Name:_____ Date:_____

Unit 3 Lesson 13

DO NOW: Explain in words the meaning of the following situation:

a) The shirt that you want to buy at Abercrombie costs at least $30. What does this mean?

$s \geq 30$ (can be $30 or more

b) A movie usually lasts no more than 2 hours. What does this mean?

$m \leq 2$ (can be 2hrs or less)

13

REAL WORLD APPLICATIONS INVOLVING SYSTEMS OF INEQUALITIES

1. Suppose you have two jobs, babysitting, which pays $5 per hour, and bagging groceries, which pays $6 per hour. You can work no more than 20 hours each week, but you need to earn at least $90 per week. How many hours can you work at each job?

a. Define the variables. x = hrs babysitting

y = hrs bagging groceries

b. Write the systems of inequalities that represents this situation.

$x + y \leq 20$

$-x \quad -x$

$y \leq -x + 20$

$5x + 6y \geq 90$

$-5x \quad -5x$

$\frac{6y}{6} \geq \frac{-5x}{6} + \frac{90}{6}$

c. Graph the inequalities and shade the solution set.

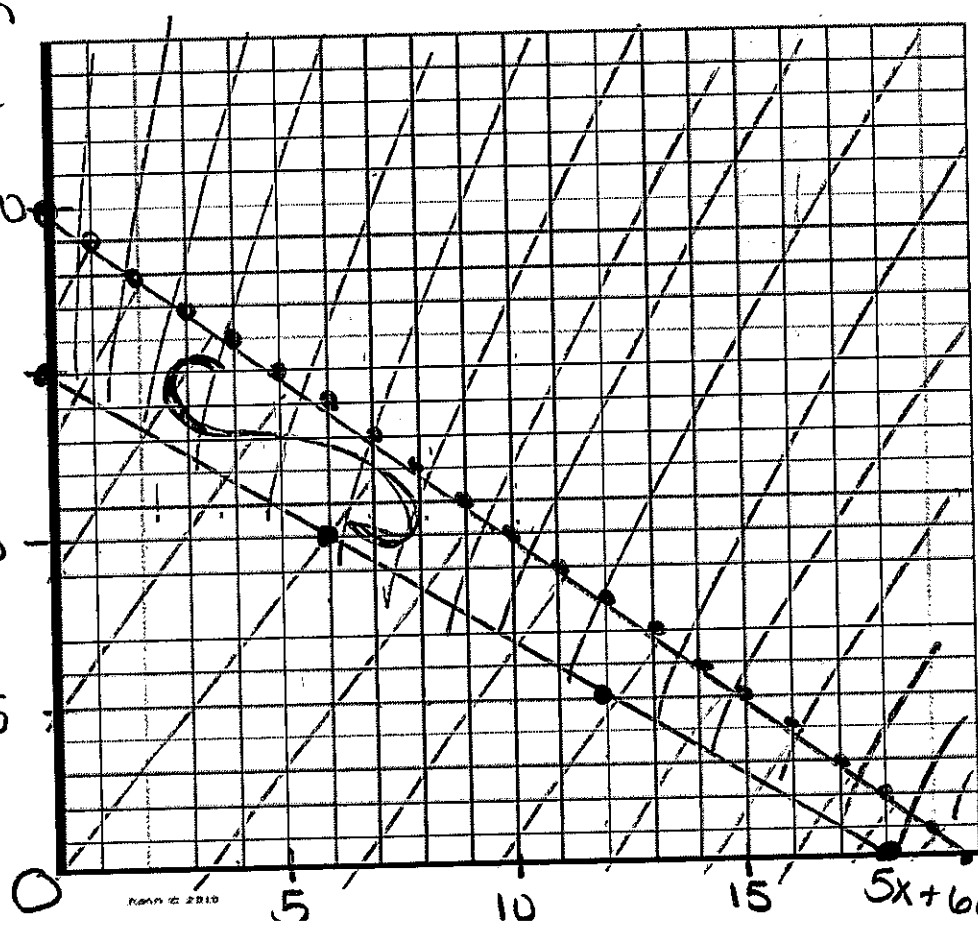
d. What does the shaded region represent?

combination of hours worked that satisfy both situations,

For ex: (5, 13)

↓ hrs of bagging

↘ hrs of baby...



a) Define the variables: x = # of cats

y = # of dogs

2. Sandi boards cats and dogs while their owners are away. Each week she can care for no more than 12 animals. For next week she already has reservations for 4 cats and 5 dogs, but she knows those numbers will probably increase. Draw a graph to show the possible number of cats and dogs that Sandi might board next week.

