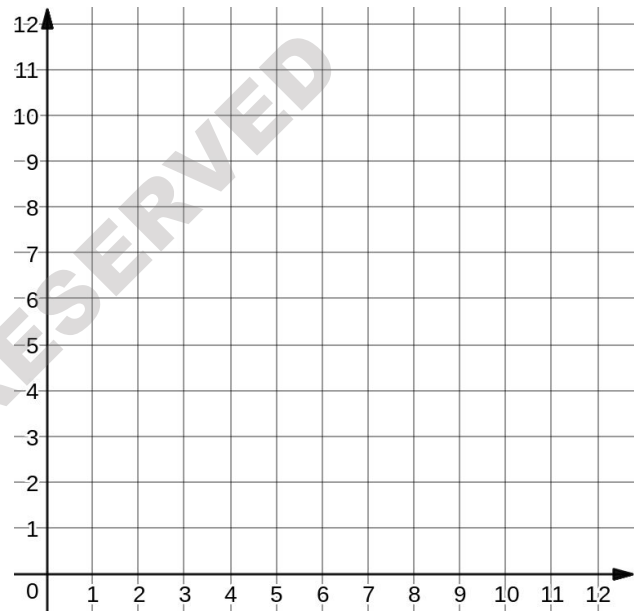


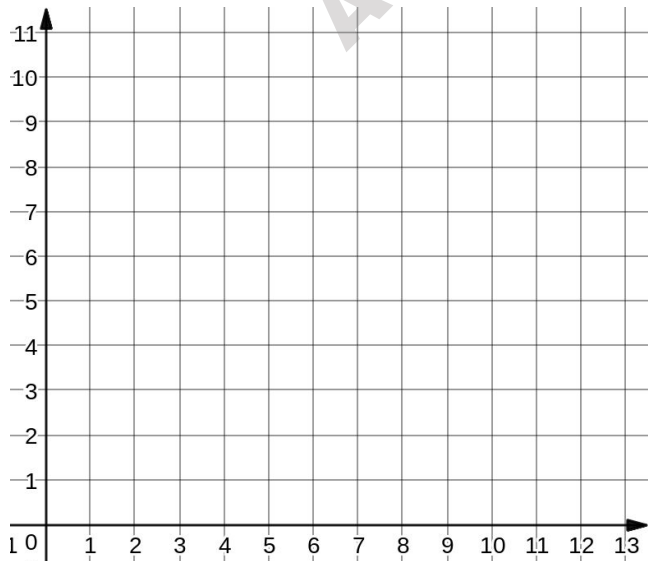
Lesson 6: Modeling Linear Inequalities

Graphs are often used in the real world to illustrate data and statistics in a user friendly way. Graphs of linear inequalities are useful because they show all of the possibilities within a given scenario. It will be up to you to determine appropriate solutions based on the context of the problem.

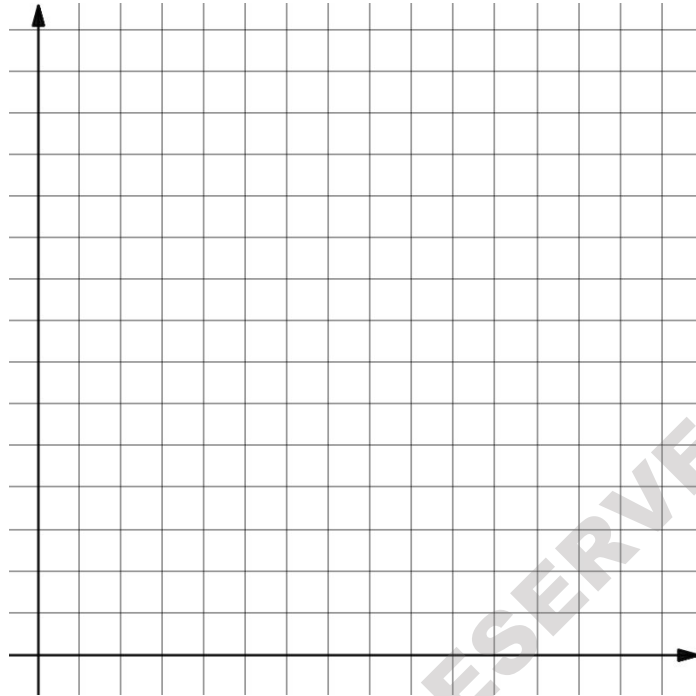
Exercise #1: A farmer in upstate New York has cattle and horses. Each cow eats 20 pounds of food per week, and each horse eats 30 pounds of food per week. If the farmer can afford to buy 210 pounds of food each week, set up and graph an inequality representing all of the possible combinations of cattle, x , and horses, y , the farmer can own.



