Is (2,3) a solution to the following systems of equations.

a. $x + y = 9$
  $2x - y = 5$

$2 + 3 = 9$
$5 \neq 9$
No

b. $4x - 2y = 2$ **Yes**
  $3x + y = 9$

$4(2) - 2(3) = 2$
$8 - 6 = 2$
$2 = 2 ✓$
$3(2) + 3 = 9 \quad 9 = 9 ✓$

c. $x - 5 = y$
  $2x + 3y = 12$

$2 - 5 = 3$
$-3 \neq 3$
No

Create a system of equations for each system to have the following type of solution.

a. infinite
  $y = 4x - 9$
  $2y = 8x - 18$

b. no solution
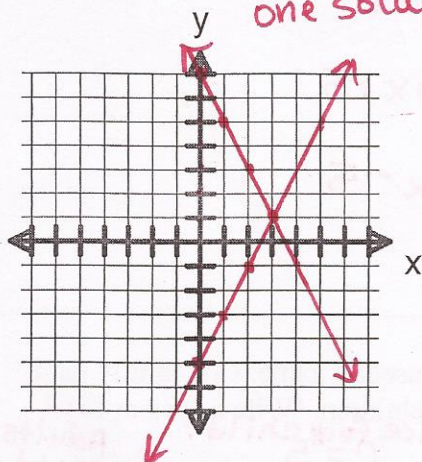 $y = -5x + 6$
  $y = -5x + 1$

c. one solution
  $y = x + 3$
  $y = -x + 3$

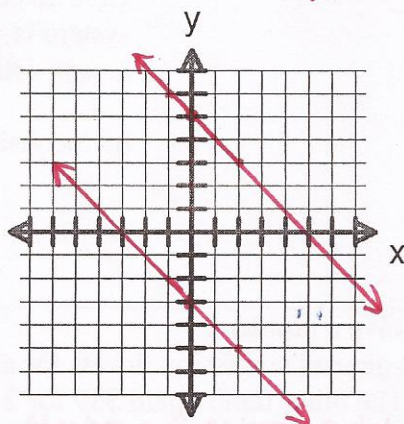Solve a system of equations by graphing? Classify each system.

a. $y = -2x + 7$
  $y = 2x - 5$

$(3, 1)$
one solution

b. $x + y = 5$ $y = -x + 5$
  $y = -x - 3$

No solution

Solve a system of equations by substitution? Classify each system.

a. $x + y = 5$
  $y = 2x - 3$

$x + 2x - 3 = 5$
$3x - 3 = 5$
$3x = 8$
$x = \dfrac{8}{3}$

$y = 2\left(\dfrac{8}{3}\right) - 3$
$y = \dfrac{16}{3} - \dfrac{9}{3}$
$y = \dfrac{7}{3}$ $\left(\dfrac{8}{3}, \dfrac{7}{3}\right)$

one solution

b. $2x - y = 3$
  $x = y + 2$

$2(y + 2) - y = 3$
$2y + 4 - y = 3$
$y + 4 = 3$
$y = -1$

$x = -1 + 2$
$x = 1$

$(1, -1)$
one solution

Solve a system of equations by elimination? Classify each system.

a. $4x - 2y = 8$
$2(-2x + y = 6)$

$-4x + 2y = 12$
$\overline{}$
$0 \neq 20$

No solution
Inconsistent

b. $4(4x + 3y = 20)$
$3(9x - 4y = 2)$

$16x + 12y = 80$
$27x - 12y = 6$
$\overline{}$
$43x = 86$
$\boxed{x = 2}$

$4(2) + 3y = 20$
$8 + 3y = 20$
$3y = 12$
$\boxed{y = 4}$

$(2, 4)$ one solution
Consistent

c. $2x + 3y = 12$
$-2x + 3y = 6$
$\overline{}$
$6y = 18$
$\boxed{y = 3}$

$2x + 3(3) = 12$
$-9 \quad -9$
$\overline{}$
$2x = 3$

Consistent.
– one solution

$\boxed{x = \dfrac{3}{2}}$

$\left(\dfrac{3}{2}, 3\right)$

d. $2(3x - y = 8)$
$-6x + 2y = -16$

$6x - 2y = 16$
$0 = 0$

infinite solutions
Consistent

Without graphing, determine whether two lines are consistent or inconsistent.

a. $2(3x - 4y = 28)$
$-6x + 8y = 32$

inconsistent

$6x - 8y = 56$
$-6x + 8y = 32$
$\overline{}$
$0 \neq 88$

b. Given the line $y = 3x + 5$
Give an equation so that the system is
a. consistent $y = -3x + 5$

b. inconsistent
$y = 3x - 5$

Write a system of equations to solve a problem.

a. Two different families bought general admission tickets for a Reno Aces baseball game. One family paid $45 for 5 adults and 2 children. The other family paid $39 for 2 adults and 5 children. Write a system to represent the problem and solve. Let $a =$ price for adult   Let $c =$ price for child.