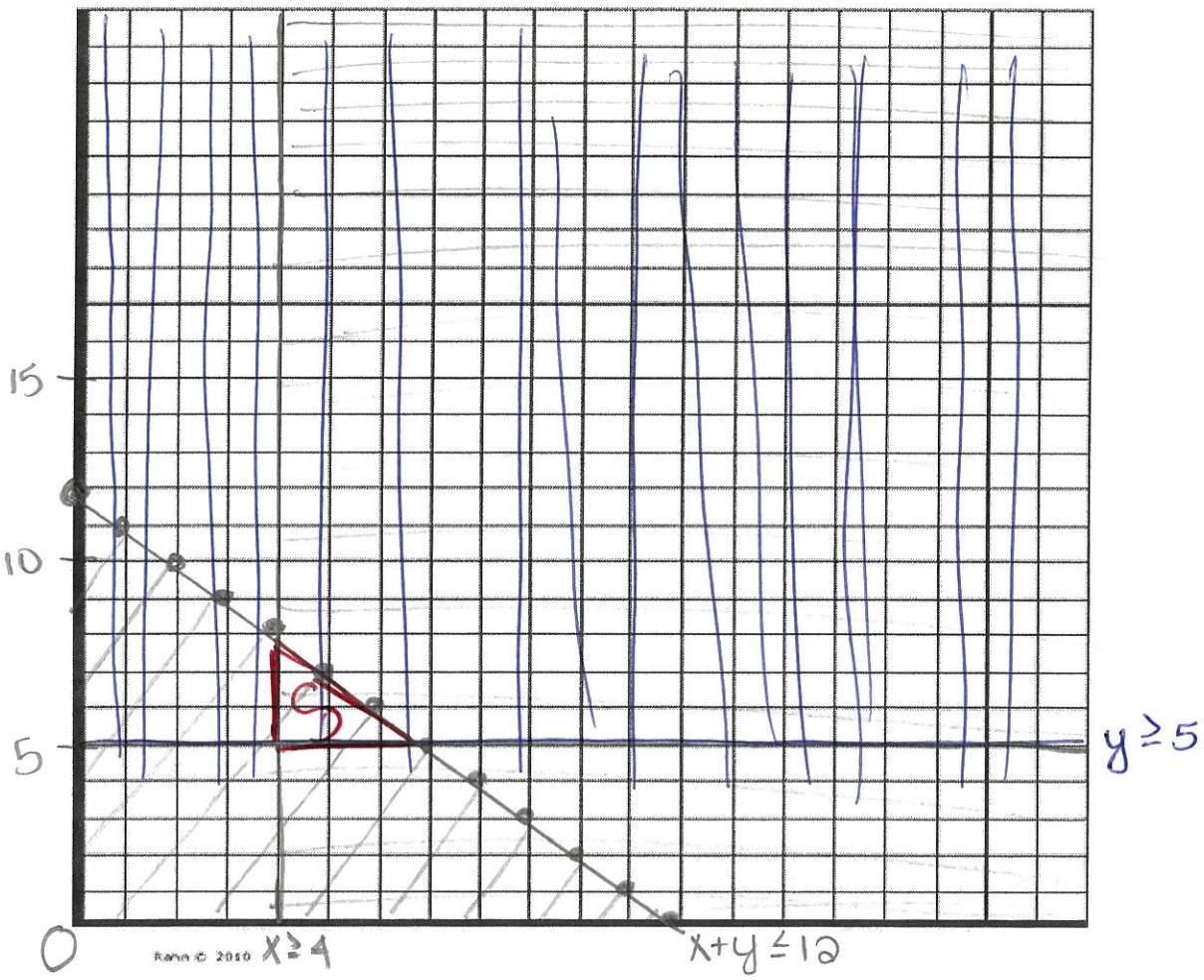
c) Give a possible combination. (5, 6) cats dogs

b) Use the information in the problem to write 3 inequalities:

1-Sandi can care for no more than 12 animals: $x + y \leq 12$ $\quad y \leq -x + 12$

2-She expects at least 4 cats: $x \geq 4$

3-She expects at least 5 dogs: $y \geq 5$



Represent the sentence as an algebraic inequality.

3) The number x is **more than** 50. 3) $x > 50$

4) The sum of 5x and 2x is **at least** 70. 4) $5x + 2x \geq 70$

5) The **minimum value** of 2x + 1 is 13. 5) $2x + 1 \geq 13$

6) The product of 3x and x + 1 is **at most** 35. 6) $3x(x + 1) \leq 35$

7) The **maximum value** of a number x is 3. 7) $x \leq 3$

Name: Key
Exit Ticket

Sarah is selling bracelets and earrings to make money for her summer vacation. The bracelets cost $ 2 and earrings cost $3. Sarah is confident that she will sell at least fifty bracelets. However, Sarah knows that she needs to make at least $500.

a. Define the variables.

x = # of bracelets
y = # of earrings

b. Write the systems of inequalities that represents this situation.

$x \geq 50$
$2x + 3y \geq 500$

Name:_____
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