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Making and Selling Markers and T-Shirts
Using a Graph to Solve a Linear System

Vocabulary

Match each definition to its corresponding term.

1. location on a graph where two lines cross

2. x-coordinate of intersection of the income equation and the production cost equation

3. the amount of money a company earns

4. amount of money that remains after the production costs are subtracted from income

a. income

b. profit

c. point of intersection

d. break-even point

Problem Sets

Write the production cost equation for each situation. Let x represent the number of units and let y represent the total production cost.

1. The set-up cost for a company is $500 and the cost per unit is $4.

$y = 4x + 500$

2. The set-up cost for a company is $2000 and the cost per unit is $8.

3. A manufacturing company spends $5 per unit to make their product. There is also a one-time set-up cost of $400.

4. A manufacturing company has a unit cost of $2, plus a one-time set-up cost of $730.

5. The initial investment in equipment is $8000. Then, the manufacturing cost is $7.50 per unit.

6. The initial investment is $12,000 to rent space and purchase equipment. Then, the manufacturing cost is $13.25 per unit.

7. The production costs are \$6.50 per unit, plus an initial start-up cost of \$350.

8. The production costs are \$1.40 per unit, plus an initial start-up cost of \$225.

Write the income equation for each situation. Let *x* represent the number of units and let *y* represent the income.

9. A company sells their product for \$4 per unit.

   $y = 4x$

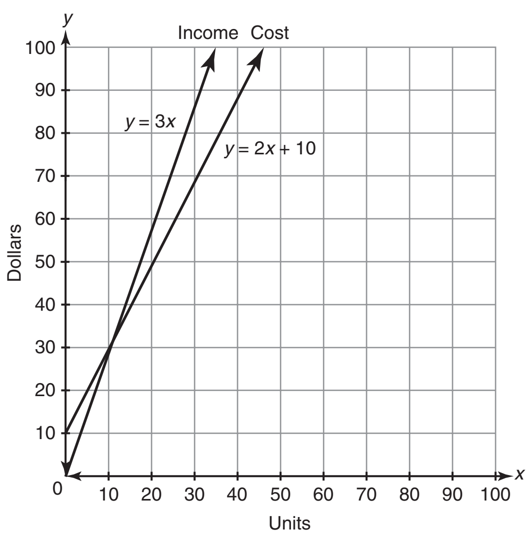
10. A company sells their product for \$8 per unit.

11. The selling price is 2 units for \$10.

12. The selling price is 10 units for \$50.

A product cost equation and income equation are shown on each graph. Estimate the break-even point. Then describe when the company will start to make a profit.

13.



break-even point: (10, 30)

The company will make a profit when they sell more than 10 units.

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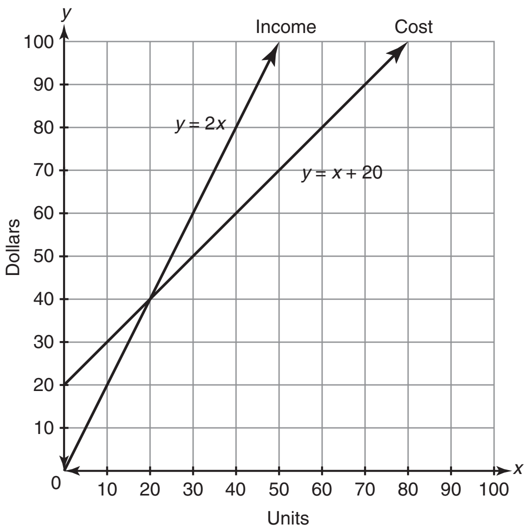
14.



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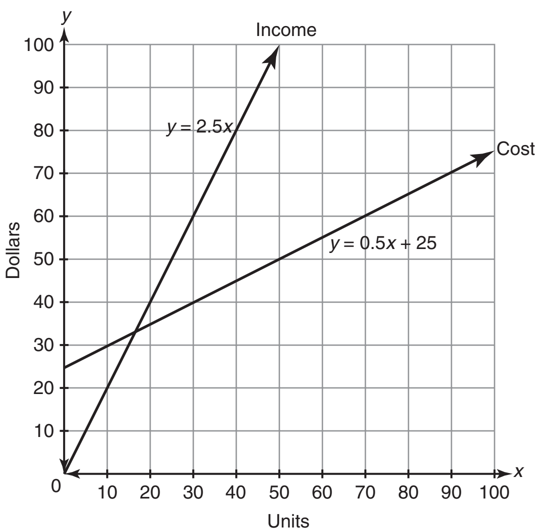

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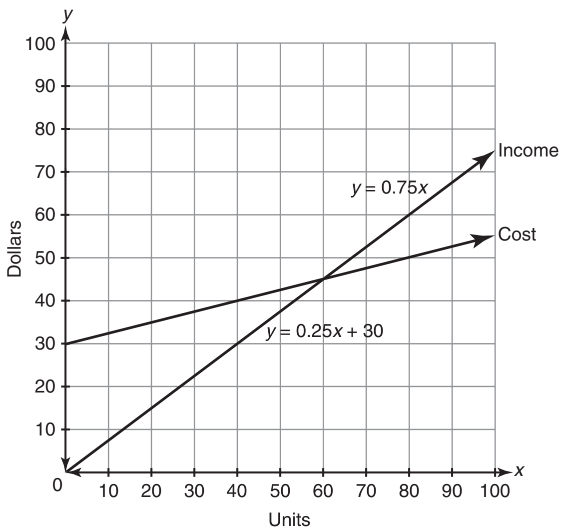
16.

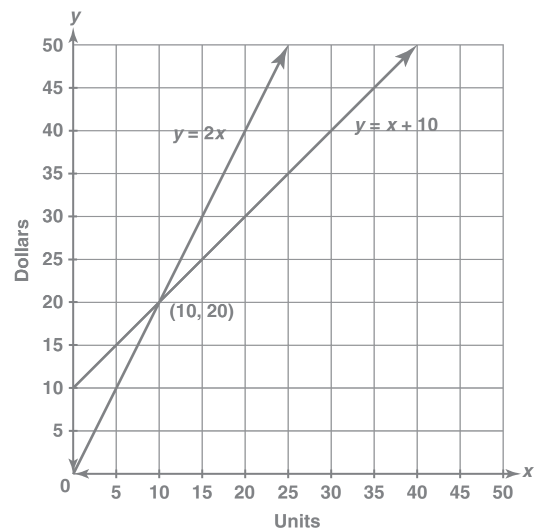


Use the given equations to complete each table. Then graph both equations on the same grid. Label the break-even point on the graph.

17. production cost equation: $y = x + 10$

income equation: $y = 2x$

Number of Units	Production Cost (dollars)	Income (dollars)
0	10	0
5	15	10
10	20	20
20	30	40
30	40	60



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18. production cost equation: $y = 2x + 30$

income equation: $y = 5x$

Number of Units	Production Cost (dollars)	Income (dollars)
0		
5		
10		
15		
20		

19. production cost equation: $y = 0.5x + 40$

income equation: $y = 2.5x$

Number of Units	Production Cost (dollars)	Income (dollars)
0		
5		
10		
20		
25		

20. production cost equation: $y = 0.25x + 25$

income equation: $y = 1.5x$

Number of Units	Production Cost (dollars)	Income (dollars)
0		
10		
20		
30		
40		

7

Name ______________________ Date ______________

Time Study
Graphs and Solutions of Linear Systems

Vocabulary

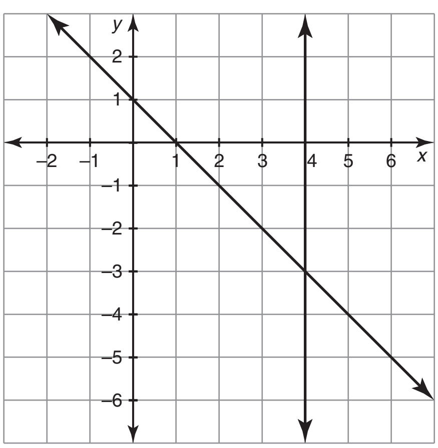
Write the term that best completes each statement.

