

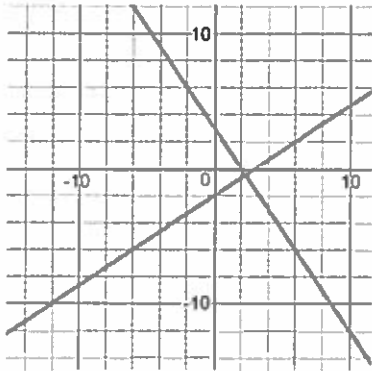
Unit 7 Test Review

Name KEY

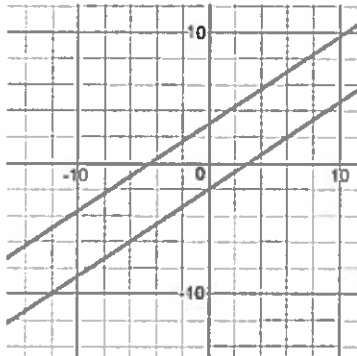
Test date _____

Directions: Select the best answer for each of the following.

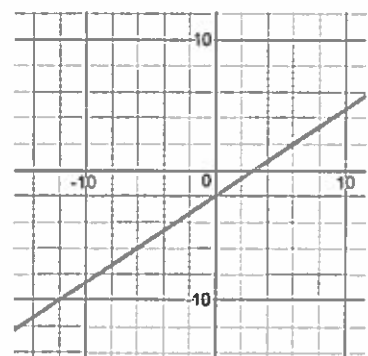
1. How many solutions exist for each system of equations graphed?



one



none



infinite
(this is a graph of two lines on top of each other)

2. Solve the following system of linear equations

$$\begin{cases} 3x + y = 7 \\ 5x + 2y = 10 \end{cases}$$

$$\begin{array}{r} -6x - 2y = -14 \\ + 5x + 2y = 10 \\ \hline \end{array}$$

$$\frac{-x}{-1} = \frac{-4}{-1}$$

$$x = 4$$

$$\begin{array}{r} 3(4) + y = 7 \\ 12 + y = 7 \\ -12 \quad -12 \\ \hline y = -5 \end{array}$$

(4, -5)

For #3 and #4, The talent show committee sold a total of 530 tickets in advance. Student tickets cost \$3 each and the adult tickets cost \$4 each. The total receipts were \$1740.

3. Write a system of equations that models the problem

$$\begin{cases} s + a = 530 \\ 3s + 4a = 1740 \end{cases}$$

4. Solve the system and explain what your answer means.

$$\begin{array}{r} -3(s + a = 530) \\ 3s + 4a = 1740 \\ \hline -3s - 3a = -1590 \\ + 3s + 4a = 1740 \\ \hline a = 150 \end{array}$$

380 student tickets
150 adult tickets

$$\begin{array}{r} s + 150 = 530 \\ -150 \quad -150 \\ \hline s = 380 \end{array}$$

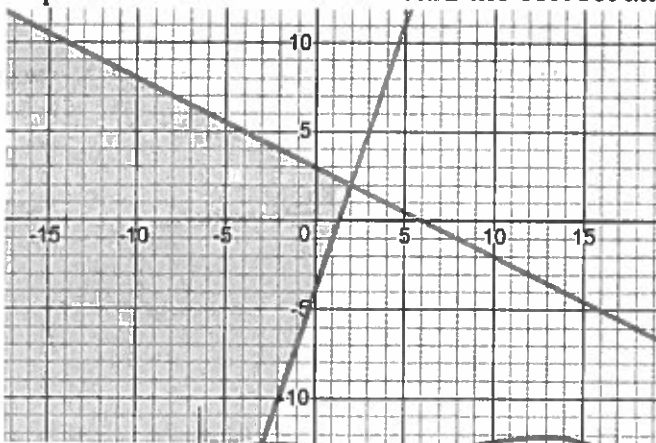
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5. Which of the following ordered pairs are solutions to the system of inequalities? Circle ALL the correct answers.

$$\begin{cases} y < 2x + 5 \\ y \geq -\frac{2}{3}x - 2 \end{cases}$$

- A. (2,10) B. (5,-5) C. (8,20) D. (0,-2) E. (0,5) F. (0,0)

6. The graph of the system of linear inequalities is shown. Which of the following ordered pairs are solutions? Select ALL the correct answers.

