

Solve each system of equations using the method of your choice.

1) $y = x + 6$
 $y = -2x - 3$
 $x + 6 = -2x - 3$
Graph
 2nd Trace
 $(-3, 3)$
 #5: Intersect
 Enter 3 times

2) $3x + 2y = 7$
 $y = -3x + 11$
Substitution
 $3x + 2(-3x + 11) = 7$
 $3x - 6x + 22 = 7$
 $-3x = -15$
 $x = 5$
 $y = -3(5) + 11$
 $y = -15 + 11$
 $y = -4$
 $(5, -4)$

Elimination

3) $3x + y = 11$
 $4x - y = 17$
 ← If we **ADD**
 The **y's** will
 eliminate right
 now!
 $7x = 28$
 $x = 4$
 Top: $3(4) + y = 11$
 $12 + y = 11$
 $y = -1$
 $(4, -1)$

4) $2x + 5y = -22$
 $10x + 25y = -110$
 $10x + 3y = 22$
 Subtract!
 $22y = -132$
 $y = -6$
 Bottom:
 $10x + 3(-6) = 22$
 $10x - 18 = 22$
 $10x = 40$
 $x = 4$
 $(4, -6)$

5) A garden supply store sells two types of lawn mowers. Total sales of mowers for the year were \$8379.70. The total number of mowers sold was 30. The small mower costs \$249.99. The large mower costs \$329.99.

a. Use x to represent the number of small mowers sold and y to represent the number of large mowers sold. Write a system of equations that represent the number of mowers sold and the total sales for the year.

b. Use your equations to find the number sold of each type of mower.

\$ → $249.99(x) + 329.99y = 8379.70$
 # of mowers → $x + y = 30$
 multiply bottom by 249.99

$249.99x + 329.99y = 8379.70$
 $249.99x + 249.99y = 7499.70$
 $80y = 880$
 $y = 11$
 $x + 11 = 30$
 $x = 19$
 19 small mowers, 11 large mowers

6) Marcella and Rupert bought some party supplies. Marcella bought 3 packages of balloons and 4 packages of favors for \$14.63. Rupert bought 2 packages of balloons and 5 packages of favors for \$16.03. Find the price of a package of balloons and a package of favors.

$2(3b + 4f = 14.63) → 6b + 8f = 29.26$
 $3(2b + 5f = 16.03) → 6b + 15f = 48.09$
 $-7f = -18.83$
 $f = 2.69$

Top:
 $3b + 4(2.69) = 14.63$
 $3b + 10.76 = 14.63$
 $-10.76 -10.76$
 $3b = 3.87$

favors cost \$2.69 each.
 $b = 1.29$
 balloons cost \$1.29 ea.

7) Which system describes the following situation? Craig has \$0.80 in nickels n and dimes d . He has four more nickels than dimes. $n = d + 4$

