

Key

WS Unit 4 Test Review

Solve each system by graphing.

1) $y = -\frac{4}{3}x + 2$

$y = \frac{1}{3}x - 3$

$(3, -2)$

2) $y = -7x - 3$
 $y = -x + 3$

$(-1, 4)$

3) $x + 4y = -12 \rightarrow 4y = -x - 12$
 $2x + y = 4$

$y = -2x + 4$

$y = -\frac{1}{4}x - 3$

$(4, -4)$

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

$-y = -x + 1$
 $y = x - 1$

$(4, 3)$

Solve each system by elimination.

5) $3x + 4y = 13$
 $(9x - 2y = -17)$

$3x + 4y = 13$
 $18x - 4y = -34$

$3(-1) + 4y = 13$
 $-3 + 4y = 13$

$4y = 16$
 $y = 4$

$21x = -21$

$x = -1$

$(-1, 4)$

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

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

$9x + 6y = 0$
 $2x - 6y = 0$

$11x = 0$

$x = 0$

$(0, 0)$

7) $(6x - y = -7)$
 $-x + 4y = 28$

$24x - 4y = -28$
 $-x + 4y = 28$

$-0 + 4y = 28$

$y = 7$

$23x = 0$

$x = 0$

$(0, 7)$

8) $(9x + 9y = 29)$
 $(-6x - 6y = -24)$

$54x + 54y = 174$
 $-54x - 54y = -216$

$0 = -42$

no soln.

$$\begin{aligned} 9) \begin{cases} -3x + 5y = -27 \\ -7x + 2y = 24 \end{cases} &= \begin{aligned} 6x - 10y &= 54 \\ -35x + 10y &= 120 \end{aligned} \end{aligned}$$

$$\begin{aligned} -3(-6) + 5y &= -27 \\ 18 + 5y &= -27 \\ -18 & \quad -18 \\ \hline 5y &= -45 \\ \frac{5y}{5} &= \frac{-45}{5} \\ y &= -9 \end{aligned}$$

$$\begin{aligned} -29x &= 174 \\ \frac{-29x}{-29} &= \frac{174}{-29} \\ x &= -6 \end{aligned}$$

$$\boxed{(-6, -9)}$$

$$\begin{aligned} 10) \begin{cases} 7x + 6y = 18 \\ -9x - 10y = -30 \end{cases} &= \begin{aligned} 63x + 54y &= 162 \\ -63x - 70y &= -210 \end{aligned} \end{aligned}$$

$$\begin{aligned} -9x - 10(+3) &= -30 \\ -9x - 30 &= -30 \\ +30 & \quad +30 \\ \hline -9x &= 0 \\ \frac{-9x}{-9} &= \frac{0}{-9} \\ x &= 0 \end{aligned}$$

$$\begin{aligned} -16y &= 48 \\ \frac{-16y}{-16} &= \frac{48}{-16} \\ y &= +3 \end{aligned}$$

$$\boxed{(0, 3)}$$

Solve each system by substitution.

$$\begin{aligned} 11) \begin{cases} y = 2x - 3 \\ -4x + 8y = 24 \end{cases} \end{aligned}$$

$$\begin{aligned} y &= 2(4) - 3 \\ y &= 8 - 3 \\ y &= 5 \end{aligned}$$

$$\begin{aligned} -4x + 8(2x - 3) &= 24 \\ -4x + 16x - 24 &= 24 \\ +24 & \quad +24 \\ \hline 12x &= 48 \\ \frac{12x}{12} &= \frac{48}{12} \\ x &= 4 \end{aligned}$$

$$\boxed{(4, 5)}$$

$$\begin{aligned} 12) \begin{cases} y = -8x - 8 \\ -4x + 3y = -24 \end{cases} \end{aligned}$$

$$\begin{aligned} -4x + 3(-8x - 8) &= -24 \\ -4x - 24x - 24 &= -24 \\ +24 & \quad +24 \\ \hline -4x - 24x &= 0 \\ -28x &= 0 \\ \frac{-28x}{-28} &= \frac{0}{-28} \\ x &= 0 \end{aligned}$$

