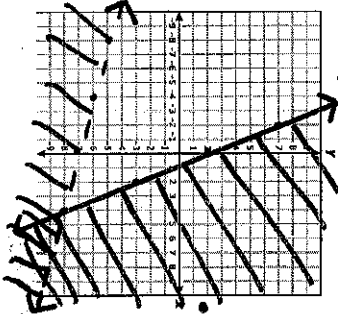


Unit 4: Systems Test Review

1. Solve the following system of inequalities.

$$\begin{cases} 5x + 2y \geq 4 \\ x + 4y < -28 \end{cases}$$

$$\begin{aligned} 2y &\geq -5x + 4 \\ y &\geq -\frac{5}{2}x + 2 \\ 4y &< -x - 28 \\ y &< -\frac{1}{4}x - 7 \end{aligned}$$



2. What value of x satisfies the following system of equations?

$$\begin{cases} -5(x + y) = -20 \\ 5x - 11y = 4 \end{cases}$$

$$\begin{aligned} -5x - 5y &= -20 & x + 1 &= 4 \\ 5x - 11y &= 4 & -10y &= -16 \\ & & y &= 1 \end{aligned}$$

$$\begin{aligned} x + 1 &= 4 \\ x &= 3 \end{aligned}$$

(3, 1)

X-value: 3

3. What value of y satisfies the following system of equations?

$$\begin{cases} 2x - y = -24 \\ x + 2y = -2 \end{cases}$$

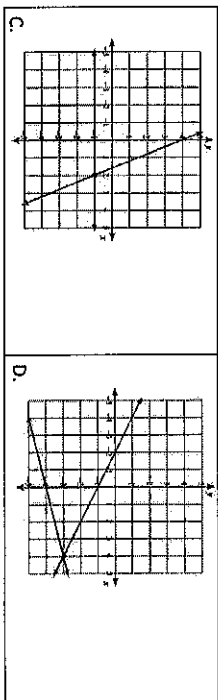
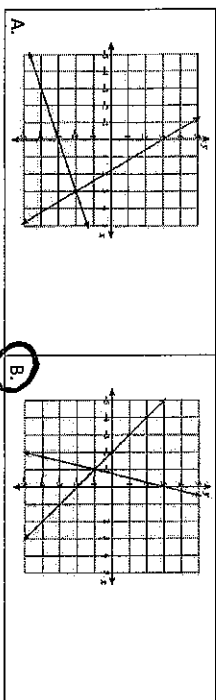
$$\begin{aligned} 2x - y &= -24 \\ -2x - 4y &= 4 \\ -5y &= -20 \end{aligned}$$

$$y = 4$$

4. Which graph best represents the solution to the following system of equations?

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

$$\begin{aligned} y &= 4x + 3 \\ y &= -x - 2 \end{aligned}$$



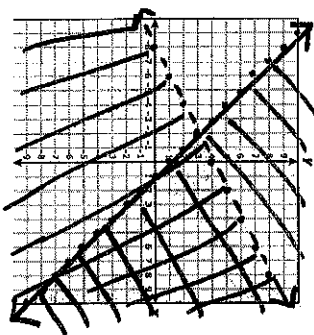
5. What is the solution for the following system of equations?

$$\begin{cases} x - 3y = -16 \\ 4x + 4y = 0 \end{cases}$$

6. Which of the following ordered pairs is a solution to the following system of inequalities?

$$\begin{cases} x - 2y > -8 \\ x + y \geq 1 \end{cases}$$

$$\begin{aligned} -2y &> -x - 8 \\ y &< \frac{1}{2}x + 4 \\ y &\geq -x + 1 \end{aligned}$$



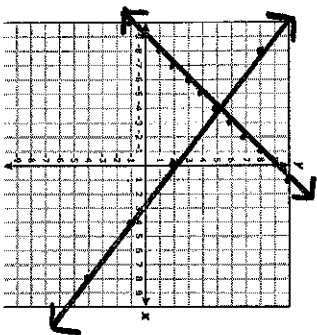
- A. (-5, 3)
- B. (0, 5)
- C. (3, -5)
- D. (4, 0)

7. Graph the following system of equations to identify the solution

$$\begin{cases} x - y = -9 \\ 3x + 4y = 8 \end{cases}$$

$$\begin{aligned} -y &= -x - 9 \\ y &= x + 9 \end{aligned}$$

$$\begin{aligned} 4y &= -3x + 8 \\ y &= -\frac{3}{4}x + 2 \end{aligned}$$



(-4, 5)

8. Sandy paid \$52 for 3 adult and 2 child tickets to a play. Kira paid \$44 for 1 adult and 4 child tickets to the same play. What is the cost of 2 adult and 1 child ticket?

- A. \$32.00 B. \$34.00 C. \$36.00 D. \$38.00

9. A movie theater sells small and large boxes of candy.

- A small box of candy costs \$4.00.
- A large box of candy costs \$11.50.
- A total of 30 boxes of candy were sold totaling \$225.