~~a.~~ $d + n = 4$
 $10d + 5n = 80$

~~c.~~ $d - n = 4$
 $10d + 5n = 80$

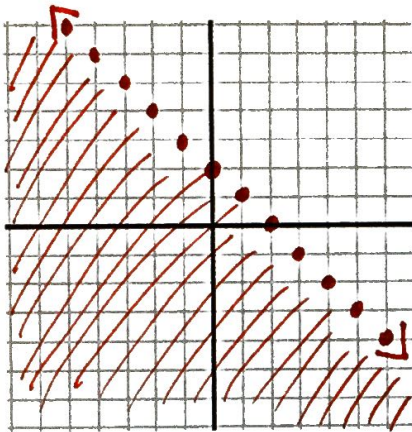
b. $n - d = 4$ * ✓
 $10d + 5n = 80$

~~d.~~ $d + n = 4$
 $10d + 5n = 80$

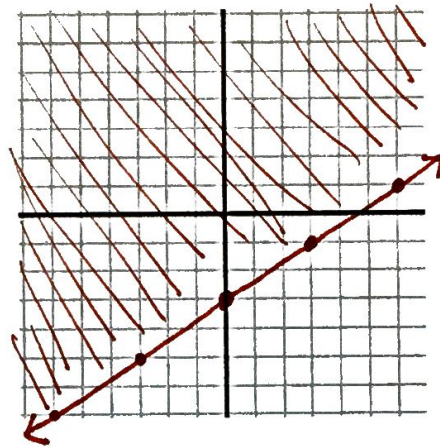
$n = d + 4$
 $n - d = 4$
 $n - d = 4$
 nickels bigger #
 dimes smaller #

Graph the linear inequality. ① y-int ② slope ③ solid/dotted ④ shade

8. $y < -x + 2$



9. $y \geq \frac{2}{3}x - 3$



10. Is (2, 2) a solution to the linear inequality $y \leq -2x + 1$?

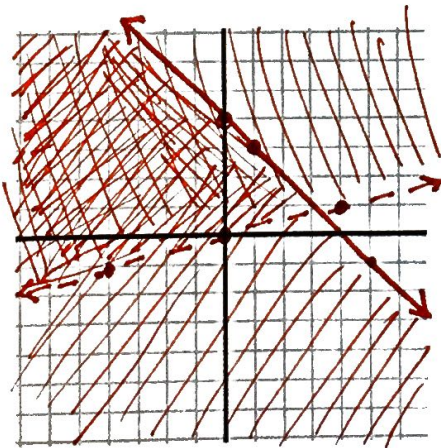
NO!

$2 \leq -2(2) + 1$
 $2 \leq -4 + 1 \rightarrow 2 \leq -3$

FALSE!

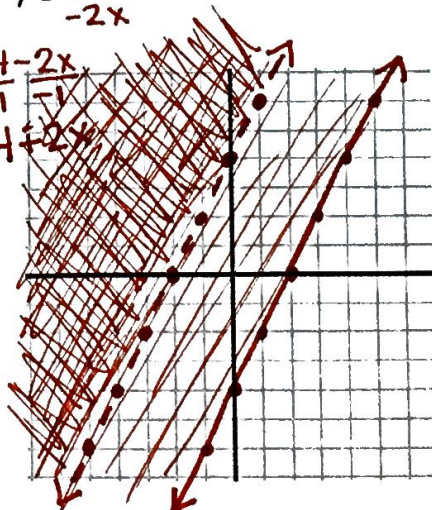
Graph the systems of linear inequalities.

11. $y > \frac{1}{4}x$
 $y \leq -x + 4$



12. $y > 2x + 4$
 $2x - y \leq 4$
 $-2x \quad -2x$

$-y \leq 4 - 2x$
 $-1 \quad -1 \quad -1$
 $y \geq -4 + 2x$



x y

13. Is (1, 19) a solution the system of inequalities?

$$\begin{aligned}y &\leq 7x - 13 \\ y &> 3x + 6\end{aligned}$$

$$19 \leq 7(1) - 13$$

$$19 \leq 7 - 13$$

$$19 \leq -6$$

↑
FALSE!

It must work for BOTH!
So... NO!

14. Suppose you buy flour and cornmeal in bulk to make flour tortillas and corn tortillas. Flour costs \$1.50/lb. Cornmeal costs \$2.50/lb. You want to spend less than \$9.50 on flour and cornmeal, and you need at least 4 lb altogether.

a. Define the variables.