$$\begin{aligned} y &= -8(0) - 8 \\ y &= -8 \end{aligned}$$

$$\boxed{(0, -8)}$$

$$\begin{aligned} 13) \begin{cases} y = 2x - 5 \\ 2x - y = 5 \end{cases} \end{aligned}$$

$$\begin{aligned} 2x - 1(2x - 5) &= 5 \\ 2x - 2x + 5 &= 5 \\ -5 & \quad -5 \\ \hline 0 &= 0 \end{aligned}$$

$$\boxed{\text{IMS}}$$

$$\begin{aligned} 14) \begin{cases} y = 2x + 5 \\ y = -6x + 13 \end{cases} \end{aligned}$$

$$\begin{aligned} y &= 2(1) + 5 \\ y &= 7 \end{aligned}$$

$$\begin{aligned} 2x + 5 &= -6x + 13 \\ +6x & \quad +6x \end{aligned}$$

$$\begin{aligned} 8x + 5 &= 13 \\ -5 & \quad -5 \\ \hline 8x &= 8 \end{aligned}$$

$$\begin{aligned} 8x &= 8 \\ x &= 1 \end{aligned}$$

$$\boxed{(1, 7)}$$

$$\begin{aligned} 15) \begin{cases} -8x - 3y = -10 \\ x - 5y = 12 \end{cases} \end{aligned}$$

$$\begin{aligned} x - 5y &= 12 \\ +5y &= +5y \\ \hline x &= 5y + 12 \end{aligned}$$

$$\begin{aligned} x &= 5y + 12 \\ 5(-2) + 12 & \\ -10 + 12 & \\ x &= 2 \end{aligned}$$

$$\begin{aligned} -8(5y + 12) - 3y &= -10 \\ -40y - 96 - 3y &= -10 \\ -43y - 96 &= -10 \\ +96 & \quad +96 \\ \hline -43y &= 86 \end{aligned}$$

$$\boxed{(2, -2)}$$

$$\begin{aligned} -43y &= 86 \\ \frac{-43y}{-43} &= \frac{86}{-43} \\ y &= -2 \end{aligned}$$

$$\begin{aligned} 16) \begin{cases} x - 7y = -18 \\ -4x - 4y = 8 \end{cases} \end{aligned}$$

$$\textcircled{x} = 7y - 18$$

$$\begin{aligned} -4(7y - 18) - 4y &= 8 \\ -28y + 72 - 4y &= 8 \\ -32y + 72 &= 8 \\ -72 & \quad -72 \\ \hline -32y &= -64 \end{aligned}$$

$$\begin{aligned} x &= 7y - 18 \\ x &= 7(2) - 18 \\ 14 - 18 & \\ x &= -4 \end{aligned}$$

$$\boxed{y = 2}$$

$$\boxed{(-4, 2)}$$

- 17) The state fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 7 vans and 12 buses with 720 students. High School B rented and filled 14 vans and 7 buses with 539 students. Each van and each bus carried the same number of students. Find the number of students in each van and in each bus.

Vans = x
buses = y

$$\begin{array}{r} (7x + 12y = 720) \times 2 \\ 14x + 7y = 539 \end{array} = \begin{array}{r} -14x - 24y = -1440 \\ 14x + 7y = 539 \end{array}$$

$$\begin{array}{r} -17y = -901 \\ y = 53 \end{array}$$

$$\begin{array}{r} 7x + 12(53) = 720 \\ 7x + 636 = 720 \\ -636 \quad -636 \end{array}$$

$$\frac{7x}{7} = \frac{84}{7} \quad x = 12$$

12 vans
53 buses

- 18) Kayla's school is selling tickets to a spring musical. On the first day of ticket sales the school sold 10 senior citizen tickets and 7 child tickets for a total of \$220. The school took in \$240 on the second day by selling 8 senior citizen tickets and 12 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