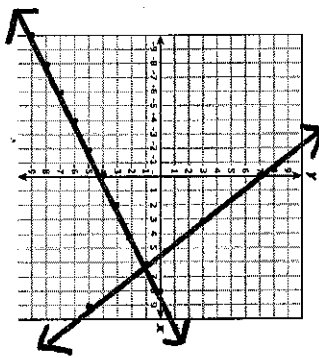
$x = \text{small}$
 $y = \text{large}$

How many large boxes of candy were sold?
14 large boxes

$$\begin{aligned} -4(x+y) &= 30 \\ 4x+11.5y &= 225 \\ \hline 4x-x+y &= 30 \\ 4x+11.5y &= 225 \\ \hline -4x-x+y &= -120 \\ 4x+11.5y &= 225 \\ \hline 7.5y &= 105 \\ y &= 14 \end{aligned}$$

14. Identify the solution to the following system of equations using the graphing method.

$$\begin{cases} y = \frac{1}{2}x - 4 \\ y = -\frac{2}{3}x + 7 \end{cases}$$



(6, -1)

10. Use the solution to the following system of equations to find the value of $x + y$

$$\begin{aligned} \begin{cases} 8x + 14y = 4 \\ -6x - 7y = -10 \end{cases} &+ \begin{cases} 8x + 14y = 4 \\ -12x - 14y = -20 \end{cases} \\ \hline -4x &= -16 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} 8(4) + 14y &= 4 \\ 32 + 14y &= 4 \\ 14y &= -28 \\ y &= -2 \end{aligned}$$

$$\begin{aligned} x + y &= 4 + (-2) \\ x + y &= 2 \end{aligned}$$

$$\begin{aligned} x + 5(5) &= 20 \\ x + 25 &= 20 \\ x &= -5 \end{aligned}$$

(-5, 5)

$$\begin{cases} 3x - y = 5 \\ x - 2y = -9 \end{cases}$$

11. A system of equations is shown below.

Which operations on the system of equations could be used to eliminate the x quantity?

- A. Divide the first equation by 3 and add the result to the first equation
B. Divide the first equation by -2 and add the result to the first equation
C. Multiply the second equation by 2 and add the result to the first equation
D. Multiply the second equation by -3 and add the result to the first equation

$$\begin{cases} 5x - 6y > 42 \\ 3x + 2y \leq 14 \end{cases}$$

16. Using the substitution method, solve the following system of equations:

$$\begin{aligned} \begin{cases} 2x + 5y = -7 \\ 7x + y = -8 \end{cases} &+ \begin{cases} -2x - 10y = -40 \\ -7x - 7y = -45 \end{cases} \\ \hline -17y &= -85 \\ y &= 5 \end{aligned}$$

$$\begin{aligned} 2x + 5(-7x - 8) &= -7 \\ 2x - 35x - 40 &= -7 \\ -33x - 40 &= -7 \\ -33x &= 33 \\ x &= -1 \end{aligned}$$

$$\begin{aligned} 7(-1) + y &= -8 \\ -7 + y &= -8 \\ y &= -1 \end{aligned}$$

(-1, -1)

12. Suzi is 24 years older than her cousin Adam. The sum of Suzi's and Adam's ages is 60 years old. How old is Adam? (Show your work with a system of equations to solve)

$S = \text{Suzi's age}$ $A = \text{Adam's age}$

$$\begin{aligned} S &= 24 + A & (24 + A) + A &= 60 & 2A &= 36 \\ S + A &= 60 & 24 + 2A &= 60 & A &= 18 \end{aligned}$$

18 yrs old

13. Which system of equations has exactly one solution?

A. $\begin{cases} 2x - 6y = 12 \\ 5x + 15y = -30 \end{cases}$

B. $\begin{cases} y = x + 4 \\ x - y = 1 \end{cases}$

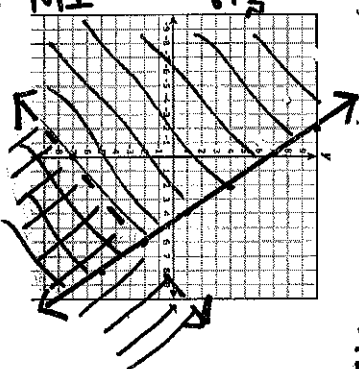
C. $\begin{cases} 6x - y = -23 \\ 8x + 3y = -9 \end{cases}$

$$\begin{aligned} 10x - 30y &= 60 \\ -10x + 30y &= -60 \\ \hline 0 &= 0 \end{aligned}$$

$$\begin{aligned} x - (x + 4) &= 1 \\ 4 &= 1 \end{aligned}$$

$$\begin{aligned} 18x - 3y &= -69 \\ + 8x + 3y &= -9 \\ \hline 26x &= -78 \\ x &= -3 \end{aligned}$$

$$\begin{aligned} y &< \frac{5}{6}x - 7 \\ 2y &\leq -\frac{3x + 14}{2} \\ y &\leq -\frac{3}{2}x + 7 \end{aligned}$$



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