$-2(5a + 2c = 45)$
$5(2a + 5c = 39)$

$-10a - 4c = -90$
$10a + 25c = 195$
$\overline{}$
$21c = 105$

$c = 5$

$5a + 2(5) = 45$
$5a + 10 = 45$
$5a = 35$
$a = 7$

Adults = $7 ea.
Child = $5 ea.

b. The admission fee at a small fair is $1.50 for children and $4.00 for adults. On a certain day, 2200 people enter the fair and $5050 is collected. How many children and how many adults attended?

Let $a = $ # of adults
Let $c = $ # of children

$1.50 a + 4.00a = 5050$
$c + a = 2200$
$c = -a + 2200$

$1.50(-a + 2200) + 4a = 5050$

$-1.50a + 3300 + 4a = 5050$
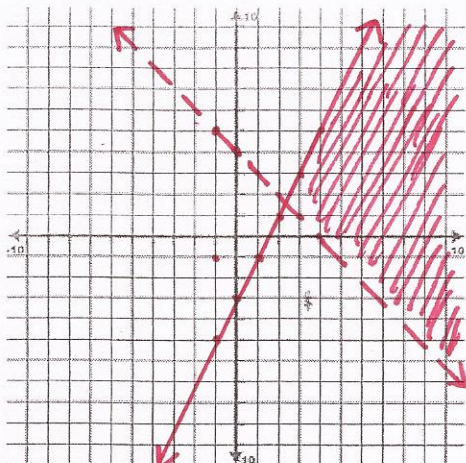$3300 + 2.5a = 5050$
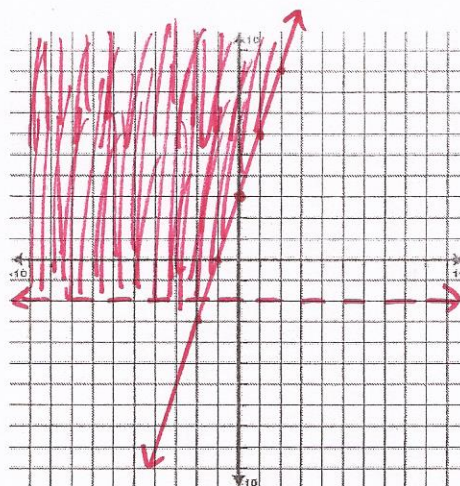$a = 700$

700 adults and
1500 children.

Solve a system of inequalities by graphing.

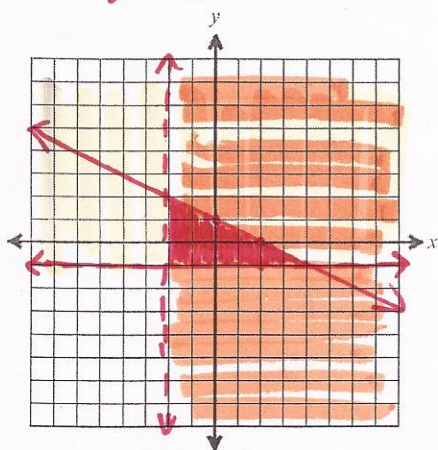a.
$y \leq 2x - 3$
$x + y > 4$ $y > -x + 4$

b. $\begin{cases} 3x - y \leq -3 \\ y > -2 \end{cases}$ $y \geq 3x + 3$
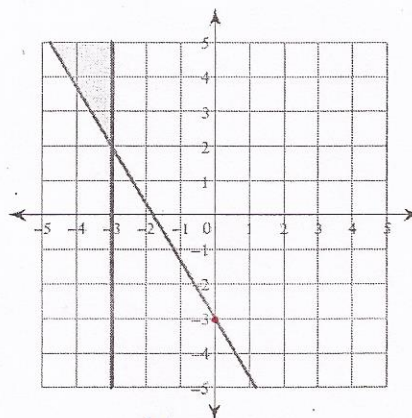

c. Graph the following system of inequalities.
$\begin{cases} y \geq -1 \\ x > -2 \\ x + 2y \leq 4 \end{cases}$ $y \leq -\frac{1}{2}x + 2$

Name two points that are possible solutions to the above system?

d. Write a system of inequalities to model the graph below..

$\begin{cases} y \geq -\frac{5}{3}x - 3 \\ x \leq -3 \end{cases}$

Extra practice.
Line A and Line B represent a system. What is the solution? $y = -5x + 2$

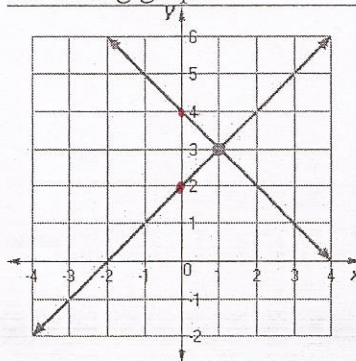| Line A	Line B
$y = -5x + 2$	<table><tr><td>x</td><td>y</td></tr><tr><td>−1</td><td>7</td></tr><tr><td>0</td><td>2</td></tr><tr><td>1</td><td>-3</td></tr><tr><td>2</td><td>-8</td></tr></table>)-5

Infinite Solutions
* they are the same line

Write the system of equations represented by the following graph.

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