Name: _____

7.3.D2 — SYSTEMS OF 2+ LINEAR INEQUALITIES

Past due on: _____ Period: _____

Jeremy is working at two jobs to save money for his college education. He makes $8 per hour working for his uncle at Pat's Pizza and $10 per hour tutoring peers after school in math. His goal is to make more than $160 per week.

1. If Jeremy works 8 hours at Pat's Pizza and tutors 11 hours during the week, does he reach his goal?

2. Let x = the hours worked at Pat's Pizza & y = the hours Jeremy tutors. Write a linear inequality to represent the amount of money Jeremy needs to make. *Refer to the 7.1 example "Writing a Linear Inequality in Two Variables" in the Chapter 7 Summary.*

3. Graph the inequality. *Refer to the 7.1 example "Graphing a Linear Inequality in Two Variables" in the Chapter 7 Summary.*

4. Due to days off from school, Jeremy will only be tutoring for 6 hours this week. Use the graph to determine the least amount of full hours he must work at Pat's Pizza to still reach his goal. Then show that your result satisfies the inequality: Write and solve an inequality that represents this situation.
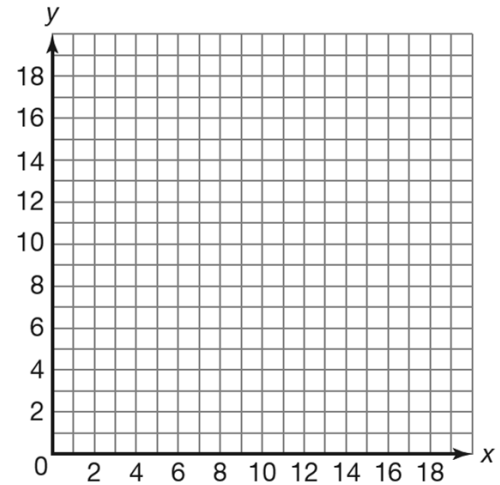
Samuel is remodeling his basement. One part of the planning involves the flooring. He knows that he would like both carpet and hardwood, but isn't sure how much of each he will use. The most amount of flooring area he can cover is 2000 square feet. The carpet is $4.50 per square foot and the hardwood is $8.25 per square foot. Both prices include labor costs. Samuel has budgeted $10,000 for the flooring.
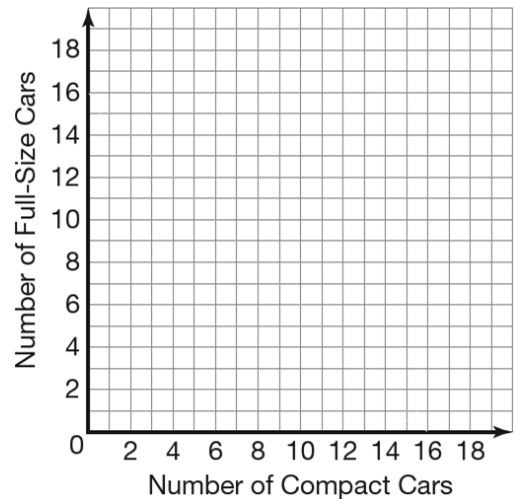
5. Let x = the square feet of carpet & y = the square feet of hardwood. Write a system of inequalities to represent the amount of flooring needed and the amount of money Samuel wants to spend. *Refer to the 7.2 example "Writing a System of Linear Inequalities" in the Chapter 7 Summary.*

   Do either of these apply? $x \geq 0$ $y \geq 0$

6. One idea Samuel has is to make two rooms: one having 400 square feet of carpeting and the other having 1200 square feet of hardwood. Determine whether this amount of carpeting and hardwood are solutions to the systems of inequalities. Show all work and explain your reasoning. *Refer to the 7.2 example "Determining Solutions to a System of Linear Inequalities Algebraically" in the Chapter 7 Summary.*

The SmartAuto Rental Car Company has \$180,000 to invest in the purchase of at most 16 cars of two different types: compact cars and full-size cars. Due to demand, SmartAuto needs to purchase at least 5 compact cars. A compact car can be purchased for \$9000, while full-size cars cost \$15,000.

7. Let x = number of compact cars & y = numbers of full-size cars. Write a system of inequalities that represents the problem situation. *Refer to the 7.3 example "Writing a System of More Than Two Inequalities" in the Chapter 7 Summary.*

   Do either of these apply? $x \geq 0$ $y \geq 0$

8. Graph the solution set for the system of linear inequalities. Identify all points of the intersection of the boundary lines. *Refer to the 7.3 example "Solving a System of More Than Two Inequalities by Graphing" in the Chapter 7 Summary.*

Number of Full-Size Cars (vertical axis: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18)
Number of Compact Cars (horizontal axis: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18)

Write a system of equations to represent each situation. Solve each system using the appropriate method: either substitution or linear combinations. Write your solution as an ordered pair (x, y). *Refer to the 6.3 example "Writing a Linear System of Equations to Represent a Problem Context" in the Chapter 6 Summary.*

9. Westin wants to buy a one-year membership to a golf course. Rolling Hills Golf Course charges a base fee of \$200 and an additional \$15 per round of golf. Majestic View Golf Course charges a base fee of \$350 and an additional \$10 per round of golf. Determine the number of rounds of golf for which both golf courses charge the same amount. *Let x = the round of golf and y = total cost of membership.*

   Equation 1: _____ *& Equation 2:* _____
   Solve the system of equations.

   Interpret the solution of the linear system in terms of the problem situation.

10. Zosha and Warren are making large pots of chicken noodle soup. Zosha opens 4 large cans and 6 small cans of soup and pours them into her pot which contains 115 ounces of soup. Warren opens 3 large cans and 5 small cans of soup and pours them into his pot which contains 91 ounces of soup. *Let x = the ounces of soup in a large can and y = the ounces of soup in a small can.*

   Equation 1: _____ *& Equation 2:* _____
   Solve the system of equations.

   Interpret the solution of the linear system in terms of the problem situation.