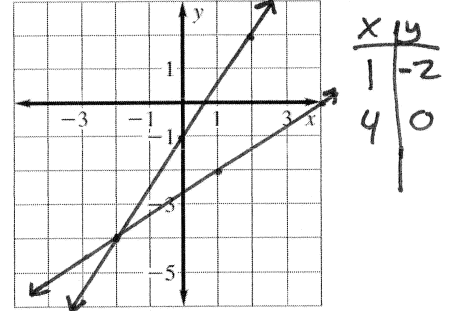
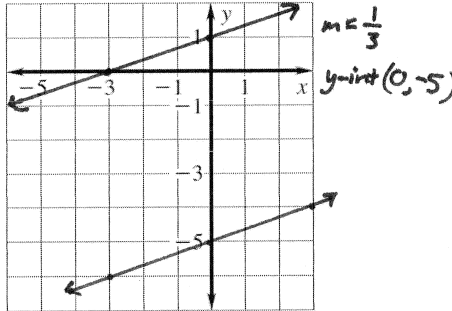
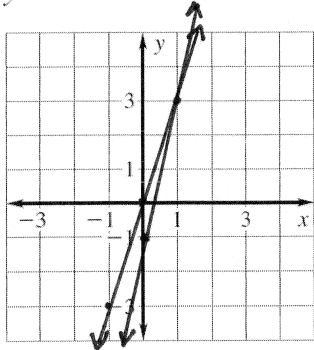


Review Lessons 3.1 & 3.2 Worksheet

Name: Key $m = \frac{3}{2}$, $y\text{-int } (0, -1)$

Solve the linear system by graphing (show me how you graphed). Remember, you must check your solution algebraically. Then classify the system as *consistent and independent*, *consistent and dependent*, or *inconsistent*.

- 1.) $y = 3x$ $\leftarrow m=3, y\text{-int: } (0,0)$ 2.) $-2x + 6y = 6$ $\leftarrow x\text{-int } (-3,0)$ 3.) $-9x + 6y = -6$ $\rightarrow y = \frac{3}{2}x - 1$
 $y = 4x - 1$ $\leftarrow m=4, y\text{-int: } (0,-1)$ $3y + 15 = x$ $\rightarrow y = \frac{1}{3}x - 5$ $2x - 3y = 8$ $\rightarrow y = \frac{2}{3}x - \frac{8}{3}$



check (1, 3)

$3 = 3(1)$ $3 = 4(1) - 1$
 $3 = 3 \checkmark$ $3 = 4 - 1$
 $3 = 3 \checkmark$

check (-2, -4)

$-9(-2) + 6(-4) = -6$ $2(-2) - 3(-4) = 8$
 $18 - 24 = -6$ $-4 + 12 = 8$
 $-6 = -6 \checkmark$ $8 = 8 \checkmark$

solution: (1, 3)

solution: NO SOLUTION

solution: (-2, -4)

classify: consistent, independent

classify: inconsistent

classify: consistent, independent

4.) A business rents in-line skates for \$15 and bicycles for \$30. During one day, the business has a total of 25 rentals and collects \$450 for the rentals. Find the number of pairs of skates rented and the number of bicycles rented.

a.) Write a linear system that represents the situation. Let x be the number of pairs of skates rented, and let y be the number of bicycles rented.

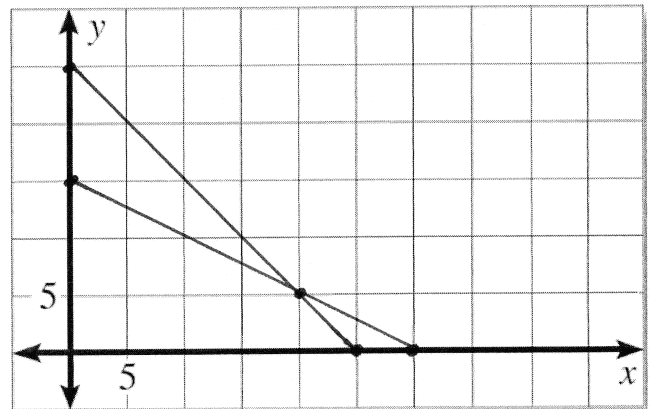
x : # of skates rented
 y : # of bikes rented

$$15x + 30y = 450$$

$$x + y = 25$$

b.) Graph both equations to find your solution. Show what you used to graph. Notice the scale.

$x\text{-int: } (30, 0)$ $x\text{-int } (25, 0)$
 $y\text{-int: } (0, 15)$ $y\text{-int } (0, 25)$



c.) How many in-line skates and bikes were rented on this particular day. Check your answer.

20 pairs of skates rented
 5 bikes rented

(20, 5) check

$20 + 5 = 25 \checkmark$ $15(20) + 30(5) = 450$
 $450 = 450 \checkmark$

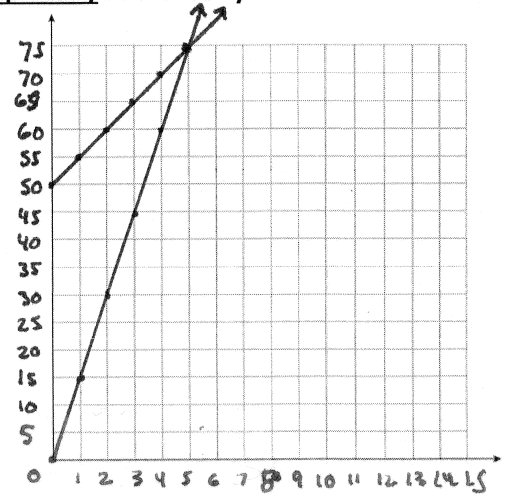
5.) The cost to join an art museum club is \$50. If you are a member you can take lessons at the museum for \$5 each. If you are not a member, lessons cost \$15 each. Write a linear system that represents the number of lessons x that can be taken for a total cost of y dollars. Solve your system graphically and check your solution.

x : # of lessons taken
 y : total cost

member: $y = 5x + 50$
 non-member: $y = 15x$

$m = 5$
 y -int: $(0, 50)$

$m = 15$
 y -int: $(0, 0)$



After how many classes will the total cost for members and non-members be the same?