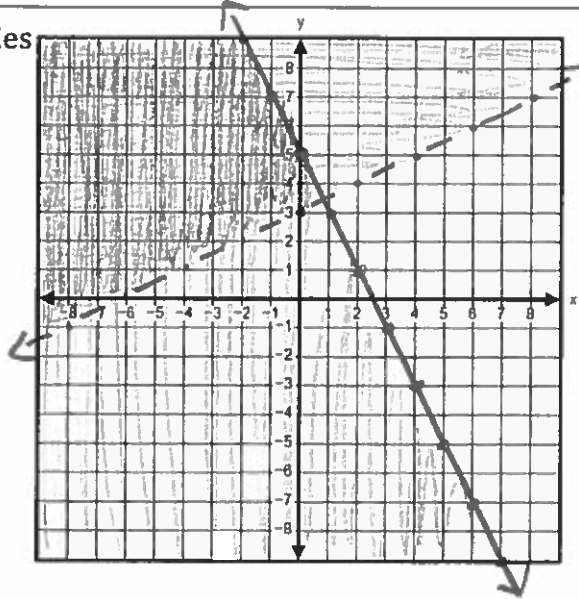


- A. (2,5) B. (0,0) C. (-2,-10) D. (5,-6) E. (-10,-10) F. (0,-3)

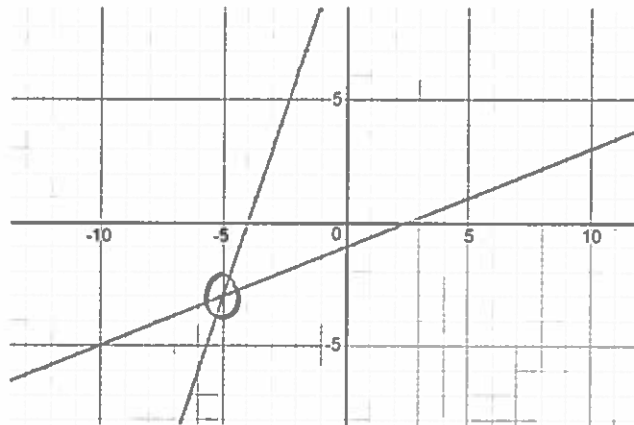
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7. Graph the solution to the system of inequalities

$$\begin{cases} y > \frac{1}{2}x + 3 \\ y \leq -2x + 5 \end{cases}$$



8. The graph shows the system $\begin{cases} y = 3x + 12 \\ y = \frac{2}{5}x - 1 \end{cases}$



a) Use the graph to determine the solution.

Solution $(-5, -3)$

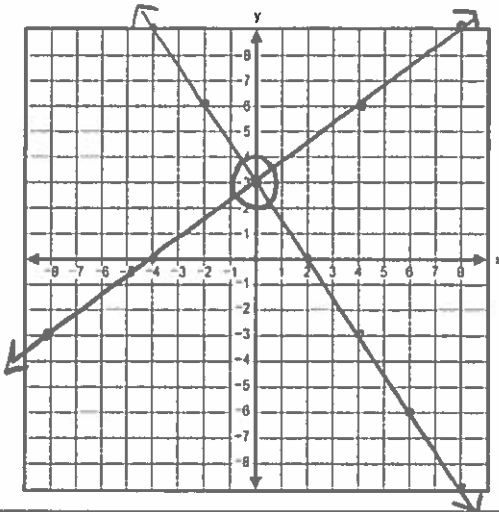
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9. Determine the solution to the following system by graphing:

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

Solution:

$$(0, 3)$$



Directions: For #10-15, find the solution to each of the following systems. Use whichever method you prefer for each.

<p>10. $\begin{cases} y = \frac{2}{5}x - 2 \\ 2x - 5y = 10 \end{cases}$</p>	<p>Solution: infinite solutions</p>	<p>11. $\begin{cases} 3x + 2y = -8 \\ (4x - y = 4) \cdot 2 \end{cases}$</p>	<p>Solution: $(0, -4)$</p>
<p>substitution</p> $2x - 5\left(\frac{2}{5}x - 2\right) = 10$ $2x - 2x + 10 = 10$ $10 = 10$ <p style="text-align: center;">✓</p>	$\begin{array}{r} 3x + 2y = -8 \\ + 8x - 2y = 8 \\ \hline 11x = 0 \\ \hline 11 \quad 11 \\ x = 0 \end{array}$	$\begin{array}{r} 3(0) + 2y = -8 \\ 2y = -8 \\ \hline 2 \quad 2 \\ y = -4 \end{array}$	

