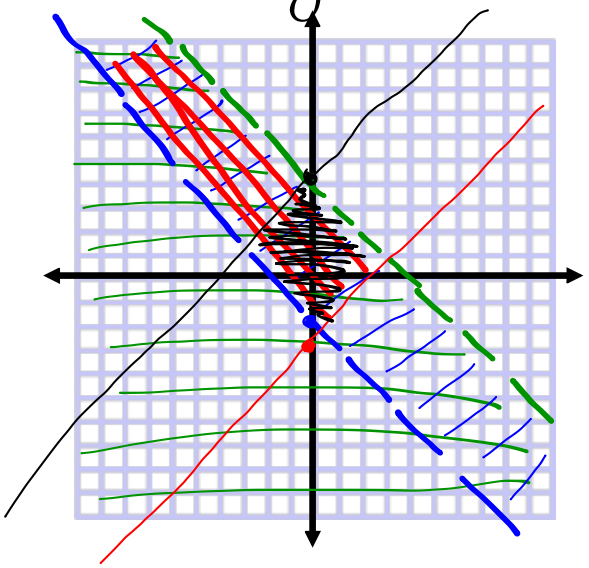
Homework Review - 7.6

$x+y<4 \longrightarrow y<-x+4$

$x+y>-2 \longrightarrow y>-x-2$

$x-y\leq 3 \longrightarrow -y\leq -x+3 \rightarrow y\geq x-3$

$x-y\geq -4 \longrightarrow -y\geq -x-4 \rightarrow y\leq x+4$



Chapter 7 Test Review

7.1: Solve linear systems - graphing
7.2: Solve linear systems - substitution
7.3 & 7.4: Solve lin. sys. - elimination (addition/subtraction)
7.5: "Special types" / Categories (one, no, many solution)
7.6: Systems of linear inequalities

Umbrella Sales The table shows the number of automatic and manual opening umbrellas sold at a shop in 2000 and 2005. Use a linear model to represent the sales of each type of umbrella. Let $t = 0$ correspond to 2000. Sketch the graphs and estimate when the number of automatic umbrellas sold equaled the number of manual umbrellas sold.

Year	2000	2005
Automatic	15	25
Manual	25	15

SOLVE THE LINEAR SYSTEM BY GRAPHING

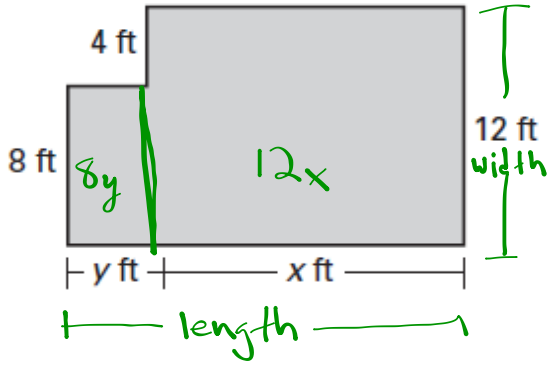
(#, years)

(20, 2.5)

2002

2002-3

Room Dimensions The area of the room shown is 224 square feet. The perimeter of the room is 64 feet. Find x and y. (Use the substitution method)



$a = l \times w$

$224 = 8y + 12x$

(x, y)

$64 = x + y + 12 + x + 4 + y + 8$

$64 = 2x + 2y + 24$

$56 = 2y + 3x$

$20 = x + y$

$x = -y + 20$

$56 = 2y + 3(-y + 20)$

$56 = 2y + -3y + 60$

$-4 = -y$

$y = 4$

$20 = x + 4$

$x = 16$

$(16, 4)$

Car Rental A car rental company charges a daily rental fee plus a per mile fee over 150 miles. Two different people rent the same style of car for the same number of days. The total bill for one person's rental is $207.50 for a 5-day rental and 180 miles. The total bill for the other person's rental is $212.50 for a 5-day rental and 200 miles. (Use addition/subtraction)

a. Write a linear system that you can use to find the daily rental fee and the per mile fee over 150 miles. *Explain* how you got your linear system.

b. What is the daily rental fee? What is the fee per mile over 150 miles?

Lift Tickets Two families go skiing on a Saturday. One family purchases two adult lift tickets and four youth lift tickets for $166. Another family purchases four adult lift tickets and five youth lift tickets for $263. Let x represent the cost in dollars of one adult lift ticket and let y represent the cost in dollars of one youth lift ticket.

a. Write a linear system that represents this situation. ✓

b. Solve the linear system to find the cost of one adult and one youth lift ticket.

c. How much would it cost two adults and five youths to ski for a day?

(Use addition/subtraction)

$(2x+4y=166)2$

$4x+5y=263$

$+(-4x+-8y=-332)$

$-3y=-69$

$\frac{-3y}{-3}=\frac{-69}{-3}$

$y=23$

(37, 23)

(adult, youth)

$2x+4(23)=166$

$2x+92=166$

$-92 \quad -92$

$\frac{2x}{2}=\frac{74}{2}$

$x=37$

Restaurant Sales The table below shows the number of each of the specials that has been sold on a Friday night and a Saturday night.

Day	Number of vegetarian specials	Number of chicken specials	Total sales (dollars)
Friday	28	44	964.40
Saturday	21	33	723.30

a. Let x represent the cost (in dollars) of the vegetarian special and let y represent the cost (in dollars) of the chicken special. Write a linear system that models the situation.

b. Solve the linear system.

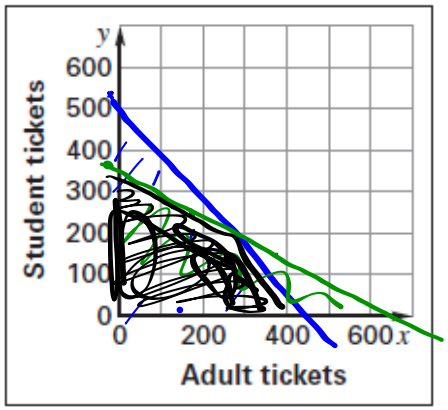
c. Can you determine how much each kind of special costs? Why or why not?

School Play The tickets for a school play cost \$8 for adults and \$5 for students. The auditorium in which the play is being held can hold at most 525 people. The organizers of the school play must make at least \$3000 to cover the costs of the set construction, costumes, and programs.

a. Write a system of linear inequalities for the number of each type of ticket sold.

b. Graph the system of inequalities.

c. If the organizers sell out and sell twice as many student tickets as adult tickets, can they reach their goal? *Explain* how you got your answer.



x

y

$x + y =$ total #

$8x + 5y =$ total \$

$x + y \leq 525$

$8x + 5y \geq 3000$

375

$8 \overline{)3000}$

24

60

56

40

$y = -x + 525$

$y = -\frac{8}{5}x + 375$

Homework:

Study for test!

(Suggested: do at least three problems from each relevant section of the chapter review on pages 475-478)