1. Two lines in the same plane are ______________ if they do not intersect.
2. ______________ lines are two lines that intersect to form a right angle.
3. Two non-zero numbers are ______________ if their product is one.
4. The ______________ of a non-vertical line is the ratio of the vertical change to the horizontal change.
5. A(n) ______________ is two or more linear equations in the same variables.
6. A(n) ______________ of a linear system is an ordered pair (x, y) that is a solution of both equations in the system.
7. The ______________ is the location on a graph where two lines or functions intersect indicating that the values at that point are the same.
8. The solution of a(n) ______________ can be a single point, no points at all, or an infinite number of points.

Problem Set

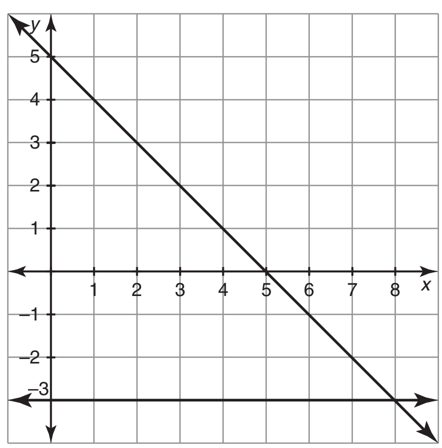
Write the solution of each system of equation as an ordered pair.

1.



(4, −3)

2.



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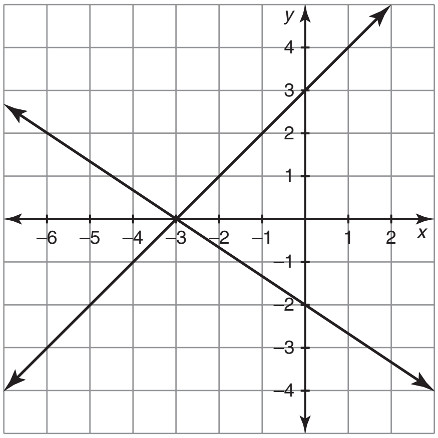
3.



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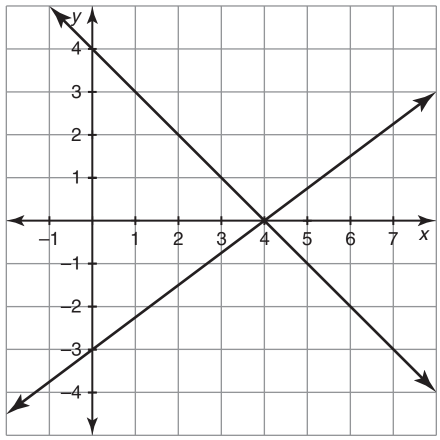
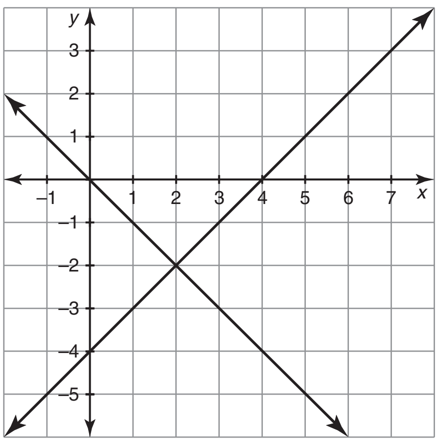


5.



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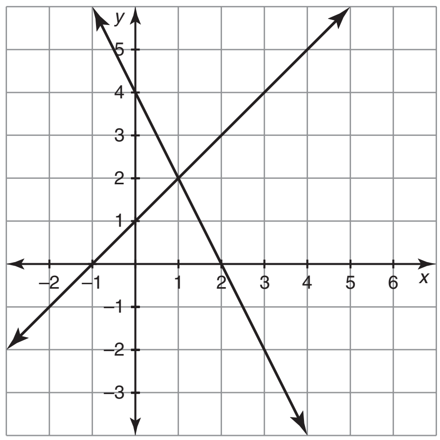
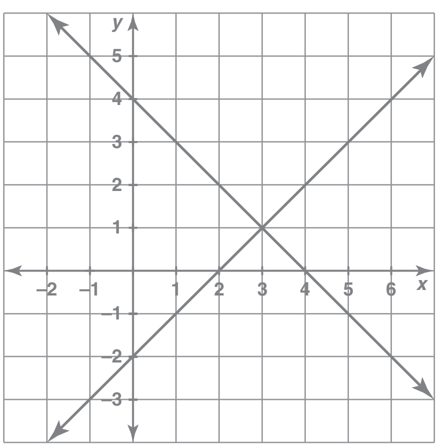


Graph each system and determine how many solutions each system has. If there is only one solution, identify it.

7. $x + y = 4$

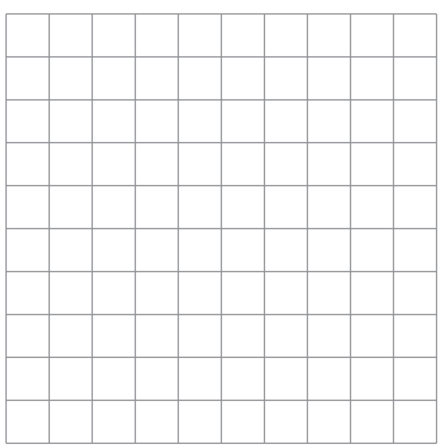
$x - y = 2$



One solution, (3, 1)

8. $y = 2 - x$

$x = 2 + y$



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9. $x + y = 0$

$x + 2y = 2$

10. $y = 2 - x$

$y = x$

11. $2x + y = 3$

$x + 2y = 0$

12. $y = 2x$

$y = 6 - x$

13. $y = x - 1$

$x = y - 1$

14. $y = 3 - x$

$x + y = 5$

15. $y = x - 2$

$2x - 2y = 4$

16. $y = 1 - x$

$3x + 3y = 3$

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Without graphing, determine whether the graphs of each pair of equations are parallel, perpendicular, or neither.

17. $y - 3x = 1$

$-2y = 3x + 2$

neither

18. $y + 4 = 3x$

$4x - y = -7$

19. $3x - y = -5$

$y - 3x = -2$

20. $x + 4 = y$

$y - x = -3$

21. $2y - x = 2$

$y + 2x = 4$

22. $5y = 4x + 10$

$4y = -5x + 4$

7

Name ______________________ Date ______________

Hiking Trip
Using Substitution to Solve a Linear System

Vocabulary

Define each term in your own words.

1. slope-intercept form of a linear equation

2. standard form of a linear equation

3. solution of a linear system

4. substitution method

Problem Set

For each system, the value of one variable is given. Determine the value of the other variable to complete the solution.