F - flour (pound)

C - pound of cornmeal

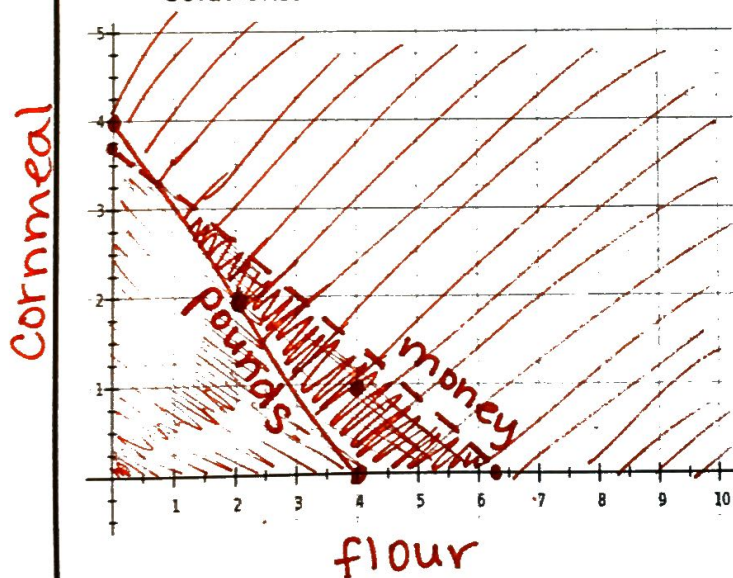
b. Write a system of two linear inequalities that describe the situation.

$$1.50f + 2.50c < 9.50$$

$$f + c \geq 4$$

↑
"at least"

c. Graph the system to show all possible solutions.



d. Write two possible solutions in context.

(4, 1)

I can buy 4 pounds of flour, and 1 pound of cornmeal.

(2, 2)

I can buy 2 pounds of flour, and 2 pounds of cornmeal.

1. Which point represents the solution of the system of linear equations?

$$y = x - 2$$

$$y = -x - 4$$

$$-x - 4 = x - 2$$

$$-2 = 2x$$

$$-1 = x$$

a. (2, 0)

b. (-3, -1)

c. (1, -1)

d. (-1, -3)

2. What is the solution to the system of equations:

$$y = 4x - 5$$

$$4x - y = 8$$

$$4x - (4x - 5) = 8$$

$$+5 = 8$$

Which method did you use to solve the system? Substitution Solution: No Solution

3. Alice's Athletic Arena requires members to pay \$20 to join, and members must pay \$1.50 for each time they come to work out. Roy's Romper Room requires members to pay \$5 to join and members must pay \$4 for each time they come to work out.

Set up two linear functions for the cost, C, or working out at each gym as a function of the number of times, n, that a person works out.

Equation 1 = $y = 20 + 1.50x$

Equation 2 = $y = 5 + 4x$

$$C = 20 + 1.50n$$

$$C = 5 + 4n$$

$$5 + 4n = 20 + 1.5n$$

$$2.5n = 15$$

$$n = 6$$

Solve the system of equations. For how many visits, n, will the cost at both gyms be the same? 6 visits

4. The difference of two numbers is 19. Their sum is 27. Find the two numbers.

$$\begin{array}{r} x - y = 19 \\ x + y = 27 \\ \hline 2x = 46 \\ x = 23 \end{array}$$

and $y = 4$

5. Solve: $y = -7x - 2$
 $7x + 3y = 10$

$$7x + 3(-7x - 2) = 10$$

$$7x - 21x - 6 = 10$$

$$-14x = 16$$

$$\frac{-14x}{-14} = \frac{16}{-14}$$

$$x = -\frac{8}{7}$$

$$y = -7\left(-\frac{8}{7}\right) - 2$$

$$y = 8 - 2$$

$$y = 6$$

$\left(-\frac{8}{7}, 6\right)$

6. Solve: $x + y = 0$
 $x = y + 4$

$$y + 4 + y = 0$$

$$2y = -4$$

$$y = -2$$

$$x = -2 + 4$$

$$x = 2$$

$(2, -2)$

7. Which inequality matches the graph?

~~A.~~ $y \leq 2x - 2$

B. $y \geq \frac{1}{2}x - 2$

C. $y \geq 2x - 2$

~~D.~~ $y \leq \frac{1}{2}x - 2$

