

1. Eric sells model cars from a booth at a local flea market. He purchases each model car from a distributor for \$12, and the flea market charges him a booth fee of \$50. Eric sells each model car for \$20.

$x =$  number of model cars

Income equation:

$$y = 20x$$

Expense equation:

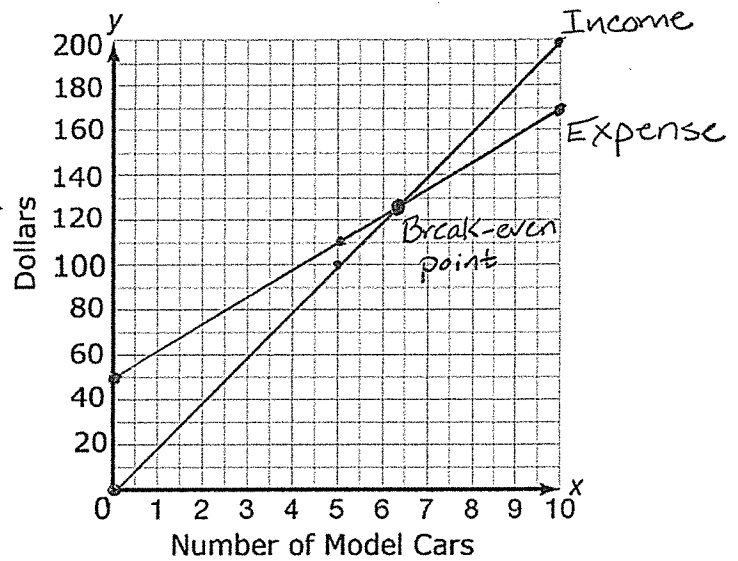
$$y = 12x + 50$$

Break-even Point:

It is between 6 and 7

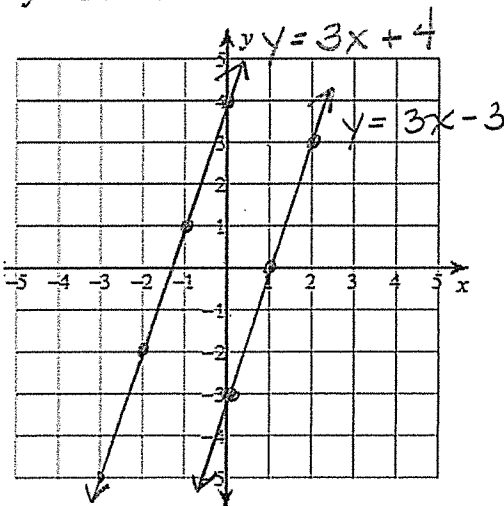
Meaning:

Eric must sell at least 7 model cars to break-even.



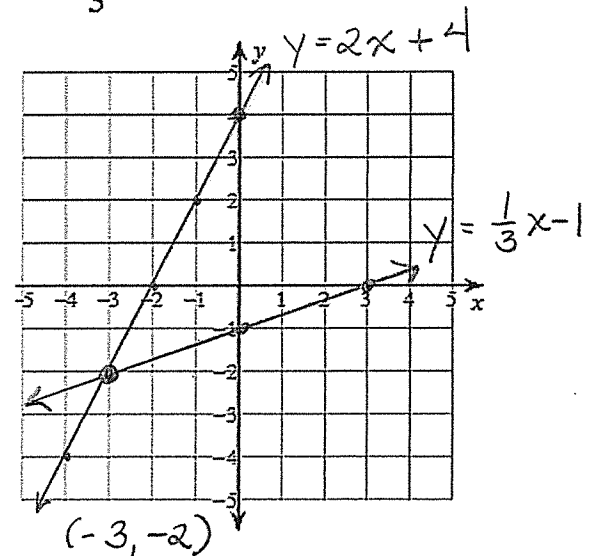
Solve each system by graphing.

