

Key

$$y = -\frac{3}{2}x + \frac{9}{2}$$

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

Classify each system without graphing. Then graph each system.

1. $\begin{cases} y = 5x - 2 \\ y = x + 4 \end{cases}$

Independent

2. $\begin{cases} 3x + 2y = 9 \\ 3x + 2y = 4 \end{cases}$

No Sol. Inconsistent

Solve using substitution.

3. $\begin{cases} 3x + 2y = 9 \\ x + y = 4 \end{cases} \quad (1, 3)$

4. $\begin{cases} 0.3x - y = 0 \\ y = 2 + 0.25x \end{cases} \quad (40, 12)$

Solve using elimination.

5. $\begin{cases} 3x - y = 1 \\ 2x + y = 14 \end{cases} \quad (3, 8)$

6. $\begin{cases} 4x - 2y = 3 \\ 2y - 4x = \frac{3}{2} \end{cases}$ *NO Solution*

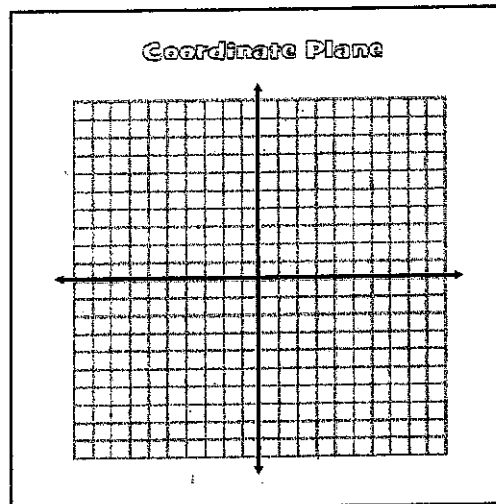
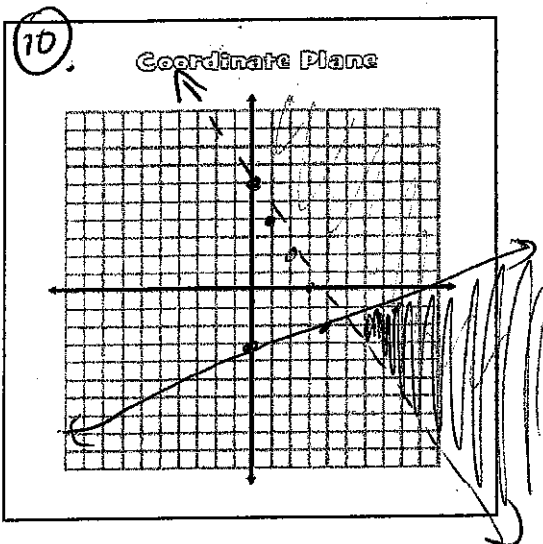
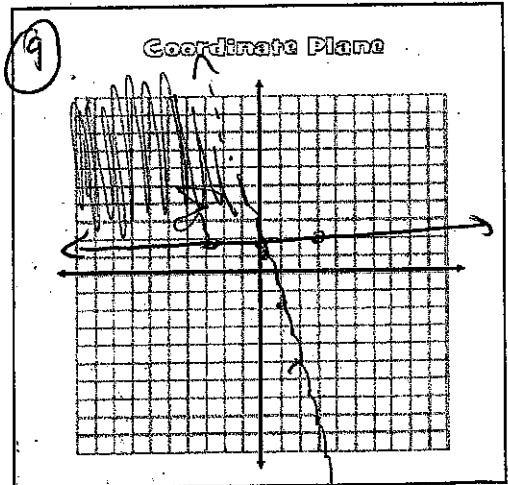
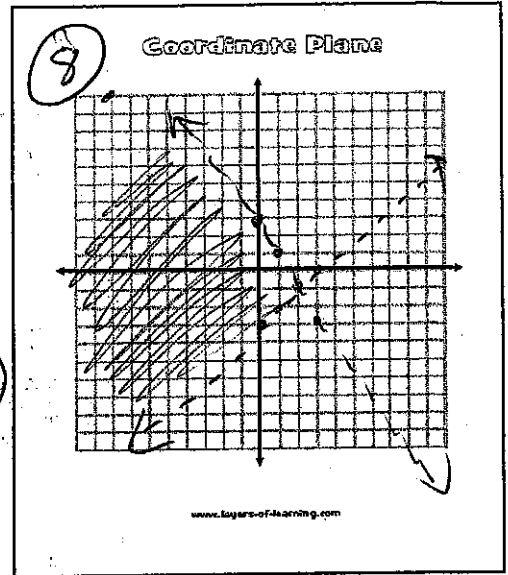
Graph each system.