1. $x + y = 3$

   $x - y = 1$

   solution: (2, ___)

   $2 + y = 3$

   $y = 3 - 2$

   $y = 1$

   solution: (2, 1)

2. $x - y = 2$

   $x + y = 6$

   solution: (4, ___)

3. $8x - y = 29$

$2x + y = 11$

solution: (___, 3)

4. $4x - y = 10$

$3x + 5y = 19$

solution: (___, 2)

5. $x = \frac{1}{2}y + 1$

$x - 2y = -2$

solution: (___, 2)

6. $x = \frac{1}{3}y + 2$

$-2x - y = 1$

solution: (___, -3)

Solve each system by using the substitution method. Check your answer by graphing.

7. $x + y = 4$

$y = 2x + 1$

$x + y = 4$

$x + (2x + 1) = 4$

$3x + 1 = 4$

$3x = 4 - 1$

$3x = 3$

$x = 1$

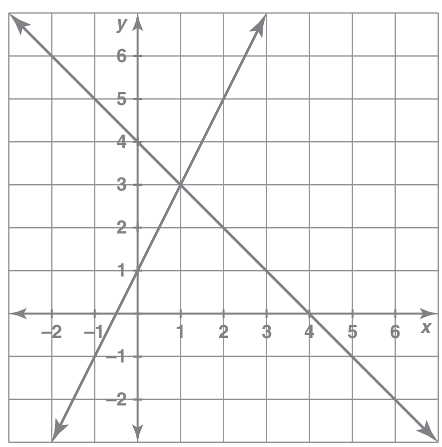
$x + y = 4$

$1 + y = 4$

$y = 4 - 1$

$y = 3$

The solution is (1, 3).



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8. $x + y = 10$

$y = x + 8$

$x + y = 10$

9. $y = x + 1$

$2x + y = 4$

10. $y = x - 6$

$x + y = -2$

11. $x + y = -4$

$x - y = 2$

12. $x - y = 6$

$x + y = -2$

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Solve each system by using the substitution method. Check your answer algebraically.

13. $x + 2y = 2$

$x - y = -4$

$x - y = -4$

$x = -4 + y$

$x + 2y = 2$

$(-4 + y) + 2y = 2$

$3y - 4 = 2$ $\quad\quad$ $x - y = -4$

$3y = 2 + 4$ $\quad\quad$ $x - 2 = -4$

$3y = 6$ $\quad\quad$ $x = -4 + 2$

$y = 2$ $\quad\quad$ $x = -2$

The solution is $(-2, 2)$.

Check:

$-2 + 2(2) \stackrel{?}{=} 2$ $\quad\quad$ $-2 - 2 \stackrel{?}{=} -4$

$-2 + 4 \stackrel{?}{=} 2$ $\quad\quad$ $-4 = -4$

$2 = 2$

14. $x + 2y = 7$

$x - y = 4$

7

15. $2x + 3y = 12$

$x - 4y = -5$

16. $3x + y = -6$

$2x = 1 + y$

7

Skills Practice

Name ______________________________ Date ____________________

Basketball Tournament
Using Linear Combinations to Solve a Linear System

Vocabulary

Explain how each pair of terms is related by identifying similarities and differences.

1. standard form of a linear equation and slope-intercept form of a linear equation

2. elimination and linear combinations

3. substitution method and linear combinations method

Problem Set

Solve each linear system by adding the equations.

1. $x + y = 10$

   $x - y = 8$

   $$\begin{aligned} x + y &= 10 \\ \underline{+ (x - y} &\underline{= 8)} \\ 2x &= 18 \\ x &= 9 \\ x + y &= 10 \\ 9 + y &= 10 \\ y &= 10 - 9 \\ y &= 1 \end{aligned}$$

   The solution is (9, 1).

2. $x - y = 7$

   $x + y = 3$

7

3. $x + y = 8$

$-x + 2y = 7$

4. $x + y = 6$

$-x + 3y = -2$

5. $3x - y = 9$

$2x + y = 6$

6. $4x - y = 1$

$3x + y = 13$

7

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Solve each linear system by subtracting the equations.

7. $-x - y = 8$

$2x - y = -1$

$$\begin{array}{r} -x - y = 8 \\ \underline{-\ (2x - y = -1)} \end{array} \qquad \begin{array}{r} -x - y = 8 \\ \underline{+\ (-2x + y = 1)} \\ -3x = 9 \\ x = -3 \end{array}$$

$$\begin{aligned} -x - y &= 8 \\ -(-3) - y &= 8 \\ 3 - y &= 8 \\ -y &= 8 - 3 \\ -y &= 5 \\ y &= -5 \end{aligned}$$

The solution is (−3, −5).

8. $x + y = -7$

$3x + y = -9$

9. $x + 3y = 19$

$x - y = -1$

10. $3x - 3y = -15$

$3x + 3y = 3$

7

11. $2x + 3y = 8$

$x + 3y = 7$

12. $5x + 3y = 17$

$5x - 2y = -3$

Solve each linear system by using linear combinations. The first step is done for you.

13. $3x - y = 8$

$x + 2y = 5$

$2(3x - y = 8) \qquad 6x - 2y = 16$

$\underline{x + 2y = 5} \qquad \underline{x + 2y = 5}$

$7x = 21$

$x = 3$

$x + 2y = 5$

$3 + 2y = 5$

$2y = 5 - 3$

$2y = 2$

$y = 1$

The solution is (3, 1).

14. $x + y = 5$

$5x - 3y = 17$

$3(x + y = 5) \qquad 3x + 3y = 15$

$\underline{5x - 3y = 17} \qquad \underline{5x - 3y = 17}$

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15. $2x - 3y = -1$

$3x + 4y = 24$

$4(2x - 3y = -1) \quad 8x - 12y = -4$

$\underline{3(3x + 4y = 24)} \quad \underline{9x + 12y = 72}$

16. $7x + 5y = 2$

$8x - 9y = 17$

$9(7x + 5y = 2) \quad 63x + 45y = 18$

$\underline{5(8x - 9y = 17)} \quad \underline{40x - 45y = 85}$

17. $2x + 3y = -1$

$3x + 5y = -2$

$3(2x + 3y = -1) \quad 6x + 9y = -3$

$\underline{-2(3x + 5y = -2)} \quad \underline{-6x - 10y = 4}$

18. $3x - 4y = 16$

$5x + 6y = 14$

$3(3x - 4y = 16) \quad 9x - 12y = 48$

$\underline{2(5x + 6y = 14)} \quad \underline{10x + 12y = 28}$

Solve each linear system by using linear combinations.

19. $x - y = 7$

$4x - 5y = 25$

$$\begin{array}{rr} -4(x - y = 7) & -4x + 4y = -28 \\ \underline{4x - 5y = 25} & \underline{4x - 5y = 25} \\ & -y = -3 \\ & y = 3 \\ & x - y = 7 \\ & x - 3 = 7 \\ & x = 7 + 3 \\ & x = 10 \end{array}$$

The solution is (10, 3).

20. $x - 3y = 0$

$5x - y = -14$

21. $5x - 2y = 0$

$2x - 3y = -11$

22. $3x - 2y = 10$

$5x + 3y = 4$

7

Name ____________________________________ Date ____________________

Finding the Better Paying Job
Using the Best Method to Solve a Linear System, Part 1

Vocabulary

Define each term in your own words.

