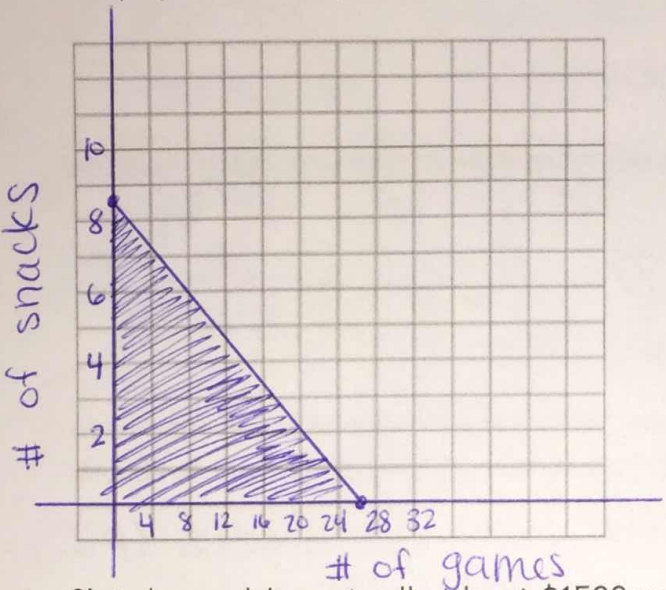
Algebra 1 Name: Key

5.6 - 5.7 Story Problem Practice Hour: _____ Date: _____

1) You have at most $20 to spend at an arcade. Arcade games cost $0.75 each and snacks cost $2.25 each. Write and graph an inequality that represents the numbers of games you can play and snacks you can buy. Identify and interpret two solutions of the inequality.



$.75x + 2.25y \leq 20$

$\frac{.75x}{.75} = \frac{20}{.75}$

$x = 26.67$

$\frac{2.25y}{2.25} = \frac{20}{2.25}$

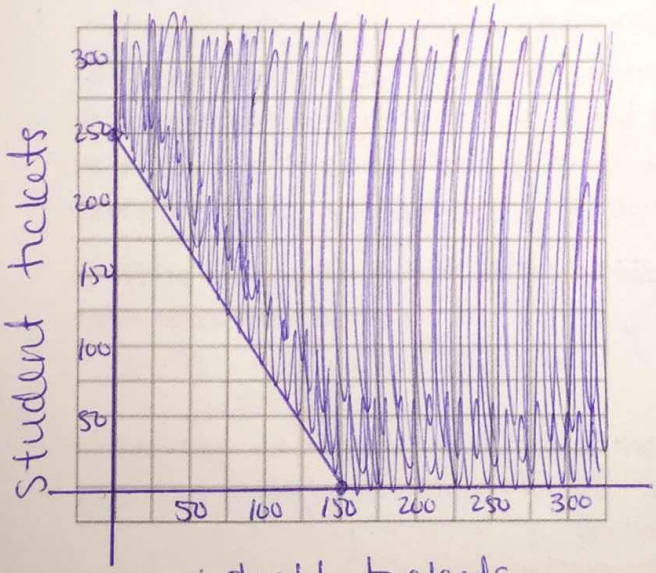
$y = 8.88$

x = # of games
y = # of snacks

(12,4) → 12 games, 4 snacks

(5,2) → 5 games, 2 snacks

2) A drama club must sell at least $1500 worth of tickets to cover the expenses of producing a play. Write and graph an inequality that represents how many adult and student tickets the club must sell. Identify and interpret two solutions of the inequality.



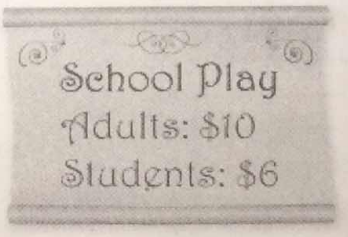
$10x + 6y \geq 1500$

$\frac{10x}{10} = \frac{1500}{10}$

$x = 150$

$\frac{6y}{6} = \frac{1500}{6}$

$y = 250$



(150,0) → 150 adult tickets and 0 student tickets

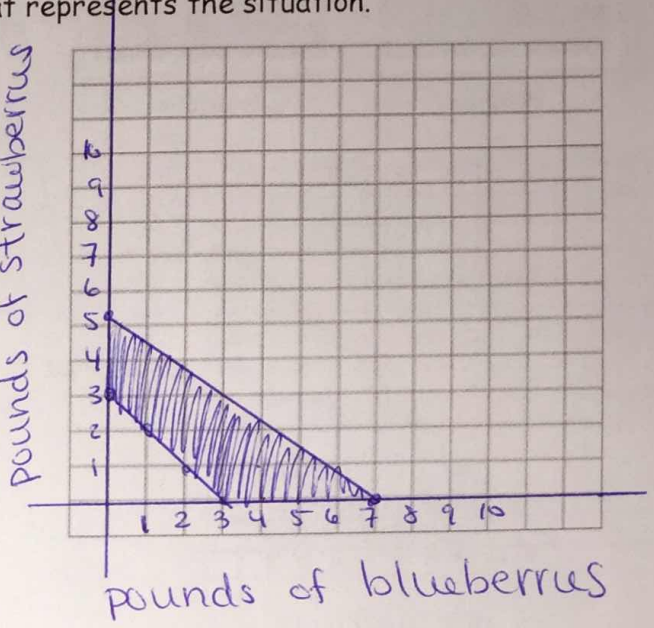
(0,250) → 0 adult tickets and 250 student tickets.

