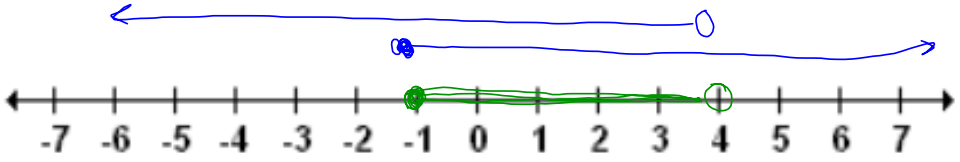
warm up:

Solve and graph the solution set:

$2x + 5 \geq 3$ AND $x < 4$



$2x + 5 \geq 3$

$2x \geq -2$

$x \geq -1$

HW page 64

1. One taco deluxe and two shakes provide 1460 calories. Two taco deluxes and three shakes provide 2360 calories. Find the caloric content of each item.

Let t = taco
Let s = shake

Equation: $t + 2s = 1460$
Equation: $2t + 3s = 2360$

$-2(t+2s=1460)$
$2t+3s=2360$

$-2t-4s=-2920$
$2t+3s=2360$
$-s=-560$
$s=560$

$t+2(560)=1460$
$t+1120=1460$
-1120
$t=340$

Sentence: Tacos have 340 calories and shakes have 560 calories

2. Seven hot dogs and four hamburgers cost $13.00. Four hot dogs and seven hamburgers cost 14.50. Find the cost of one hot dog and the cost of one hamburger.

Let d = hot dogs
Let h = hamburgers

Equation: $7d + 4h = 13.00$
Equation: $4d + 7h = 14.50$

$7(7d+4h=13.00)$
$-4(4d+7h=14.50)$

$49d+28h=91.00$
$-16d-28h=-58.00$
$33d=33.00$
$d=1.00$

$7(1.00)+4h=13.0$
$7.00+4h=13.0$
$-7.00 \quad -7.00$
$\frac{4h}{4}=\frac{6.00}{4}$
$h=1.50$

Sentence: Hot dogs cost $1.00 and hamburgers cost $1.50.

HW page 64

3. Your club is selling boxes of cookies for a fund raiser. Peanut wafers cost $4 a box and chocolate crisps cost $6 a box. Together the club sells 525 boxes of cookies and collects $2876. How many of each type of cookie did the club sell?

Let p = peanut wafers
Let c = chocolate crisps

Equation: p + c = 525
$ Equation: 4p + 6c = 2876

$-4(p+c=525)$
$4p+6c=2876$

$-4p-4c=-2100$
$4p+6c=2876$
$2c=776$
$\frac{2c}{2}=\frac{776}{2}$
$c=388$

$p+388=525$
$-388 \quad -388$
$p=137$

Sentence: The club sold 137 boxes of peanut wafers and 388 boxes of chocolate crisps.

4. The Booster Club voted to go to a baseball game for their annual trip. They bought some children's tickets and some adult tickets for a total of 29 tickets. The children's tickets cost $21 dollars each and the adult tickets cost $27 dollars each for a total of $675. How many of each ticket did they buy?

Let c = children's tickets
Let a = adult tickets

Equation: c + a = 29
$ Equation: 21c + 27a = 675

$-21(c+a=29)$
$21c+27a=675$

$-21c-21a=-609$
$21c+27a=675$
$6a=66$
$a=11$

$c+11=29$
$-11 \quad -11$
$c=18$

Sentence: They bought 18 children's tickets and 11 adult tickets.

HW page 65

1. Jane saved up 20 coins, all nickels and quarters, and when she counted it, she had $3.00. How many nickels and how many quarters did she have?

Let n = nickels
Let q = quarters

Equation: $n + q = 20$
Equation: $.05n + .25q = 3.00$

$-5(n + q = 20)$
$5n + 25q = 300$

$n + 10 = 20$
$n = 10$

$-5n - 5q = -100$
$5n + 25q = 300$
$20q = 200$
$q = 10$

Sentence: Jane had 10 nickels and 10 quarters.

2. Joey has 12 coins consisting of dimes and nickels. If the total value of the coins is .75¢, how many are dimes and how many are nickels.

Let d = dimes
Let n = nickels

Equation: $d + n = 12$
Equation: $.10d + .05n = .75$

$-10(d + n = 12)$
$10d + 5n = 75$

$d + 9 = 12$
$d = 3$

$-10d - 10n = -120$
$10d + 5n = 75$
$-5n = -45$
$n = 9$

Sentence: Joey has 9 nickels and 3 dimes.

HW page 65

3. A jar of dimes and quarters contains $15.25. There are 103 coins in all. How many dimes are there, and how many quarters?