1. inequality

2. linear equation in two variables

3. linear system

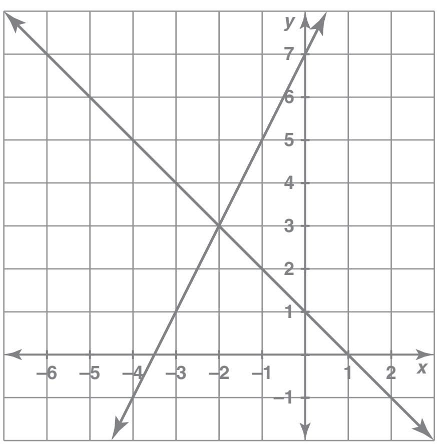
4. constant function

Problem Set

Solve each system by graphing.

1. $x + y = 1$

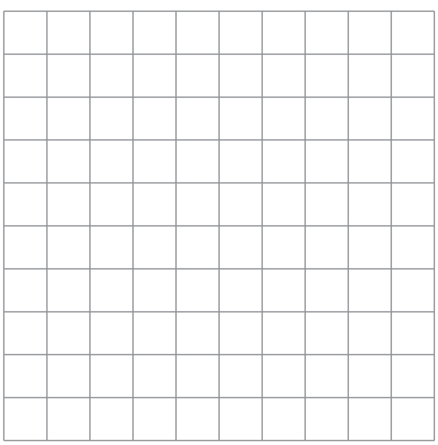
$2x - y = -7$



The solution is (−2, 3).

2. $y - x = 1$

$y + x = 3$



3. $x + y = 4$

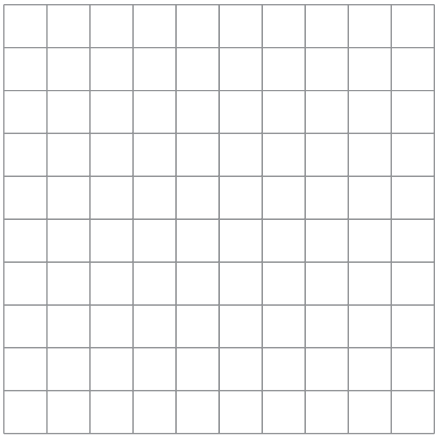
$x - y = 2$

4. $3x + y = 5$

$x - 2y = 4$

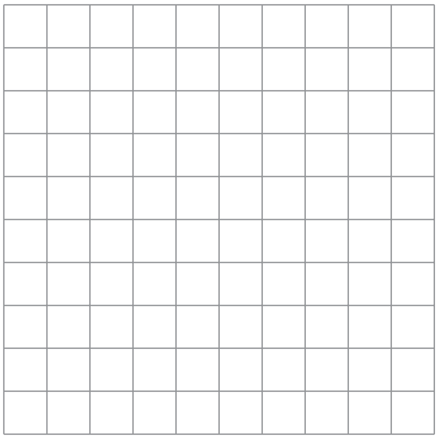
5. $4x - y = 9$

$x - 3y = 16$



6. $x = y - 1$

$2x = 3y$



Name ____________________ Date ____________________

Solve each system by using substitution.

7. $3x + 5y = 3$

$x = 8 - 4y$

$$\begin{aligned} 3x + 5y &= 3 \\ 3(8 - 4y) + 5y &= 3 \\ 24 - 12y + 5y &= 3 \\ -7y &= 3 - 24 \\ -7y &= -21 \\ y &= 3 \end{aligned} \qquad \begin{aligned} x &= 8 - 4y \\ x &= 8 - 4(3) \\ x &= 8 - 12 \\ x &= -4 \end{aligned}$$

The solution is (−4, 3).

8. $2x - 3y = 13$

$y = 5 - 4x$

9. $5x + y = 8$

$3x - 4y = 14$

$y = 8 - 5x$

7

10. $4x + y = 1$

$x - 2y = 16$

Solve each system by using linear combinations.

11. $x + 3y = 7$

$-x + 4y = 7$

$$\begin{aligned} x + 3y &= 7 \\ \underline{-x + 4y} &\underline{= 7} \\ 7y &= 14 \\ y &= 2 \\ x + 3y &= 7 \\ x + 3(2) &= 7 \\ x + 6 &= 7 \\ x &= 7 - 6 \\ x &= 1 \end{aligned}$$

The solution is (1, 2).

12. $x + y = 9$

$2x - y = -3$

7

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13. $4x - 3y = -1$

$x - y = -1$

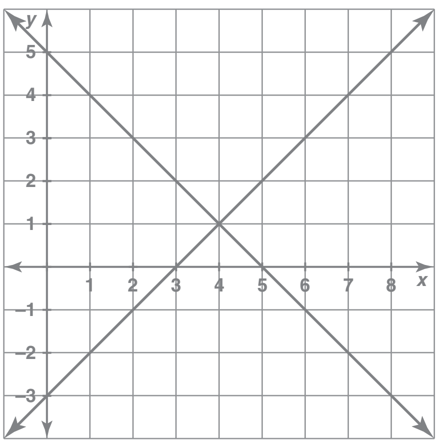
14. $5x + 3y = -9$

$2x - 5y = -16$

Use any method to solve each system.

15. $x - y = 3$

$x + y = 5$



The solution is (4, 1).

16. $2x - y = 4$

$5x - y = 13$

7

17. $9x - 2y = 3$

$3x - 6 = y$

18. $3x + y = 5$

$y = 2x$

19. $x + y = 3$

$3x - 5y = 17$

20. $5x - 3y = 24$

$3x + 5y = 28$

7

Name ______________________________ Date ____________________

World Oil: Supply and Demand
Using the Best Method to Solve a Linear System, Part 2

Vocabulary

Write an example for each term.

1. a linear system with no solutions

2. a linear system represented by perpendicular lines

3. a linear system with exactly one solution

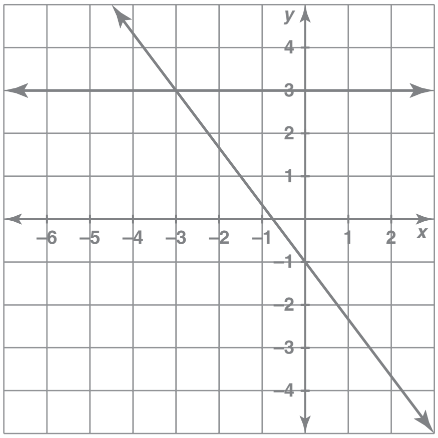
4. a linear system with infinitely many solutions

Problem Set

Solve each system by graphing.

1. $4x + 3y = -3$

$y = 3$



The solution is (−3, 3).

2. $2x + y = 1$

$x = 2$

3. $y = 6 - x$

$y = 6x - 8$

4. $x + y = 3$

$x - 2y = 0$

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Solve each system by using substitution.

5. $y = 2x$

$3x + y = 5$

$3x + y = 5$

$3x + 2x = 5 \qquad y = 2x$

$5x = 5 \qquad y = 2(1)$

$x = 1 \qquad y = 2$

The solution is (1, 2).

6. $3x + 2y = 5$

$x = 2 - y$

7. $x + 3y = 2$

$2x + 3y = 7$

8. $3y - x = 6$

$2x + 6y = 0$

Solve each system by using linear combinations.