8. $\begin{cases} 2x + y < 3 \\ x < y + 3 \end{cases}$

9. $\begin{cases} 3y + 9x < 3 \\ y \geq 2 \end{cases}$

10. $\begin{cases} x > 3 \\ y < 2x - 1 \end{cases}$

11. $\begin{cases} y > -2x + 6 \\ y \leq \frac{1}{4}x - 3 \end{cases}$



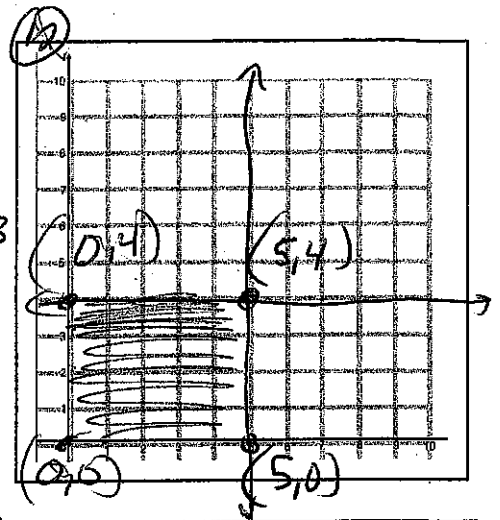
Graph each system of constraints. Find all vertices.
Evaluate the objective function at each vertex to find the maximum or minimum value.

$$12. \begin{cases} x \leq 5 \\ y \leq 4 \\ x \geq 0, y \geq 0 \end{cases}$$

Maximum for $P = 2x + y$ at $(5, 4)$
@ 14

$$13. \begin{cases} x + y \leq 8 & y \leq -x + 8 \\ x + 2y \geq 6 & y \geq \frac{-1}{2}x + 3 \\ x \geq 0, y \geq 0 \end{cases}$$

Minimum for $C = x + 3y$ at $(6, 0)$
@ 6



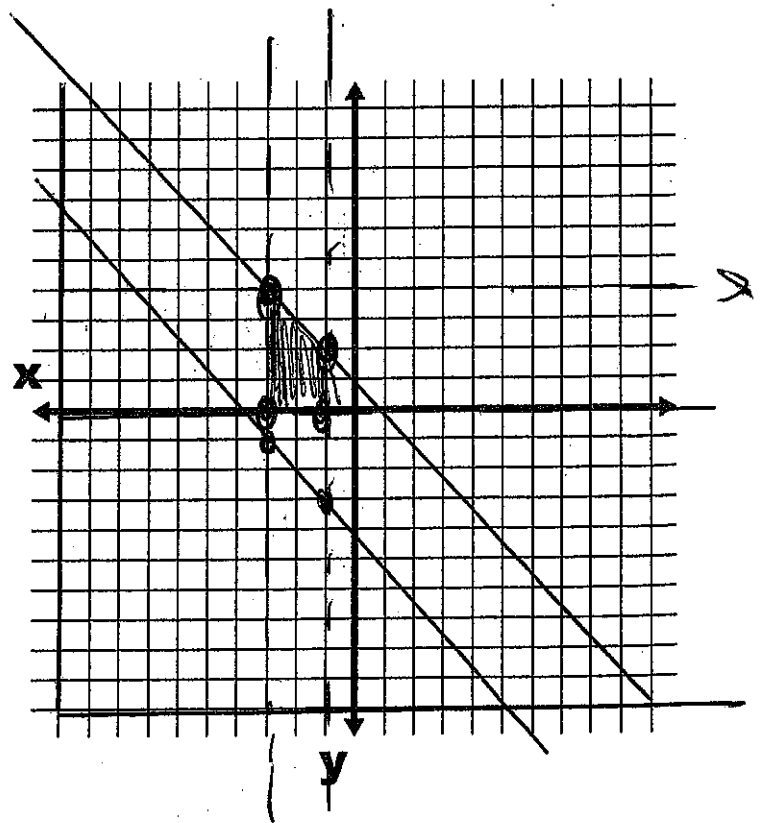
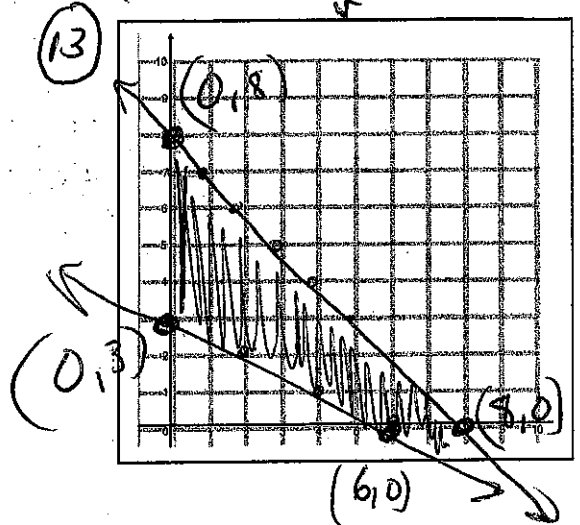
14. Sales A pizza shop makes \$1.50 on each small pizza and \$2.15 on each large pizza. On a typical Friday, it sells between 70 and 90 small pizzas and between 100 and 140 large pizzas. The shop can make no more than 210 pizzas in a day. How many of each size of pizza must be sold in order to maximize profit?