Let d = dimes
Let q = quarters
Equation: $d + q = 103$
$ Equation: $.10d + .25q = 15.25$

$-10(d + q = 103)$
$10d + 25q = 1525$

$-10d - 10q = -1030$
$10d + 25q = 1525$
$15q = 495$
$\frac{15q}{15} = \frac{495}{15}$
$q = 33$

$d + 33 = 103$
$-33 \quad -33$
$d = 70$

Sentence: There are 70 dimes and 33 quarters.

4. When Julio cracked open his piggy bank, he found 94 coins all quarters and dimes. He found that he had $17.20. How many quarters and how many dimes did Julio have?

Let d = dimes
Let q = quarters
Equation: $d + q = 95$
$ Equation: $.10d + .25q = 17.20$

$-10(d + q = 95)$
$10d + 25q = 1700$

$-10d - 10q = -950$
$10d + 25q = 1700$
$15q = 750$
$\frac{15q}{15} = \frac{750}{15}$
$q = 50$

$d + 50 = 95$
$d = 45$

Sentence: Julio had 45 dimes and 50 quarters.

1. **The difference between two numbers is 11. Two times the larger plus fourteen is equal to five times the smaller. Choose the best system for this problem:**

~~X = 11~~
~~2Y = 14~~

Let x = larger #
y = smaller #

~~X + Y = 11~~
2X + 14 = 5

x − y = 11

X − Y = 11
2X − 5Y = -14

2x + 14 = 5y
2x = 5y − 14
2x − 5y = −14

The swim team paid $446 for team suits. The men's suits cost $18 each and the women's $32 each. If there are 17 members on the team, how many men are there? How many women?

i. Choose the best set of variables for this problem:

X = cost of men's suits
Y = cost of women's suits

X = number of men's suits
Y = number of women's suits

X = number of people on the team
Y = number of people on the other team

ii. Choose the best system of equations for this system:

X = 18
Y = 32

X + Y = 17
X – Y = 446

18X + 32Y = 446
X + Y = 17

3. $\begin{cases} 3x + y = 0 \\ x + y = 4 \end{cases}$ $(-2, 6)$	4. $\begin{cases} x - 3y = -3 \\ 2x + y = 8 \end{cases}$ $(3, 2)$

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6–5 Systems of Linear Inequalities

The solution set to a system of linear inequalities is the set of all the points that make both linear inequalities true. The shading on the graph shows the solution set.

Example 1: Graphing a System of Inequalities

a. Solve by graphing. pp 93-95

$$\begin{cases} y > 2x - 5 \\ 3x + 4y < 12 \end{cases}$$

Step 1: Graph each inequality. Use arrows for shading.

Step 2: Shade the region where both inequalities are true.

~~Step 3:~~

~~Step 4:~~

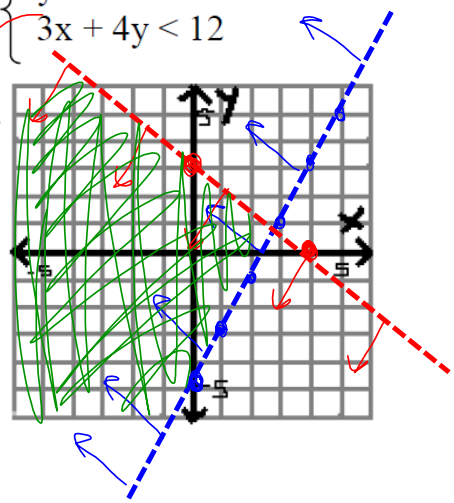
~~Step 5:~~

m = 2, b = -5

test (0,0): $0 > 2(0) - 5$, $0 > -5$

x	y
0	3
4	0

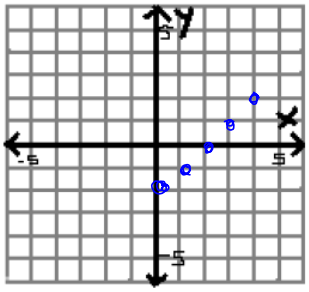
test (0,0): $3(0) + 4(0) < 12$, $0 < 12$



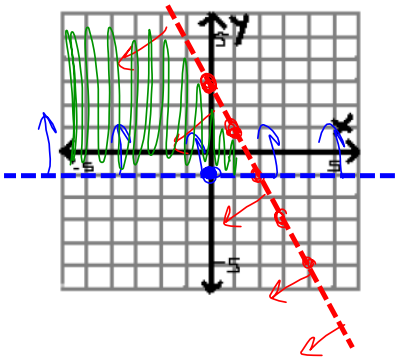
√ Understanding Check:

Graph each system of inequalities:

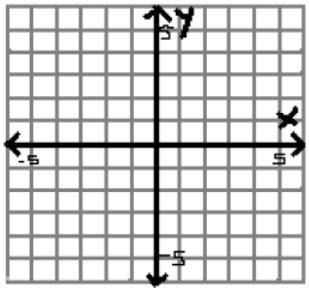
a. $\begin{cases} y > x - 2 \\ y \leq -\frac{1}{3}x + 3 \end{cases}$ m = 1, b = −2



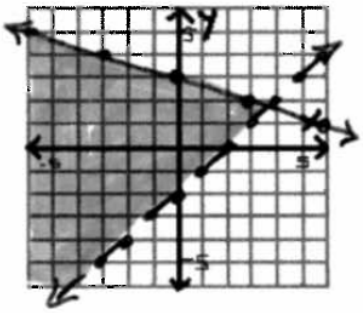
b. $\begin{cases} y < -2x + 3 \\ y > -1 \end{cases}$ m = −2, b = 3



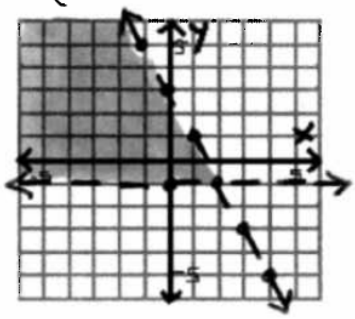
c. $\begin{cases} y \leq x + 2 \\ 2x + 3y < -6 \end{cases}$



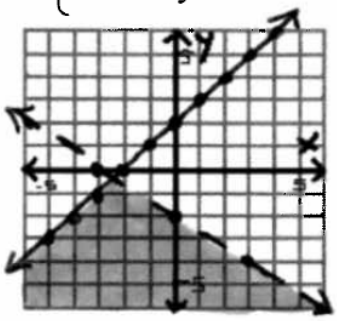
a. $\begin{cases} y > x - 2 \\ y \leq -1/3x + 3 \end{cases}$



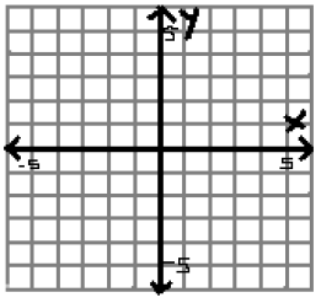
b. $\begin{cases} y < -2x + 3 \\ y > -1 \end{cases}$



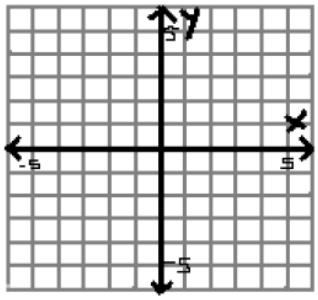
c. $\begin{cases} y \leq x + 2 \\ 2x + 3y < -6 \end{cases}$



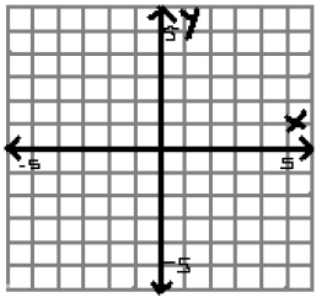
d. $\begin{cases} y > -x + 5 \\ y \leq 3x - 4 \end{cases}$



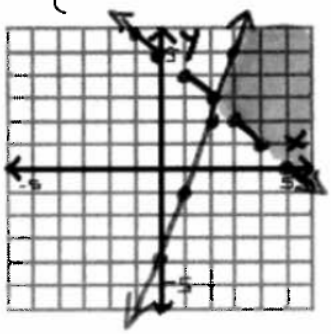
e. $\begin{cases} 3x - 2y < 6 \\ x + 2y \geq 6 \end{cases}$



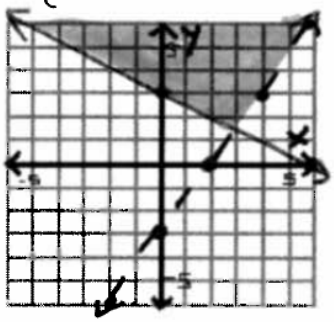
f. $\begin{cases} y < 2x + 4 \\ 2x - y \leq 4 \end{cases}$



d. $\begin{cases} y > -x + 5 \\ y \leq 3x - 4 \end{cases}$



e. $\begin{cases} 3x - 2y < 6 \\ x + 2y \geq 6 \end{cases}$



f. $\begin{cases} y < 2x + 4 \\ 2x - y \leq 4 \end{cases}$