9. $6x + 5y = -8$

$2x - 5y = -16$

$$\begin{aligned} 6x + 5y &= -8 \\ \underline{2x - 5y} &\underline{= -16} \\ 8x &= -24 \\ x &= -3 \\ 2x - 5y &= -16 \\ 2(-3) - 5y &= -16 \\ -6 - 5y &= -16 \\ -5y &= -16 + 6 \\ -5y &= -10 \\ y &= 2 \end{aligned}$$

The solution is $(-3, 2)$.

10. $5x + 3y = 8$

$-7x - 3y = -10$

11. $x + y = 7$

$x - y = 9$

12. $2x + 3y = -1$

$3x + 5y = -2$

7

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Tell whether you would use substitution or linear combinations to solve each system. Explain your answer.

13. $y = 3 - x$
$x + y = 5$

Substitution would be the better method, because the first equation shows an expression that is equal to *y*.

14. $2x + y = 7$
$2x - y = 13$

15. $7x - y = 18$
$-5x + y = -14$

16. $y = x - 2$
$2x - 2y = 4$

17. $y = 2 - x$
$x = 2 + y$

18. $x = y - 1$
$y = x - 1$

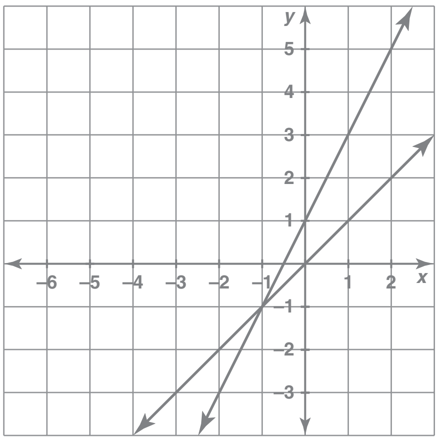
19. $x + 3y = -26$
$x - 3y = 22$

20. $7x + 11y = -25$
$x - 11y = 9$

Use any method to solve each system.

21. $2x - y = -1$

$x - y = 0$



The solution is $(-1, -1)$.

22. $x + y = 4$

$x - y = 2$

23. $x + 5y = 2$

$x = -3y$

24. $2x - 2 = y$

$3x - 2y = 3$

25. $x - y = -5$

$x + y = 25$

26. $2x + 3y = 0$

$5x - 2y = -19$

7

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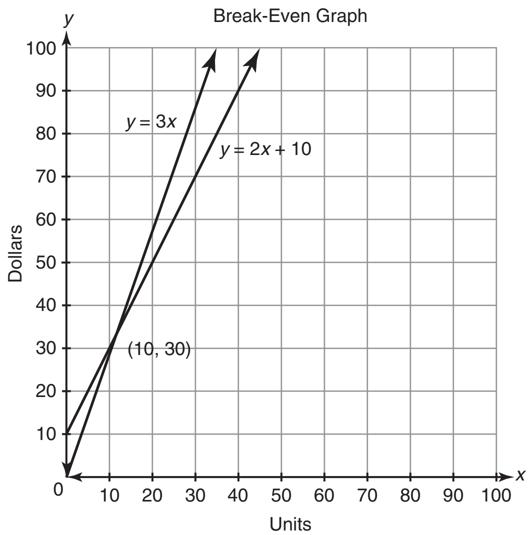
Picking the Better Option
Solving Linear Systems

Vocabulary

The graph shows that the production cost is \$10 plus \$2 per unit. The company sells their product for \$3 each. Use the graph to answer the questions.



1. What is the production cost equation?

2. What is the income equation?

3. What is the break-even point?

4. What happens if the company sells fewer than 10 units?

5. What happens when the company sells more than 10 units?

6. What does the ordered pair (10, 30) show?

Problem Set

Each situation describes two different production plans. Write a system of linear equations to represent the two plans.

1. Plan 1: The set-up cost is $750 and the cost per unit is $3.

   Plan 2: The set-up cost is $200 and the cost per unit is $5.

   $y = 3x + 750$

   $y = 5x + 200$

2. Plan 1: The production costs are $1300 for an initial start-up cost, plus $1.25 per unit.

   Plan 2: The production costs are $850 for an initial start-up cost, plus $2.15 per unit.

3. Plan 1: The start-up costs are $8500 for equipment and a prototype. The manufacturing cost per unit will be $125.

   Plan 2: The start-up costs are $7000 for equipment and a prototype. The manufacturing cost per unit will be $210.

4. Plan 1: The initial investment in warehouse space and fixtures is $12,400. The production cost is $318 per unit.

   Plan 2: The initial investment in warehouse space and fixtures is $15,100. The production cost is $250 per unit.

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Write a system of linear equations to model each situation. Use the first equation to represent the production costs. Use the second equation to represent the income.

5. The set-up cost is \$200 and the cost per unit is \$5. Each unit of the product will sell for \$12.

$y = 5x + 200$

$y = 12x$

6. The production costs are \$3.50 per unit, plus an initial start-up cost of \$725. Each unit of the product will sell for \$8.25.

7. The start-up costs are \$35,000 for equipment and a prototype. The manufacturing cost per unit will be \$350. Each unit will sell for \$600.

8. The initial investment in warehouse space and fixtures is \$50,000. The production cost will be \$425 per unit. Each item will sell for \$720.

Each system of equations compares two production plans for a company. Solve the system and use your answer to determine which is the better plan.

9. Plan 1: $y = 3x + 750$

Plan 2: $y = 5x + 200$

$3x + 750 = 5x + 200$

$3x - 5x = 200 - 750$

$-2x = -550$

$x = 275$

Plan 1 is better if the company plans to sell more than 275 units.

Plan 2 is better if the company plans to sell fewer than 275 units.

10. Plan 1: $y = 4x + 75$

Plan 2: $y = x + 180$

11. Plan 1: $y = 1.5x + 330$

Plan 2: $y = 2.25x + 180$

12. Plan 1: $y = 2.15x + 850$

Plan 2: $y = 1.25x + 1300$

13. Plan 1: $y = 210x + 7000$

Plan 2: $y = 125x + 8500$

14. Plan 1: $y = 250x + 15{,}100$

Plan 2: $y = 318x + 12{,}400$

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Each system includes a production cost equation and an income equation. Solve the system to determine the break-even point.

15. income equation: $y = 12x$

production cost equation: $y = 5x + 200$

$12x = 5x + 200$

$12x - 5x = 200$

$7x = 200$

$x = 28.57$

The break-even point is 29 units.

16. income equation: $y = 80x$

production cost equation: $y = 65x + 350$

17. income equation: $y = 8.25x$

production cost equation: $y = 3.5x + 725$

18. income equation: $y = 2.75x$

production cost equation: $y = 0.85x + 1400$

19. income equation: $y = 180x$

production cost equation: $y = 105x + 9500$

20. income equation: $y = 214x$

production cost equation: $y = 135x + 7200$

21. income equation: $y = 700x$

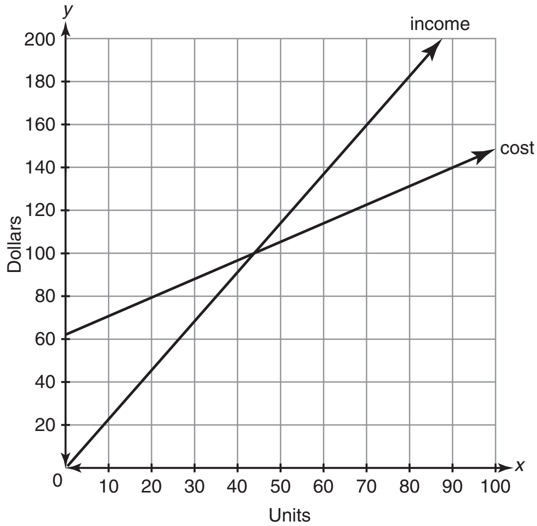
production cost
equation: $y = 370x + 35{,}000$

22. income equation: $y = 720x$

production cost
equation: $y = 425x + 50{,}000$

Each graph shows an income equation and a production cost equation. Use the graph to estimate the break-even point.