Senior x
child y

$$\begin{array}{r} (10x + 7y = 220) \times 8 \\ (8x + 12y = 240) \times 10 \end{array} \Rightarrow +$$

$$\begin{array}{r} -80x - 56y = -1760 \\ 80x + 120y = 2400 \end{array}$$

$$64y = 640$$

$$y = 10$$

15 senior tickets
10 adult tickets

$$\begin{array}{r} 10x + 7(10) = 220 \\ 10x + 70 = 220 \\ -70 \quad -70 \end{array}$$

$$\frac{10x}{10} = \frac{150}{10} \quad x = 15$$

- 19) A jar contains quarters and dimes for a total of \$6.15. How many quarters and dimes are in the jar? There are a total of 33 coins in the jar.

x - quarters
 y - dimes

$$.25x + .10y = 6.15$$

$$\begin{array}{r} x + y = 33 \\ -x \quad \quad -x \end{array}$$

$$y = -x + 33$$

$$y = -19 + 33$$

$$y = 14$$

19 quarters
14 dimes

$$.25x + .10(-x + 33) = 6.15$$

$$.25x + -.1x + 3.3 = 6.15$$

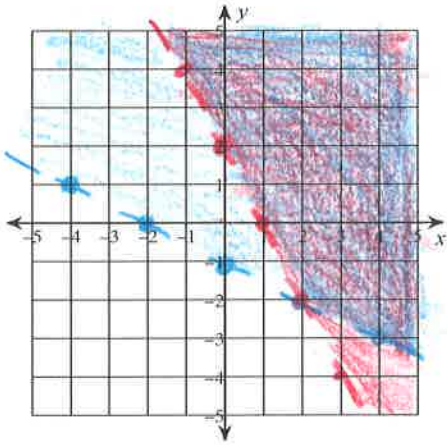
$$\begin{array}{r} .15x + 3.3 = 6.15 \\ -3.3 \quad -3.3 \end{array}$$

$$.15x = 2.85$$

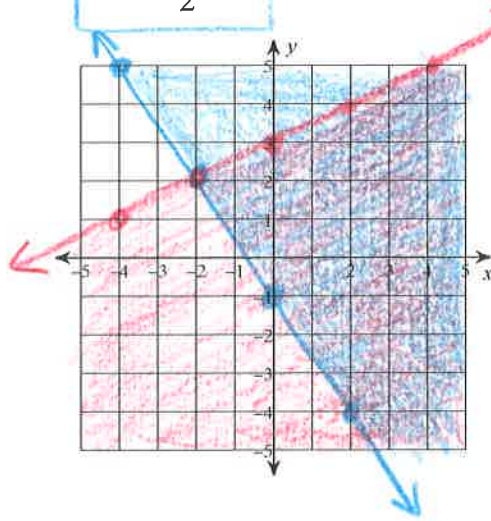
$$x = 19$$

Sketch the solution to each system of inequalities.

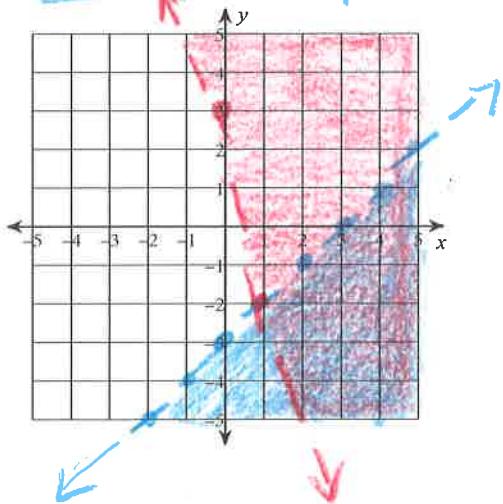
20) $y > -2x + 2$ $m = -2/1$
 $y > -\frac{1}{2}x - 1$ $m = \frac{1}{2}$ OR $\frac{1}{-2}$



21) $y \leq \frac{1}{2}x + 3$
 $y \geq -\frac{3}{2}x - 1$ $m = -\frac{3}{2}$ OR $\frac{3}{-2}$



22) $y > -5x + 3$ $m = -\frac{5}{1}$ OR $\frac{5}{-1}$
 $y < x - 3$ $m = \frac{1}{1}$



23) $y \geq -x + 2$ $m = -\frac{1}{1}$ OR $\frac{1}{-1}$
 $y > 3x - 2$ $m = \frac{3}{1}$