$x \rightarrow$ Small $y \rightarrow$ Large
 $P = 1.5x + 2.15y$

$(70, 100)$ $(70, 140)$
 $(90, 100)$ $(90, 120)$

$(90, 120) = \$393$

$(70, 140) = \$404.60$



LESSON
6-3

Practice B

Piecewise Functions

Evaluate each piecewise function for $x = -8$ and $x = 5$.

1. $f(x) = \begin{cases} 2x & \text{if } x < 0 \\ 0 & \text{if } x \geq 0 \end{cases}$

$(-8, -16) (5, 0)$

2. $g(x) = \begin{cases} 2-x & \text{if } x \leq 5 \\ -x^2 & \text{if } 5 < x < 8 \\ 6 & \text{if } 8 \leq x \end{cases}$

$(-8, 6) (5, -3)$

3. $h(x) = \begin{cases} 2x+4 & \text{if } x \leq -8 \\ -1 & \text{if } -8 < x < 5 \\ x^2 & \text{if } 5 \leq x \end{cases}$

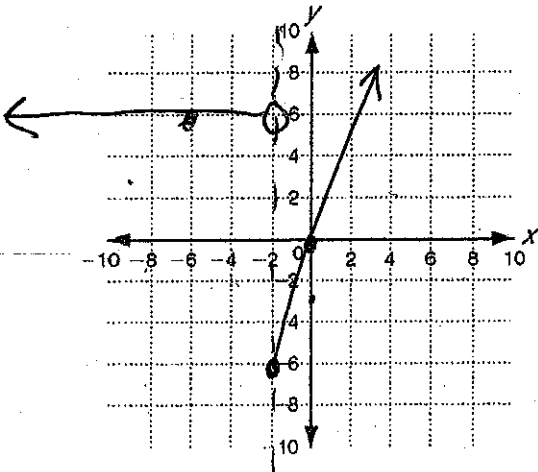
$(-8, -12) (5, 25)$

4. $k(x) = \begin{cases} 15 & \text{if } x \leq -5 \\ x & \text{if } -5 < x < 1 \\ 7 - \frac{x}{2} & \text{if } 1 < x \end{cases}$

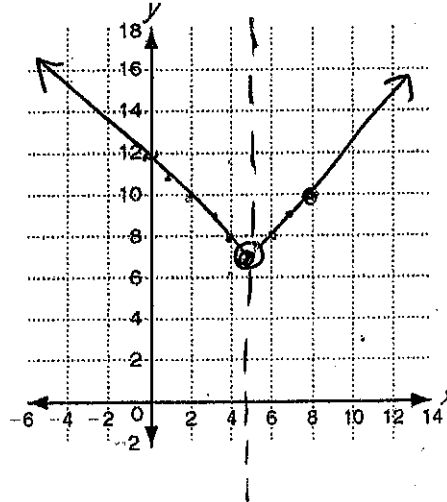
$(-8, 15) (5, 4.5)$

Graph each function.

5. $f(x) = \begin{cases} 6 & \text{if } x < -2 \\ 3x & \text{if } -2 \leq x \end{cases}$



6. $g(x) = \begin{cases} 12-x & \text{if } x \leq 5 \\ x+2 & \text{if } 5 < x \end{cases}$



Solve.

7. An airport parking garage costs \$20 per day for the first week. After that, the cost decreases to \$17 per day.

- Write a piecewise function for the cost of parking a car for x days.
- What is the cost to park for 10 days?
- Ms. Anderson went on two trips. On the first, she parked at the garage for 5 days; on the second, she parked at the garage for 8 days. What was the difference in the cost of parking between the two trips?

$y = \begin{cases} 20x & x \leq 7 \\ 17x & x > 7 \end{cases}$

~~$= 20(10) = 200$~~
 ~~$= 17(10) = 170$~~
 $= 17(10)$
 $= 170$

$20(5) = 100$
 $17(8) = 136$
 36

146

$\frac{17}{8}$
146