23.



Estimates will vary. Actual value is 45 units.

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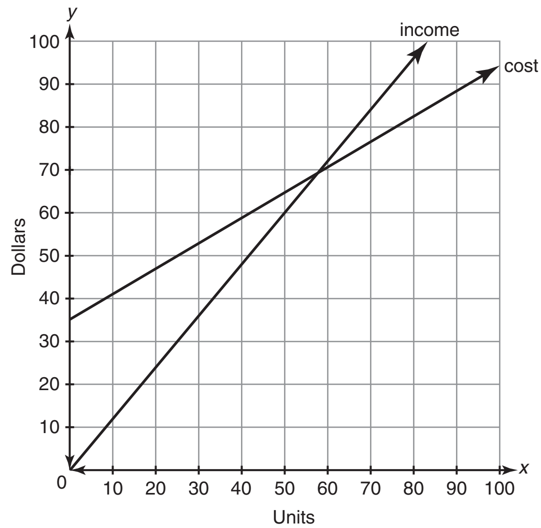

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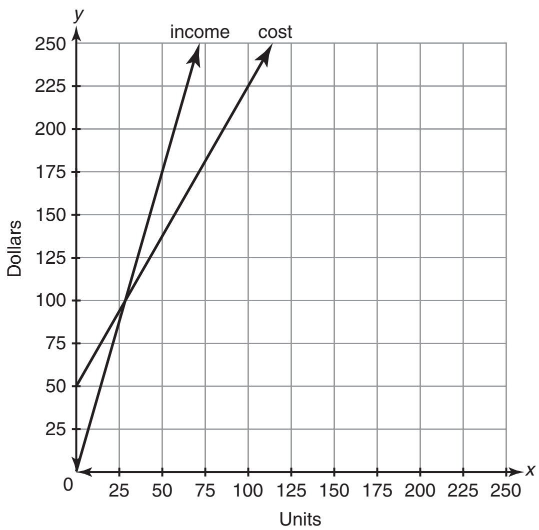

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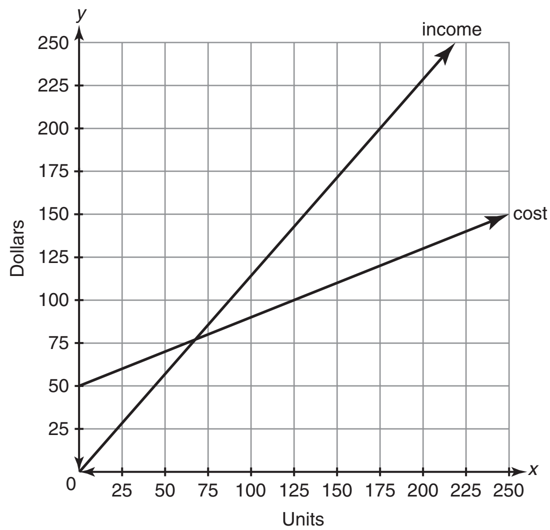

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Video Arcade
Writing and Graphing an Inequality in Two Variables

Vocabulary

Match each definition to its corresponding term.

1. graph of a linear inequality in two variables — **a.** solution

2. one of the symbols for less than ($<$), greater than ($>$), less than or equal to ($\leq$), or greater than or equal to ($\geq$) — **b.** coordinate plane

3. any inequality that can be written in one of these forms: $ax + by > c$, $ax + by < c$, $ax + by \geq c$, or $ax + by \leq c$ — **c.** half-plane

4. a number or ordered pair of numbers that makes an equation true — **d.** linear equation

5. a plane formed by the intersection of a vertical real number line and a horizontal real number line — **e.** inequality symbol

6. an equation in which each of the variables is raised to the first power and each variable appears, at most, once — **f.** linear inequality in two variables

Problem Set

Write a linear inequality in two variables to represent each problem situation. Define the variables used in the inequality.

1. Fran spent less than $5 for 3 bananas and 8 oranges.

   $3x + 8y < 5$

   ***x* represents the price per banana**

   ***y* represents the price per orange**

2. Notebooks cost \$3 and packages of markers cost \$5. You have at most \$40 to spend on notebooks and markers.

3. Tickets to a school carnival are \$5 each on weekdays and \$8 each on weekends. The school raised more than \$400 selling carnival tickets.

4. In Jamie's basketball game, field goals are 2 points each and free throws are 1 point each. Jamie scored more than 20 points.

5. Adult tickets to a school play are \$12 each. Children's tickets are \$8 each. The school wants to raise at least \$800 by selling the tickets.

6. In the cafeteria of the office building where Ed works, it costs \$2 for a cup of coffee and \$6 for the daily lunch special. His budget for the cafeteria for next month is \$120 for both coffee and lunches.

7. Mandy has a jar of pennies and nickels. The total value of the coins in the jar is at least \$10.

8. Jake has a pocketful of dimes and quarters. The total value of the coins in his pocket is less than \$5.

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Solve each inequality for *y*.

9. $x + y > 5$

$y > 5 - x$

10. $y + 2x > 1$

11. $y - x \leq 3$

12. $2x + y \leq -5$

13. $x - y > 5$

14. $2x - y > 8$

Determine whether the point (0, 0) is a solution of each inequality.

15. $x + y > 0$

$x + y > 0$

$0 + 0 > 0$

$0 > 0$ false

No, (0, 0) is not a solution.

16. $2x + y > 2$

17. $3y \geq x$

18. $y - 2x \leq 1$

19. $4x + y < -4$

20. $3x + 5y \leq 0$

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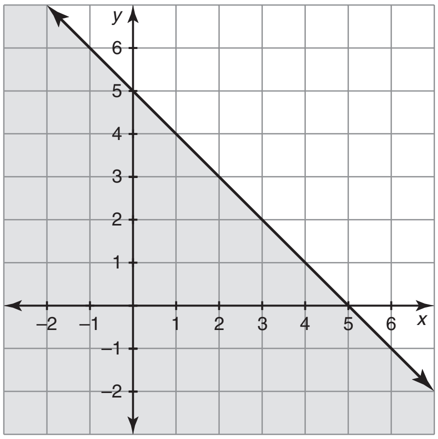
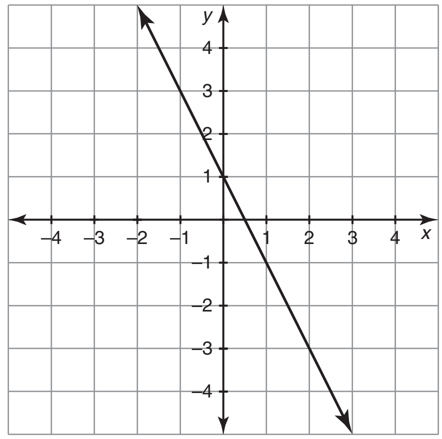
Complete the graph of each inequality. The line has been drawn for you.

