Graphing Two Variable Inequalities

Name KEY

Day 1 Explore

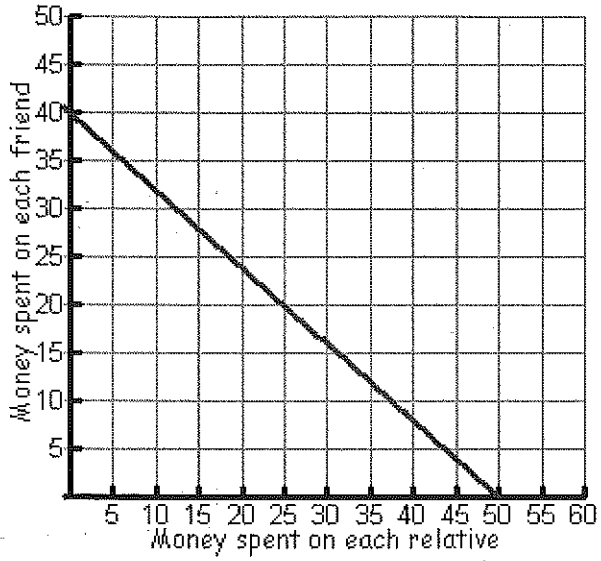
Date _____ Period _____

While you were out shopping for your friends and relatives you decided to spend any amount up to and including $200 on your 4 relatives and 5 friends.

1. According to the problem, what amount can you spend on gifts for your friends and relatives? $200 or less

2. State 3 combinations that meet your new requirements.
(0,40) (50,0) (25,20) → On the line
(10,10) (15,5) (5,30) (35,10)

3. The graph of $4x + 5y = 200$ is shown. This graph represents the situation if you spend exactly $200. Plot the points from question 2 on the grid. Where do your points fall? On and below the line



4. Change the equation to an inequality that represents the amount of money that could be spent on friends and relatives using your new requirements.
$4x + 5y \leq 200$

5. Plot 3 points that fit the new requirements that are not on the line. Where are these points in relation to the line?
(10,10) (15,5) (5,30) (35,10) - Below the line, under the line

6. Why do they fall in that region?
They show where less than $200 is spent

7. Are there other points in that region that should be included as solutions? How could we include all of them? Yes, all points below the line
- Shade the area below the line

8. Give 2 points that do not fit the budget. Where do these points lie on the graph?
(15,40), (40,15) (55,10) (40,45)
These points are above line

9. Write an inequality that states a reasonable domain and range for the situation.
Domain: $0 \leq x \leq 50$
Range: $0 \leq y \leq 40$

Joanna is running a food stand for the summer. She sells hotdogs for $4.00 and burgers for $6.00. She would like to make more than $300 a day. h: hotdogs b: burgers

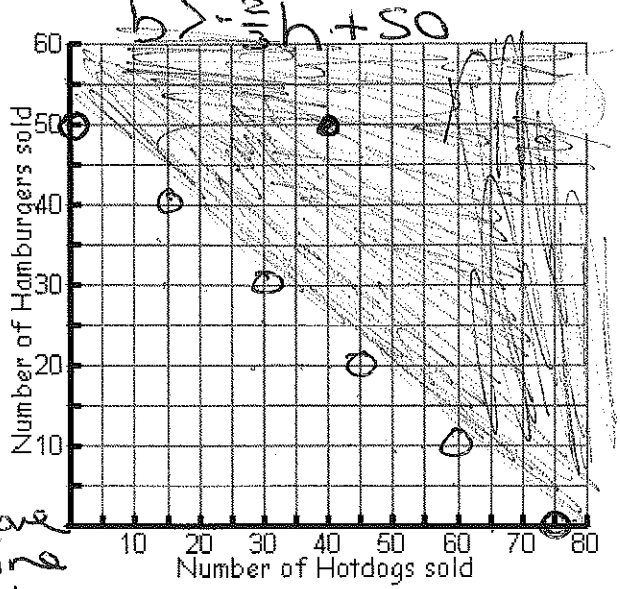
10. Write an inequality for the situation.

$4h + 6b > 300$

11. State 3 reasonable combinations of hotdogs and burgers that would allow Joanna to make more than $300. (40,30) (20,50) (60,20)

12. Graph this situation using the x- and y-intercepts. Where do you need to shade to show possible solutions?

$b > -\frac{2}{3}h + 50$



X-intercept (75, 0) y-intercept (0, 50) above the line

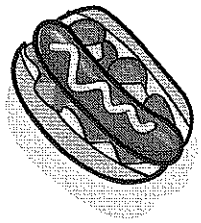
13. Use the inequality from problem 10 to determine if the point (40, 50) a solution?

$4h + 6b > 300$

$4(40) + 6(50) > 300$

$160 + 300 > 300$

$460 > 300$ yes



14. How can you use the graph to determine if the point (40, 50) a solution?

If it lies in the shaded region

15. Use the inequality from problem 10 to determine if the point (30, 30) a solution?

$4h + 6b > 300$

$4(30) + 6(30) > 300$

$120 + 180 > 300$

$300 > 300$

NO

16. Where is the point (30, 30) on the graph?

On the line

17. When you are graphing on a number line, what do you use to show that the solution is greater than a value, but not equal to that value?

An open circle

* If inequality is not "equal to" must use dotted line or dashed line to represent these points are NOT a solution to the inequality