

Key

Name _____

Per ABCDEF Date _____

SYSTEMS OF EQUATIONS REVIEW

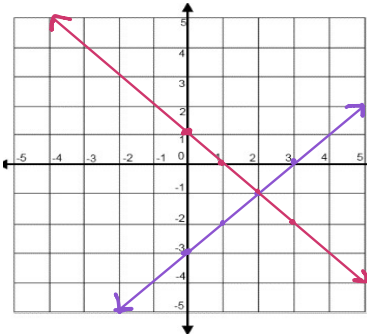
1-4: Solve by graphing. (hint: find m and b of each line first)

1.
$$\begin{cases} y = x - 3 \\ y = -x + 1 \end{cases}$$

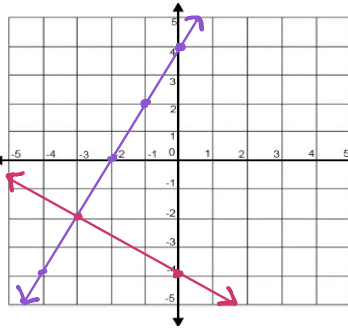
2.
$$\begin{cases} y = -4 - \frac{2}{3}x \\ y = 2x + 4 \end{cases}$$

3.
$$\begin{cases} y = x - 2 \\ y = -\frac{1}{3}x + 2 \end{cases}$$

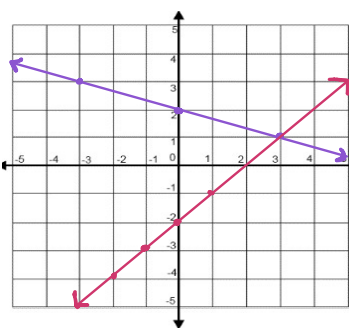
4.
$$\begin{cases} y = -3x - 1 \\ y = 2 - 3x \end{cases}$$



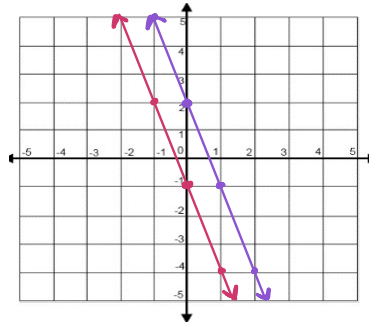
(2, -1)



(-3, -2)



(3, 1)



No solution

5. When two lines have the same slope and different y- intercepts, there is no solution.

6. When two lines have different slopes, there is one solution.

7. When two lines have the same slope and the same y- intercept, there is infinite solutions.

8. If you were given the equation, $y = 4x - 6$, write an equation that would provide you with the following answers.

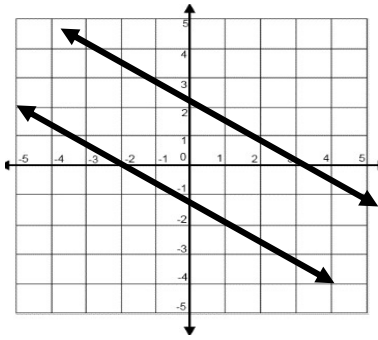
One Solution: $y = 3x + 2$ No Solution: $y = 4x + 1$ Infinite Solutions: $y = 4x - 6$

9. The ordered pair (8, 5) is the solution to which system of equations? Circle all that apply. (Show work)

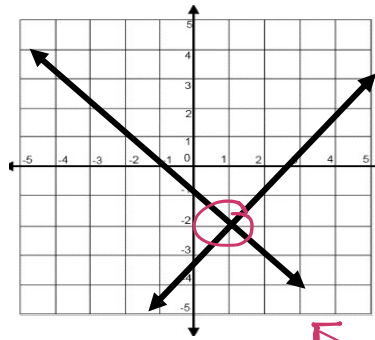
<p>A.</p> $\begin{cases} x = 8 \\ y = 5 \end{cases}$	<p>B.</p> $\begin{cases} x - 4y = -12 \\ 2x - 3y = 1 \end{cases}$ $8 - 4(5) \stackrel{?}{=} -12$ $8 - 20 = -12 \checkmark$ $2(8) - 3(5) \stackrel{?}{=} 1$ $16 - 15 = 1 \checkmark$	<p>C.</p> $\begin{cases} y = 2x \\ x + y = 9 \end{cases}$ $5 = 2(8)$ $5 \neq 16$	<p>D.</p> $\begin{cases} y = -2x + 21 \\ y = -2x - 10 \end{cases}$ $5 \stackrel{?}{=} -2(8) + 21$ $5 = -16 + 21$ $5 = 5 \checkmark$ $5 \stackrel{?}{=} -2(8) - 10$ $5 = -16 - 10$ $5 \neq -26 \times$	<p>E.</p> $\begin{cases} y = -x + 13 \\ 7x - 4y = 36 \end{cases}$ $5 \stackrel{?}{=} -(8) + 13$ $5 = 5 \checkmark$ $7(8) - 4(5) \stackrel{?}{=} 36$ $56 - 20 = 36$ $36 = 36 \checkmark$
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10. Which of the following has no solution? A Infinite solutions? C Explain how you know.
parallel lines *same line*