3) You can spend at most $21 on fruit. Blueberries cost $4 per pound, and strawberries cost $3 per pound. You need at least 3 pounds of fruit to make muffins.

a) Write and graph a system of linear inequalities that represents the situation.

$x + y \geq 3$ $\quad x$ = blueberries

$4x + 3y \leq 21$ $\quad y$ = strawberries



b) Identify and interpret a solution to the system.

$x + y \geq 3$

$-x \quad -x$

$y \geq -x + 3$

$4x + 3y \leq 21$

$\frac{4x}{4} \leq \frac{21}{4}$

$x = 5.25$

$(5.25, 0)$

$3y = 21$

$y = 7$

$(0, 7)$

c) Use the graph to determine whether you can buy 4 pounds of blueberries and 1 pound of strawberries.

(2,4) 2 lbs blueberries and 4 lbs strawberries

yes! (4,1) falls in the double shaded region.

4) You ear $10 per hour working as a manager at a grocery store. You are required to work at the grocery store at least 8 hours per week. You also teach music lessons for $15 per hour. You need to earn at least $120 per week, but you do not want to work more than 20 hours per week. x = grocery store $\quad y$ = music

a) Write and graph a system of linear inequalities that represents the situation.

$x \geq 8$ $\quad 10x + 15y \geq 120$ $\quad y = x + 20$

$x + y \leq 20$

$10x = 120$

$x = 12$

$(12, 0)$

$15y = 120$

$y = 8$

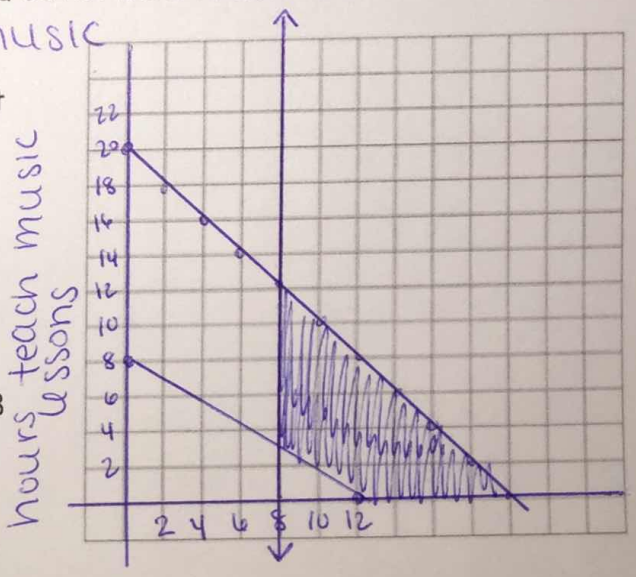
$(0, 8)$

b) Identify and interpret a solution of the system.

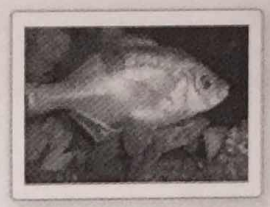
(12,2) → you can work 12 hours @ grocery store, 2 hours teach music.

c) Use the graph to determine whether you can work 8 hours at the grocery store and teach 1 hour of music lessons.

(8,1) → No, doesn't satisfy all equations.



5) You are fishing for surfperch and rockfish, which are species of bottomfish. Gaming laws allow you to catch no more than 15 surfperch per day, no more than 10 rockfish oer day, and no more than 20 total bottomfish per day. X = surfperch y = rockfish



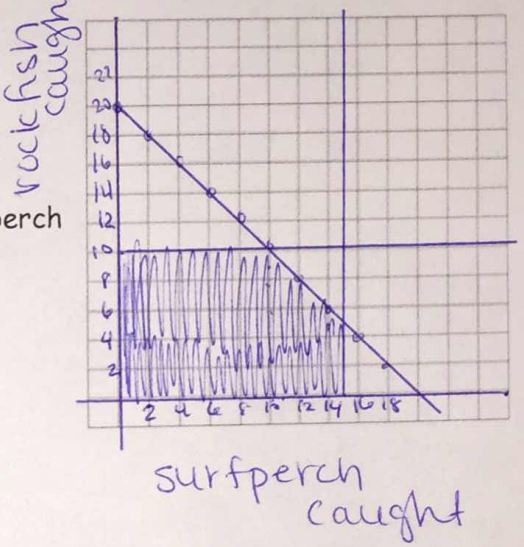
surfperch

rockfish

a) Write and graph a system of linear inequalities that represents the situation.

$x \leq 15$ $y \leq 10$ $x + y \leq 20$

$y = -x + 20$



b) Use the graph to determine whether you can catch 11 surfperch and 9 rockfish in 1 day.

(11, 9) → yes, falls in the shaded region + satisfies all equations.