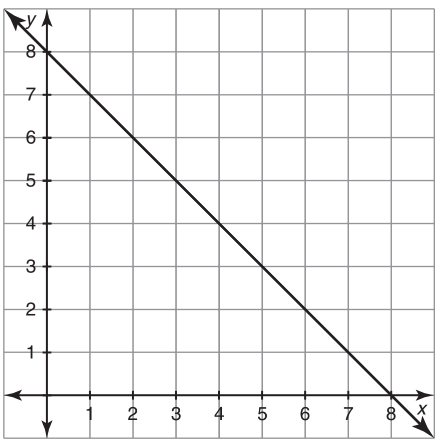
21. $y \leq 5 - x$



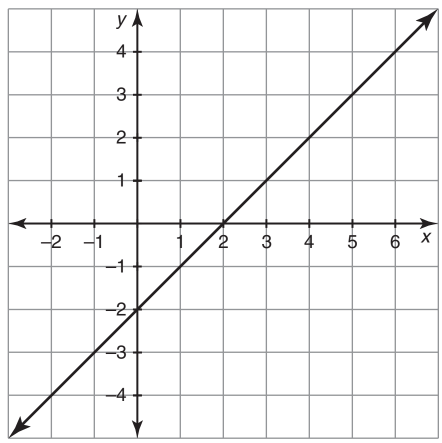
22. $y \geq -2x + 1$



23. $y + x \geq 8$

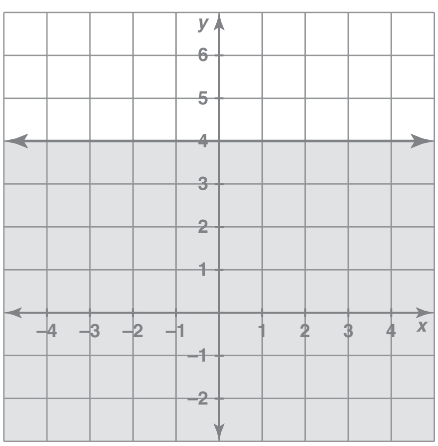


24. $y - x \leq -2$

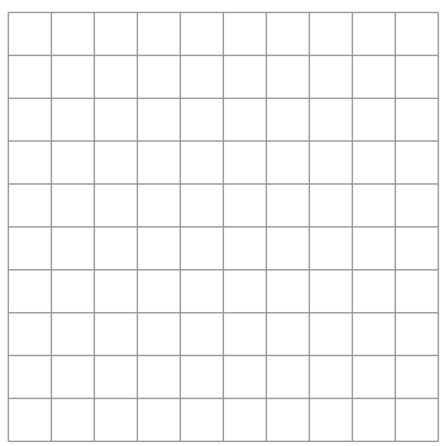


Graph each inequality.

25. $y \leq 4$



26. $x > -2$



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27. $y > x + 1$

28. $y \leq x - 4$

29. $2x - 3y \leq 9$

30. $7x - 5y > -15$

31. $3y - 2x < -9$

32. $8y + 3x \leq 16$

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Making a Mosaic
Solving Systems of Linear Inequalities

Vocabulary

Explain how each pair of terms is related by identifying similarities and differences.

1. linear equation
   linear inequality

2. solution set of a linear equation
   solution set of a linear inequality

3. graph of an inequality that uses $>$ or $<$
   graph of an inequality that uses $\geq$ or $\leq$

4. system of linear equations
   system of linear inequalities

Problem Set

Write a system of inequalities to model each situation.

1. Conrad is less than twice the age of Hernandez. The sum of Hernandez and Conrad's ages is at least 30 years. Let h represent Hernandez's age and let c represent Conrad's age.

$c < 2h$

$c + h \geq 30$

2. Gina is taller than Brenda. The difference in their heights is less than 8 inches. Let g represent Gina's height and let b represent Brenda's height.

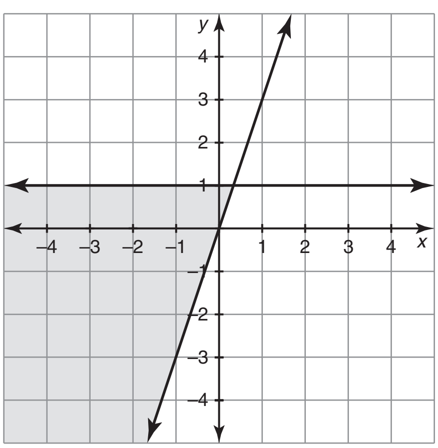
3. To make guacamole, Anita has \$15. Limes cost \$1 and avocados cost \$2. She needs to buy more than 3 avocados. Let l represent the number of limes and let a represent the number of avocados that Anita buys.

4. A store sells MP3 players for \$45 and DVDs for \$12. They need to make more than \$5000 in sales per week. There are more DVDs sold than MP3 players. Let m represent the number of MP3 players sold and let d represent the number of DVDs sold.

Complete the graph of each system of inequalities.

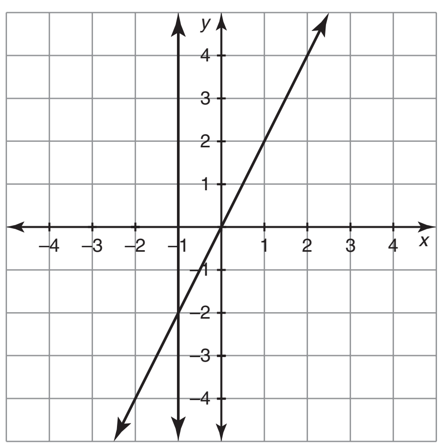
5. $y \geq 3x$

$y \leq 1$



6. $x \geq -1$

$y \leq 2x$



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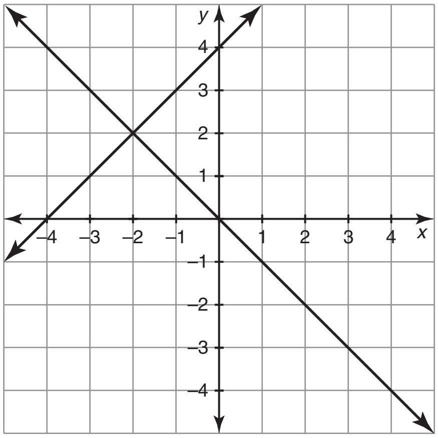
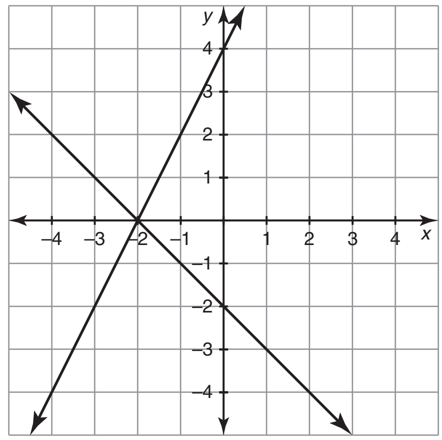
7. $y \le x + 4$

$y \le -x$



8. $y \ge 2x + 4$

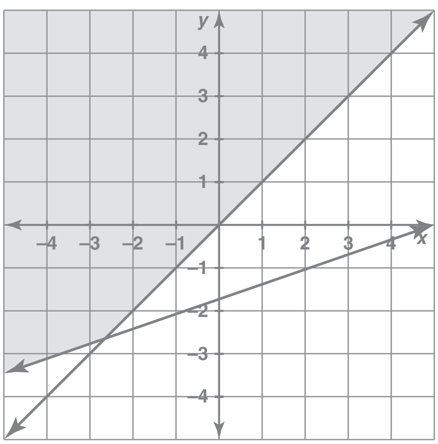
$y \le -x - 2$



Graph each system of inequalities.