2.  $y = 3x - 3$   
 $y = 3x + 4$

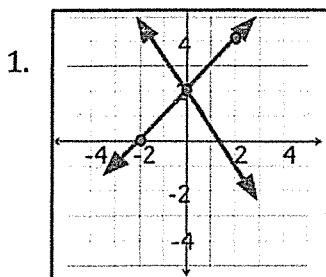


No solution

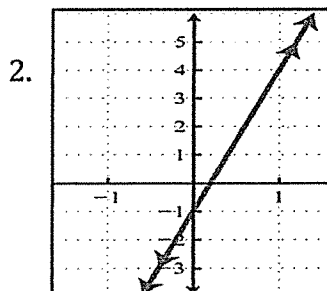
3.  $y = 2x + 4$   
 $y = \frac{1}{3}x - 1$



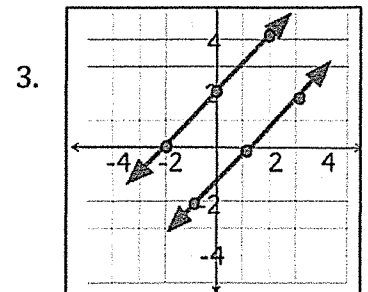
Label each system of equations below as one solution, no solution, or infinite solutions AND consistent or inconsistent.



One solution  
Consistent



Infinite solutions  
Consistent



No solution  
Inconsistent

4. Workout Plus offers a membership for \$30 each month plus a \$100 start-up fee. Fit Works offers a membership for \$50 each month plus a \$20 start-up fee. After how many months will memberships to both gyms cost the same amount?

$x$  = number of months

Write an equation for each situation. Then use substitution to solve.

$$y = 30x + 100 \quad 30x + 100 = 50x + 20 \quad y = 30(4) + 100$$

$$y = 50x + 20 \quad -20x + 100 = 20 \quad y = 220$$

$$\quad \quad \quad -20x = -80 \quad \text{After 4 months, both}$$

$$\quad \quad \quad x = 4 \quad \text{memberships will}$$

$$\quad \quad \quad \quad \quad \quad \text{cost } \$220.$$

Solve each system using substitution.

5.  $-2x + 8y = 4$   
 $y = 2$   
 $-2x + 8(2) = 4$   
 $-2x + 16 = 4$   
 $-2x = -12$   
 $x = 6$   
 $(6, 2)$

6.  $y = -7x - 7$   
 $y = -6x - 5$   
 $-7x - 7 = -6x - 5$   
 $-x - 7 = -5$   
 $-x = 2$   
 $x = -2$   
 $y = -7(-2) - 7$   
 $y = 14 - 7$   
 $y = 7$   
 $(-2, 7)$

7.  $-0.5x + 0.3y = -0.7 \times 10$   
 $0.1y = 0.6x + 0.2 \times 10$   
 $-5x + 3y = -7$   
 $y = 6x + 2$   
 $-5x + 3(6x + 2) = -7$   
 $-5x + 18x + 6 = -7$   
 $13x + 6 = -7$   
 $13x = -13$   
 $x = -1$   
 $y = 6(-1) + 2$   
 $y = -6 + 2$   
 $y = -4$   
 $(-1, -4)$

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

All real numbers or  
 Infinitely many  
 solutions

9.  $5x + y = 1 \rightarrow y = 1 - 5x$   
 $15x + 3y = -7$   
 $15x + 3(1 - 5x) = -7$   
 $15x + 3 - 15x = -7$   
 $3 = -7$

No solution

10.  $\frac{1}{2}x + \frac{3}{2}y = 5 \times 2$   
 $\frac{1}{3}y = 2x - 1 \times 3$   
 $x + 3y = 10$   
 $y = 6x - 3$   
 $x + 3(6x - 3) = 10$   
 $x + 18x - 9 = 10$   
 $19x - 9 = 10$   
 $19x = 19$   
 $x = 1$   
 $y = 6(1) - 3$   
 $y = 6 - 3$   
 $y = 3$   
 $(1, 3)$