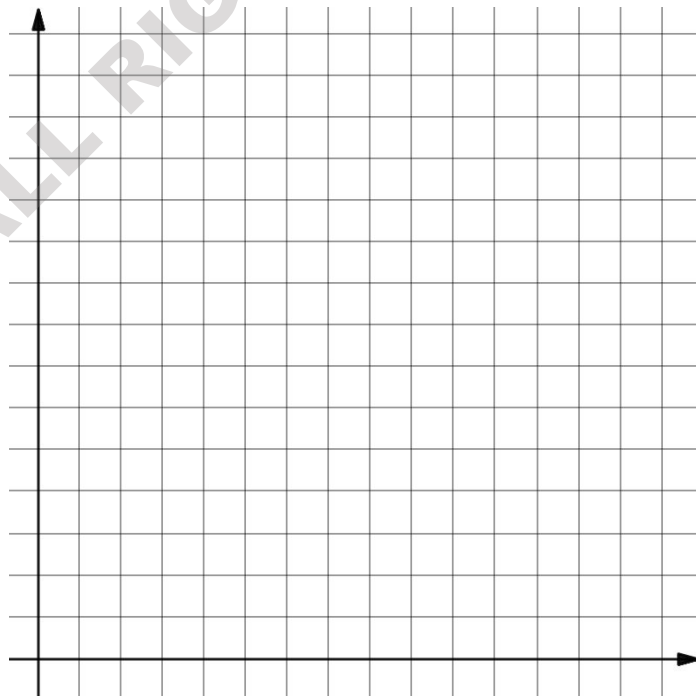
Exercise #2: It costs \$1.75 to buy a pack of gum, and \$5.25 to buy an energy drink. If you have \$21 to spend, set up an inequality and graph all the possible combinations of gum, x , and energy drinks, y , you could buy.



Exercise #3: At a fruit store, watermelons weigh 8 pounds and cantaloupes weigh 5 pounds. The weight of the bin that holds the watermelons and cantaloupes must be less than 90 pounds. Set up an inequality and graph all the possible combinations of the amount of watermelons, x , and cantaloupes, y , the bin can hold.