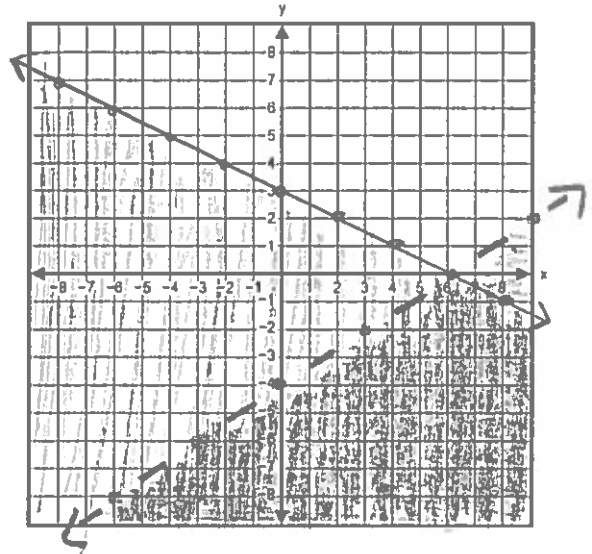
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12. $\begin{cases} 5y+2x=20 \\ 4x-3y=14 \end{cases}$	Solution: $(5, 2)$	13. $\begin{cases} x-3y=-6 \\ -2x+9y=14 \end{cases}$	Solution: $(-4, -\frac{2}{3})$
$\begin{array}{r} -2(2x+5y=20) \\ 4x-3y=14 \\ \hline -4x-10y=-40 \\ +4x-3y=14 \\ \hline -13y=-26 \\ \frac{-13}{-13} \quad \frac{-26}{-13} \\ y=2 \end{array}$	$\begin{array}{r} 5(2)+2x=20 \\ 10+2x=20 \\ -10 \quad -10 \\ \hline 2x=10 \\ \frac{2}{2} \quad \frac{10}{2} \\ x=5 \end{array}$	$\begin{array}{r} 2x-6y=-12 \\ -2x+9y=14 \\ \hline 3y=2 \\ \frac{3y}{3}=\frac{2}{3} \\ y=\frac{2}{3} \end{array}$	$\begin{array}{r} x-3(\frac{2}{3})=-6 \\ x-2=-6 \\ +2 \quad +2 \\ \hline x=-4 \end{array}$
14. $\begin{cases} 3x-6y=9 \\ -2x+4y=6 \end{cases}$	Solution: none	15. $\begin{cases} 4x-y=8 \\ -6x+3y=-15 \end{cases}$	Solution: $(\frac{3}{2}, -2)$
$\begin{array}{r} 6x-12y=18 \\ + -4x+12y=18 \\ \hline 0 \neq 18 \end{array}$		$\begin{array}{r} 12x-3y=24 \\ + -6x+3y=-15 \\ \hline 6x=9 \\ \frac{6x}{6}=\frac{9}{6} \\ x=\frac{3}{2} \end{array}$	$\begin{array}{r} 4(\frac{3}{2})-y=8 \\ 6-y=8 \\ -6 \quad -6 \\ \hline -y=2 \\ \frac{-y}{-1}=\frac{2}{-1} \\ y=-2 \end{array}$

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16. Graph the following system of linear inequalities.

$$\begin{cases} y < \frac{2}{3}x - 4 \\ y \leq -\frac{1}{2}x + 3 \end{cases}$$



Directions: Solve each of the following problems by a) writing a system of equations and b) solving the system of equations.

17. Jacob and Joe are selling cheesecakes for a school fundraiser. Customers can buy New York style cheesecakes and strawberry cheesecakes. Jacob sold 6 New York style cheesecakes and 6 strawberry cheesecakes for a total of \$96. Joe sold 1 New York style cheesecake and 4 strawberry cheesecakes for a total of \$52. What is the cost each of one New York style cheesecake and one strawberry cheesecake?

a)

$$\begin{aligned} 6N + 6S &= 96 && \text{(Jacob)} \\ N + 4S &= 52 && \text{(Joe)} \end{aligned}$$

b)

$$\begin{array}{r} 6N + 6S = 96 \\ -6(N + 4S = 52) \\ \hline -18S = -216 \\ \hline -18 \quad -18 \end{array}$$

$$S = 12$$

$$N + 4(12) = 52$$

$$N + 48 = 52$$

$$\begin{array}{r} -48 \quad -48 \\ \hline N = 4 \end{array}$$

New York - \$4/each

Strawberry - \$12/each