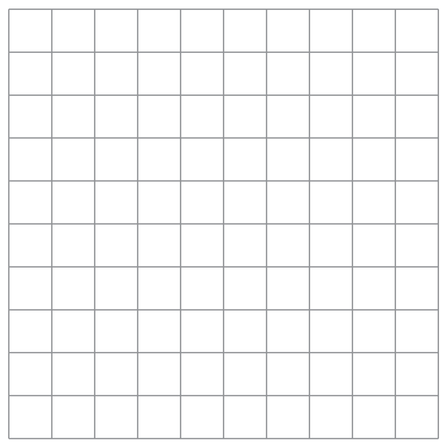
9. $y \ge x$

$x - 3y \le 5$



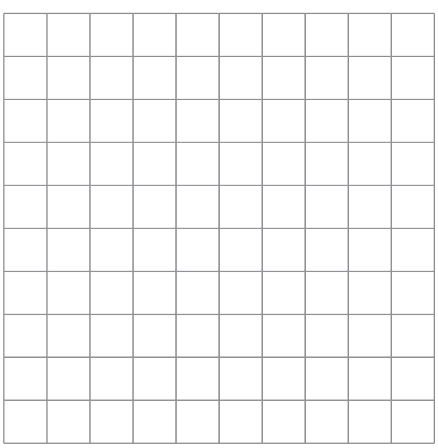
10. $y \le 2x + 5$

$y \ge x + 2$



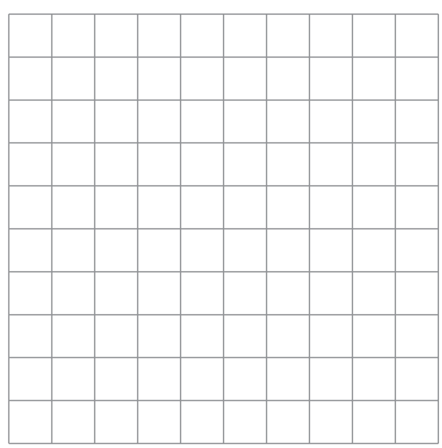
11. $y \ge 4x - 1$

$y \le -2x + 5$



12. $x - 2y \ge 6$

$x + 2y \le 0$



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Determine whether the ordered pair is a solution of the given system of linear inequalities.

13. (3, 1);

$x + 2y > 4$

$2x - y > -3$

$(3) + 2(1) = 3 + 2 = 5$

$5 > 4$

$2(3) - (1) = 6 - 1 = 5$

$5 > -3$

Yes, the ordered pair (3, 1) is a solution.

14. (2, 4);

$3x + y < 21$

$-2x + 2y > -5$

15. (−2, 3);

$2x + 5y < 5$

$-3x - 2y \geq -1$

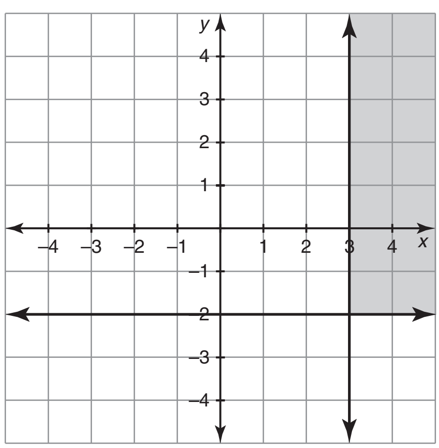
16. (1, −4);

$3x - 2y \geq 11$

$-6x - 4y < 9$

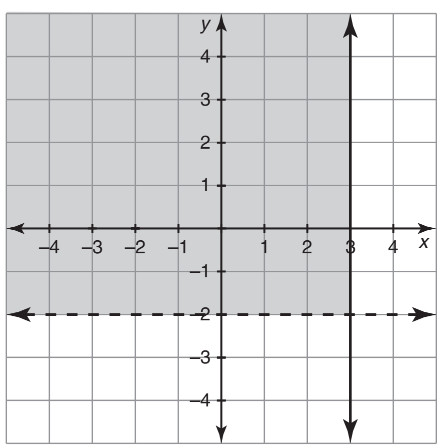
Determine whether each ordered pair is a solution of the system of linear inequalities shown in the graph.

17. (5, 2)



Yes, (5, 2) is a solution. It lies in the shaded part of the graph.

18. (0, 0)



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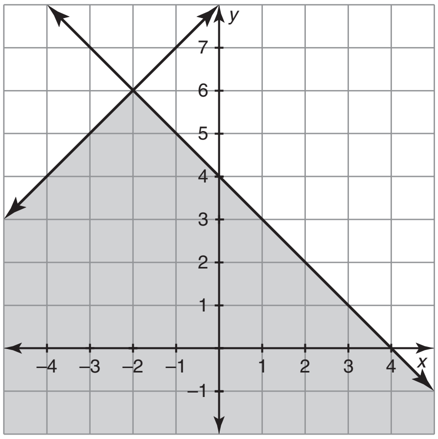
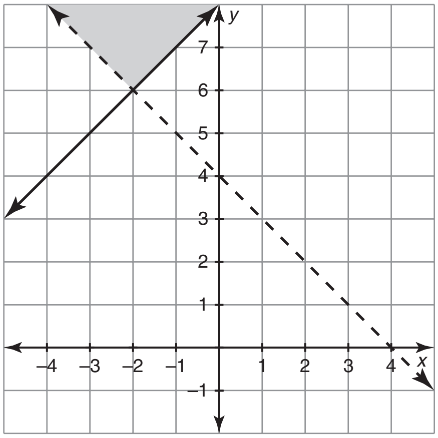
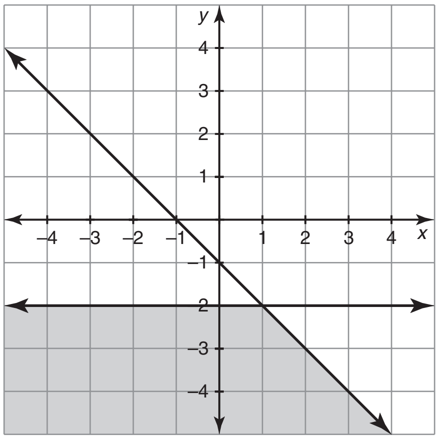
19. (−2, 9)



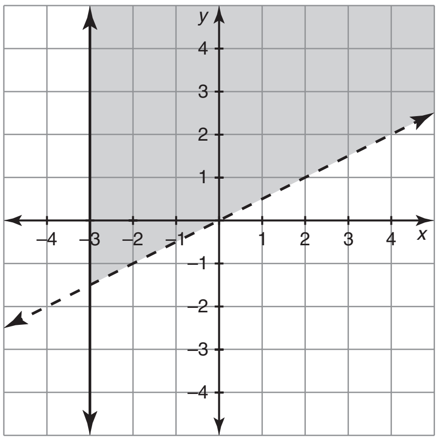
20. (−4, 1)



21. (–2, –2)



22. (2, 1)



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