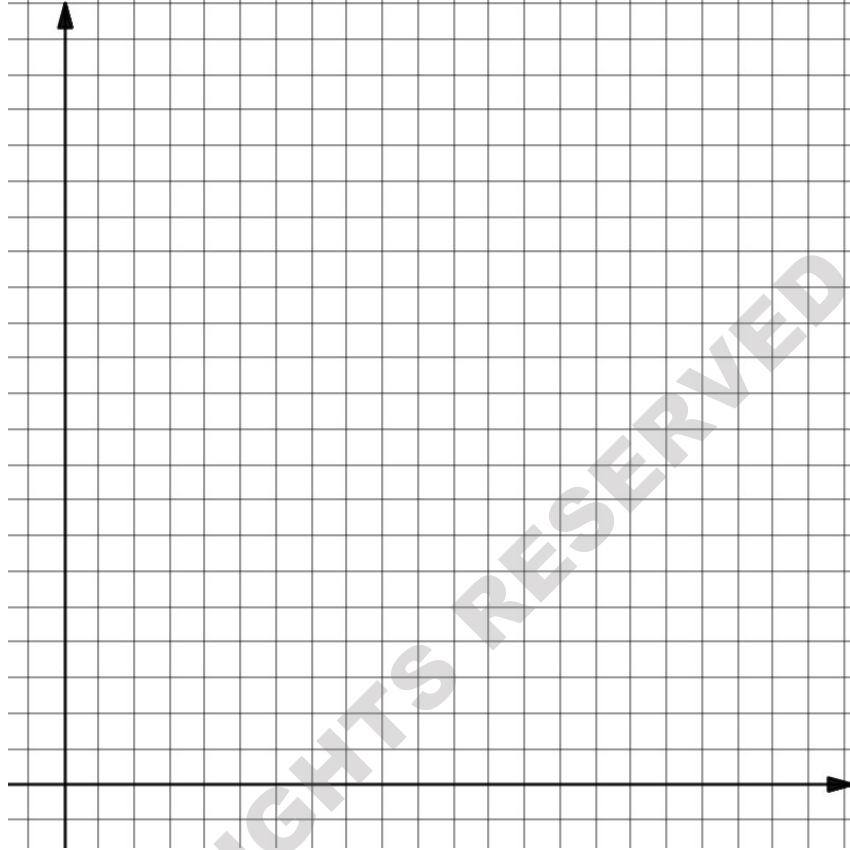


Exercise #4: At the surf shop, boardshorts cost \$30 and t-shirts cost \$20. If the surf shop wants to sell at least \$400 worth of boardshorts, x , and t-shirts, y , set up and graph an inequality that shows the possible combinations that would allow the shop to reach their goal.



Lesson 6 Extra Practice

EP1. During a sale, all video games cost \$25 and all movies cost \$10. If Zoe wants to buy video games and movies with some or all of her \$200 in birthday money, set up and graph a linear inequality to represent all of the possible combinations Zoe can buy.



a) Is the point $(-1, 1)$ in the solution set? Explain your answer.

b) Based on your answer above, what would be a reasonable domain for this problem? Explain your reasoning.

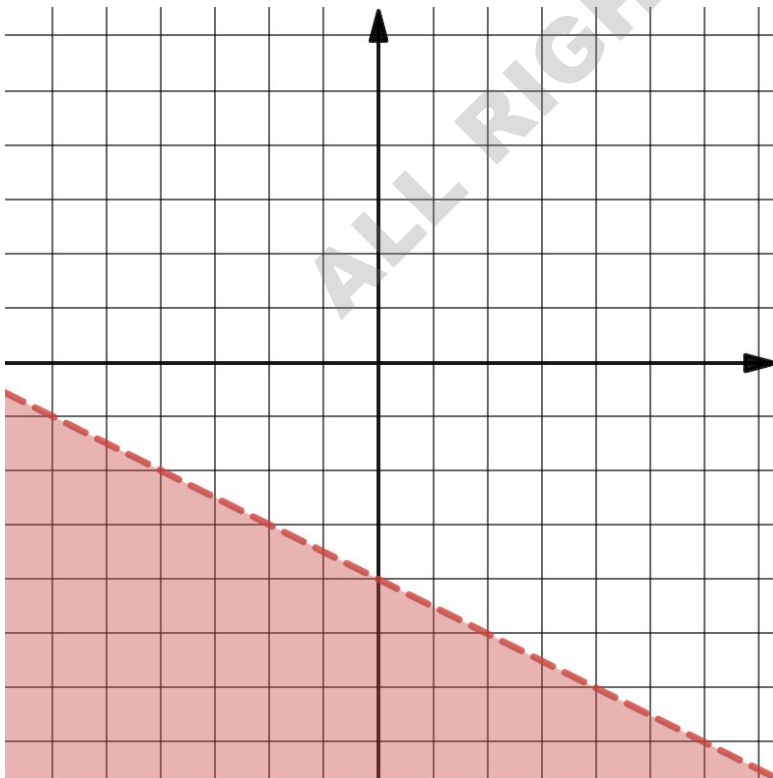
b) List three possible combinations in the solution set.

EP2. The manager of an electronics store projects that the revenue from the sale of televisions and cameras should be at least \$18,000 per day.

a) If televisions sell for \$550 each and cameras sell for \$300 each, set up an inequality to represent how many televisions, t , and cameras, c , must be sold in order to make the desired amount.

b) The store manager sells his entire stock of 30 televisions. How many cameras must be sold to reach the desired revenue?

EP3. Shawn incorrectly graphed the inequality $-x - 2y < 8$ on the graph below.



a) Explain Shawn's mistake while graphing this inequality.