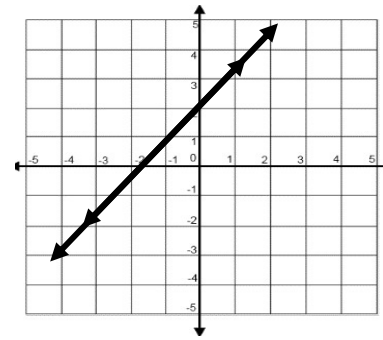
Graph A



Graph B



Graph C



11. Find the solution for the graph that you did NOT use in #10. (1, -2)

12. Solve by substitution or set equal.

a. $\begin{cases} y = 5x - 11 \\ y = -2x + 10 \end{cases}$

5x - 11 = -2x + 10 Back sub
+2x *+2x*
 $7x - 11 = 10$
+11 *+11*
 $7x = 21$
 $x = 3$
 $y = 5(3) - 11$
 $y = 15 - 11$
 $y = 4$

(3, 4)

b. $\begin{cases} y = -3x + 17 \\ y = 4x - 18 \end{cases}$

$-3x + 17 = 4x - 18$ Back sub
+3x *+3x*
 $17 = 7x - 18$
+18 *+18*
 $35 = 7x$
 $5 = x$
 $y = 4(5) - 18$
 $y = 20 - 18$
 $y = 2$

(5, 2)

c. $\begin{cases} y = -3x + 6 \\ 2x - 3y = 4 \end{cases}$

$2x - 3(-3x + 6) = 4$
 $2x + 9x - 18 = 4$
 $11x - 18 = 4$
 $11x = 22$
 $x = 2$

Back Sub

$y = -3(2) + 6$
 $y = -6 + 6$
 $y = 0$

(2, 0)

d. $\begin{cases} x = -18 - 7y \\ 4x + 7y = -30 \end{cases}$

$4(-18 - 7y) + 7y = -30$
 $-72 - 28y + 7y = -30$
 $-72 - 21y = -30$ Back Sub
+72 *+72*
 $-21y = 42$
 $y = -2$
 $x = -18 - 7(-2)$
 $x = -18 + 14$
 $x = -4$

(-4, -2)

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e. $\begin{cases} -6x + 2y = 4 \\ -3x + y = 2 \end{cases} \rightarrow y = 3x + 2$

$-6x + 2(3x + 2) = 4$
 $-6x + 6x + 4 = 4$
 $4 = 4 \checkmark$

f. $\begin{cases} x + 5y = 4 \rightarrow x = -5y + 4 \\ 3x + 15y = -1 \end{cases}$

$3(-5y + 4) + 15y = -1$
 $-15y + 12 + 15y = -1$
 $12 \neq -1$

Infinite Solutions

No Solution

g. $\begin{cases} 8x + 2y = 13 \\ 4x + y = 11 \end{cases} \rightarrow y = -4x + 11$

$8x + 2(-4x + 11) = 13$
 $8x - 8x + 22 = 13$
 $22 \neq 13$

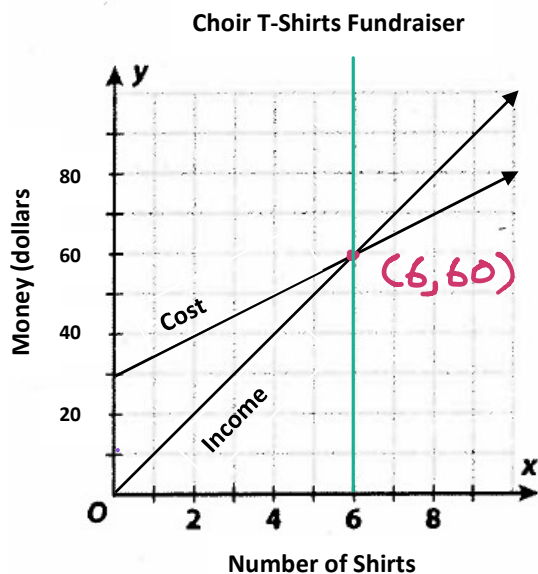
h. $\begin{cases} 4x + 3y = 8 \\ x - 2y = 13 \end{cases} \rightarrow x = 2y + 13$