Check $(5, 75)$

$75 = 5 \cdot 5 + 50$
 $75 = 75 \checkmark$

$75 = 15 \cdot 5$
 $75 = 75 \checkmark$

After 5 classes, the cost for members and non-members will be the same

Solve the linear system using substitution. the same

6.) $4x + 3y = 0$ (2)
 $2x + y = -2$ (1)

$4x + 3(-2x - 2) = 0$

$4x - 6x - 6 = 0$ (3)
 $-2x = 6$
 $x = -3$

$y = -2(-3) - 2$
 $y = 6 - 2$
 $y = 4$

$(-3, 4)$

8.) $-3x - 4y = 4$ (2)
 $3x + 3y = -3$ (1)

$-3(-y - 1) - 4y = 4$

$3y + 3 - 4y = 4$ (3)
 $-y = 1$
 $y = -1$

$x = -1 - 1$
 $x = -2$

$(-2, -1)$

Solve the linear system using elimination.

10.) $3 = -5y + 2x$
 $-4x + 10y = -6$

$(2x - 5y = 3) \cdot 2$
 $4x - 10y = 6$
 $-4x + 10y = -6$

 $0 = 0$

Infinitely Many Solutions

7.) $4x + 6y = 8$
 $y = -\frac{2}{3}x + 1$
 $4x + 6(-\frac{2}{3}x + 1) = 8$
 $4x - 4x + 6 = 8$
 $6 = 8$ X

NO SOLUTION

9.) $-2x + 6y = 6$ (1) $\rightarrow x = 3y - 3$
 $-7x + 8y = -5$ (2)

$-7(3y - 3) + 8y = -5$
 $-21y + 21 + 8y = -5$
 $-13y = -26$
 $y = 2$

$x = 3(2) - 3$
 $x = 6 - 3$
 $x = 3$

$(3, 2)$

11.) $(3x + 2y = 5) \cdot -5$ $-15x - 10y = -25$
 $(5x - 9y = -4) \cdot 3$ $15x - 27y = -12$

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

$(1, 1)$

$-37y = -37$
 $y = 1$

$$-3x - y = 8$$

$$12.) \begin{array}{r} -3x - y = 8 \\ 7x + 12 = -y \\ \hline 4x = -4 \end{array}$$

$$-3(-1) - y = 8$$

$$x = -1$$

$$3 - y = 8$$

$$-y = 5$$

$$y = -5$$

$$(-1, -5)$$

$$13.) \begin{array}{r} 11x - 20y = 28 \\ (3x + 4y = 36) \cdot 5 \end{array}$$

$$\begin{array}{r} 11x - 20y = 28 \\ 15x + 20y = 180 \\ \hline 26x = 208 \end{array}$$

$$3(8) + 4y = 36$$

$$24 + 4y = 36$$

$$4y = 12$$

$$y = 3$$

$$(8, 3)$$

- 14.) **Drum Sticks** A drummer is stocking up on drum sticks and brushes. The wood sticks that he buys are \$10.50 a pair and the brushes are \$24 a pair. He ends up spending \$90 on sticks and brushes and buys two times as many pairs of sticks as brushes. How many pairs of sticks and brushes did he buy?

x : # of pairs of sticks purchased
 y : # of pairs of brushes purchased

$$10.50x + 24y = 90$$

$$x = 2y$$

$$10.5(2y) + 24y = 90$$

$$21y + 24y = 90$$

$$45y = 90$$

$$y = 2$$

$$x = 2(2)$$

$$x = 4$$

He bought 2 pairs of brushes and 4 pairs of sticks

- 15.) Two cars get an oil change at the same service center. Each customer is charged a fee x (in dollars) for the oil change plus y dollars per quart of oil used. The oil change for the car that requires 5 quarts of oil costs \$22.45. The oil change for the car that requires 7 quarts of oil costs \$25.45. Find the fee and the cost per quart of oil.

x : cost for the oil change (flat fee)

y : cost per quart of oil

$$\begin{array}{r} \text{customer 1: } 22.45 = x + 5y \\ \text{customer 2: } 25.45 = x + 7y \end{array} \quad \times(-1)$$

$$22.45 = x + 5(1.50)$$

$$22.45 = x + 7.50$$

$$14.95 = x$$

$$-22.45 = -x - 5y$$

$$25.45 = x + 7y$$

$$3.00 = 2y$$

$$y = 1.50$$

\$14.95 for the oil change, and \$1.50 per quart

- 16.) During a football game, the parents of the football players sell pretzels and popcorn to raise money for new uniforms. They charge \$2.50 for a bag of popcorn and \$2 for a pretzel. The parents collect \$336 in sales during the game. They sell twice as many bags of popcorn as pretzels. How many bags of popcorn do they sell? How many pretzels do they sell?

x : # of bags of popcorn sold

y : # of pretzels sold

$$2.50x + 2y = 336$$

$$x = 2y$$

$$2.50(2y) + 2y = 336$$

$$5y + 2y = 336$$

$$7y = 336$$

$$y = 48$$

$$x = 2(48)$$

$$x = 96$$

They sold 48 pretzels and 96 bags of popcorn