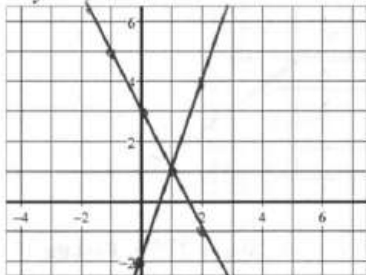


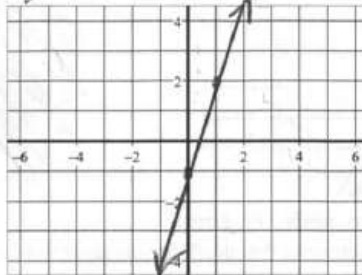
Honors Algebra 2
Chapter 3 Worksheet
Key

Solve each system of equations by graphing:

1. $y = 3x - 2$
 $y = -2x + 3$ Answer: $(1, 1)$



2. $3x - y = 1$
 $2y - 6x = -2$ Answer: Infinite many



Refer to equations 1 and 2. State whether the system is "Consistent and Dependent", "Consistent and Independent", or "Inconsistent."

3. Exercise 1 Consistent / Independent 4. Exercise 2 Consistent / Dependent

Solve each system by substitution, work must be shown.

5. $x - 3y = 4$
 $3x + 2y = 1$ Answer: $(1, -1)$

$$\begin{aligned} x &= 4 + 3y & x &= 4 + 3(-1) \\ 3(4 + 3y) + 2y &= 1 & x &= 4 - 3 \\ 12 + 9y + 2y &= 1 & x &= 1 \\ 12 + 11y &= 1 & & \\ 11y &= -11 & & \\ y &= -1 & & \end{aligned}$$

6. $4x - 3y = -23$
 $x + 7y = 2$ Answer: $(-5, 1)$

$$\begin{aligned} x &= 2 - 7y & x &= 2 - 7(1) \\ 4(2 - 7y) - 3y &= -23 & x &= 2 - 7 \\ 8 - 28y - 3y &= -23 & x &= -5 \\ -31y &= -31 & & \\ y &= 1 & & \end{aligned}$$

Solve each system by elimination, work must be shown.

7. $3x - y = 10$
 $4x - y = 16$ Answer: $(6, 8)$

$$\begin{aligned} -3x + y &= -10 \\ \underline{4x - y} &= 16 \\ x &= 6 \end{aligned}$$

$$\begin{aligned} 3(6) - y &= 10 \\ 18 - y &= 10 \\ -y &= -8 \\ y &= 8 \end{aligned}$$

8. $-3(5x + 4y = 10)$
 $5(3x + 5y = -7)$ Answer: $(6, -5)$

$$\begin{aligned} -15x - 12y &= -30 \\ \underline{15x + 25y} &= -35 \\ 13y &= -65 \\ y &= -5 \end{aligned}$$

$$\begin{aligned} 5x + 4(-5) &= 10 \\ 5x - 20 &= 10 \\ 5x &= 30 \\ x &= 6 \end{aligned}$$

Solve, work must be shown.

1. $x + 2y - z = -7$
 $2x - 2y - z = 6$ Answer: $(1, -3, 2)$
 $x + y - 2z = -6$

$$\begin{aligned} x + 2y - z &= -7 \\ -2x - 2y + 4z &= 12 \\ \hline 3x - 2z &= -1 \end{aligned}$$

$$\begin{aligned} 3(-x + 3z) &= 5 \\ -3x + 9z &= 15 \\ \hline 7z &= 14 \\ z &= 2 \end{aligned}$$

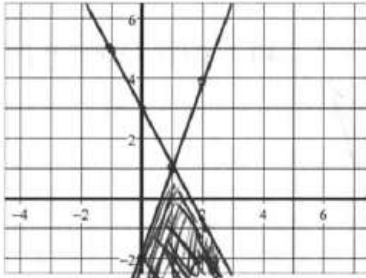
$$\begin{aligned} 3x - 2z &= -1 \\ -3x + 9z &= 15 \\ \hline 7z &= 14 \\ z &= 2 \end{aligned}$$

$$\begin{aligned} 3x - 2(2) &= -1 \\ 3x - 4 &= -1 \\ 3x &= 3 \\ x &= 1 \end{aligned}$$

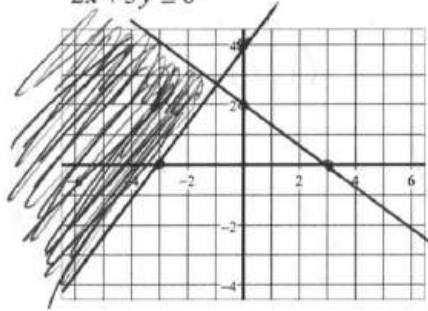
$$\begin{aligned} 1 + 2y - (2) &= -7 \\ -1 + 2y &= -7 \\ 2y &= -6 \\ y &= -3 \end{aligned}$$

Solve each system by graphing.

10. $y \leq 3x - 2$
 $y \leq -2x + 3$



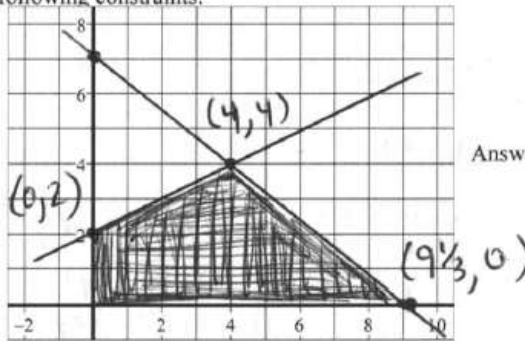
11. $4x - 3y \leq -12$
 $2x + 3y \leq 6$



Solve the Linear Programming Problems

12-13. Mr. Duffy determines that profit for his company is determined by $P(x, y) = 180x + 275y$. Find the maximum profit under the following constraints.

$y \leq \frac{1}{2}x + 2$
 $y \leq -\frac{3}{4}x + 7$
 $x \geq 0$
 $y \geq 0$



Answer: 1820

14-17 A clothing company makes jackets and pants. Each requires two operations, A and B. Operation A is limited to 20 hours per day. Operation B is limited to 32 hours per day. For a jacket to be made it takes 1 hour in operation A and 4 hours in operation B. Whereas pants take 2 hours in operations A and 2 hours in operation B. If the jackets have a profit of \$14 and pants have a profit of \$10, how many jackets and pants should be made to maximize the profits?

Graph of constraints:

$x = \text{jackets}$
 $y = \text{pants}$

Constraints:
 $x + 2y \leq 20$
 $4x + 2y \leq 32$
 $x \geq 0$
 $y \geq 0$

Profit Function:
 $P(x, y) = 14x + 10y$

Answer:
4 jackets, 8 pants