$4(2y + 13) + 3y = 8$ Backsub
 $8y + 52 + 3y = 8$ $x = 2y + 13$
 $11y + 52 = 8$ $x = 2(-4) + 13$
 $11y = -44$ $x = -8 + 13$
 $y = -4$ $x = 5$

No Solution

(5, -4)

13-16: Use the following graph which shows the cost and income of Choir Fundraiser.



13. How much is the setup fee for the cost? \$30
 How do you know? The Cost equation starts at (0,30).

14. What is the break-even point? (6,60)
 What is the cost and income at this point? \$60, \$60
 What is the profit at this point? \$0

15. Determine the number of shirts for which the cost is greater than the income.
Less than 6 shirts (0-5)

16. State the number of shirts that must be sold for a profit to be made
More than 6 shirts

17-20: Jenny was selling Girl Scout Cookies. She sold 14 boxes for a total of \$60. Shortbreads (x) sell for \$4.00 each and Thin Mints (y) sell for \$5.00 each. How many boxes of each did she sell?

$x = \#$ of shortbreads boxes $y = \#$ of Thin Mints Boxes

17. Write 2 equations to represent this situation.

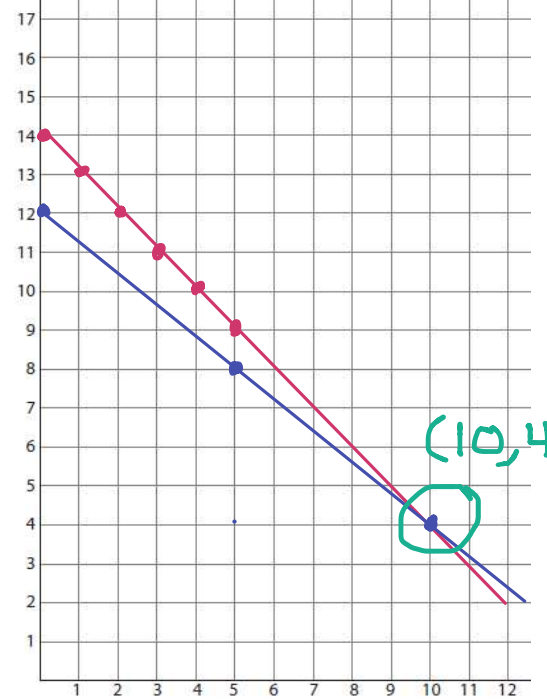
Equation for number of boxes: $x + y = 14$

Equation for cost: $4x + 5y = 60$
 $5y = -4x + 60$

18. Write both equations in slope- intercept form and graph

Equation 1: $y = -x + 14$

Equation 2: $y = -\frac{4}{5}x + 12$



19. Solve using substitution.

$$\begin{aligned} x + y &= 14 \rightarrow y = -x + 14 \\ 4x + 5y &= 60 \\ 4x + 5(-x + 14) &= 60 \\ 4x - 5x + 70 &= 60 \\ -x + 70 &= 60 \\ -x &= -10 \\ x &= 10 \end{aligned}$$

Back Sub

$$\begin{aligned} y &= -x + 14 \\ y &= -(10) + 14 \\ y &= 4 \end{aligned}$$

20. The ordered pair (10, 4) is the solution. What does it represent?

Jenny sold 10 boxes of shortbreads and 4 boxes of Thin Mints.

Answers:

- 1) (2,-1) 2) (-3,-2) 3) (3,1) 4) No solution 5) no 6) one 7) infinite 8) Answers may vary
 9) (a) (b) (e) 10) A, C 11) (1,-2) 12) a. (3,4) b. (5,2) c. (2,0) d. (-4,-2) e. Inf solutions f. no solution g. no solution h. (5,-4)
 13) \$30, this is the y-intercept 14) (6, 60), \$60, \$0 15) 0-5 shirts
 16) More than 6 shirts 17) $x+y=14$, $4x+5y=60$ 18) $y=-x+14$, $y=-4/5x+12$
 19) (10,4) 20) Jenny sold 10 boxes of Shortbreads and 4 boxes of Thin Mints