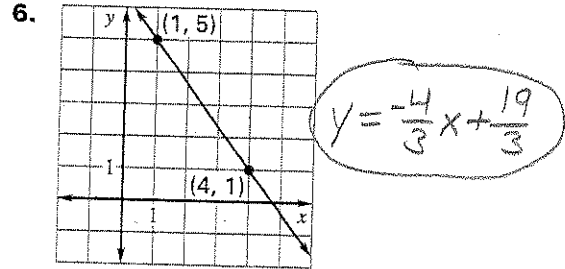
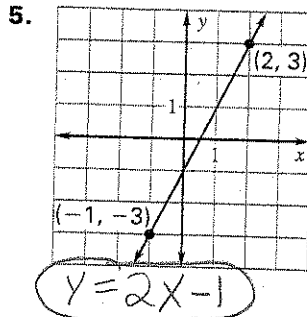
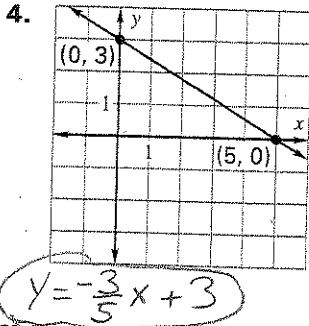


Write an equation of the line with the given slope m and y -intercept b .

1. $m = \frac{3}{4}; b = -4$
 $y = \frac{3}{4}x - 4$

2. $m = -\frac{3}{2}; b = \frac{5}{7}$
 $y = -\frac{3}{2}x + \frac{5}{7}$

Write an equation of the line shown.



Write an equation of the line that passes through the given point P and has the given slope m .

10. $P(3, 4); m = 4$
 $y = 4x - 8$

11. $P(5, -2); m = -3$
 $y = -3x + 13$

12. $P(-3, 2); m = \frac{1}{3}$
 $y = \frac{1}{3}x + 3$

Write an equation of the line that passes through point P and is parallel to the line with the given equation.

16. $P(3, -3); y = 4x - 6$
 $y = 4x - 15$

17. $P(6, -1); y = 3x + \frac{3}{4}$
 $y = 3x - 19$

18. $P(-4, 6); y = -2x - 3$
 $y = -2x - 2$

Write an equation of the line that passes through point P and is perpendicular to the line with the given equation.

22. $P(-4, -4); y = -2x + 1$
 $y = \frac{1}{2}x - 2$

23. $P(2, -3); y = -4x - 5$
 $y = \frac{1}{4}x - \frac{7}{2}$

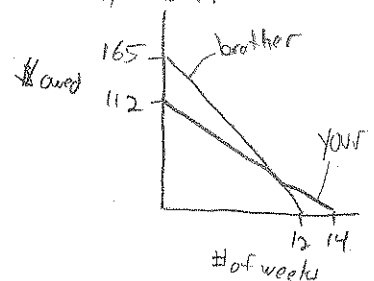
24. $P(5, 4); x = -5$
 $y = 4$

10. **Borrowing Money** You borrowed \$112 from your sister and told her that you would pay \$8 a week until the loan is paid off. Your brother borrowed \$165 from your sister and told her that he would pay \$13.75 a week until the loan is paid off.

- Write a linear equation that represents the balance of each loan. Identify the slope and y -intercept of each equation and explain what they represent in the real-life situation.
- Use a graph to determine who will pay off their loan first. Explain your reasoning. Brother, amount owed hits 0 in twelve weeks compared to 14 weeks
- Explain how you can verify your answer to part (b) algebraically. Set each equation = 0 & solve for x
- Explain the meaning of the intersection of the two lines in terms of the real-life situation. When your loan & brother's loan owe the same amount
- After the third week, you decide to pay your sister \$11 a week until the loan is paid off. Does this change your answer to part (b)? Explain your reasoning.

a) Your Loan: $y = 112 - 8x$
 $m = -8$ $b = 112$
 Slope is amount \$/week y -intercept is starting amount

brother Loan: $y = 165 - 13.75x$
 $m = -13.75$ $b = 165$
 slope & y -intercept mean the same as



$$y = 112 - (8 \cdot 3) - 11x$$

$$y = 112 - 24 - 11x$$

$$y = 88 - 11x$$

$$0 = 88 - 11x$$

$$8 = x$$

8 more weeks after the 3rd week \Rightarrow 11 weeks to pay it off, which is sooner than brother's loan.

equation of line \perp through midpoint
 In Exercises 1–4, find a relationship between x and y such that (x, y) is equidistant from the two points.

$m = \frac{-4}{6} = -\frac{2}{3}$

1. $(4, -1), (-2, 3)$ Midpoint is $(1, 1)$
 $m_{\perp} = \frac{3}{2}$
 $y = \frac{3}{2}x - \frac{1}{2}$

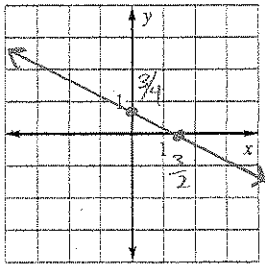
2. $(8, 4), (2, -7)$ $y = -\frac{6}{11}x + \frac{27}{11}$

5. A line passes through the points $(k + 10, -2k - 1)$ and $(2, 9)$ and has a y -intercept of 10. Find the value of k and the equation of the line. $k = -4$ $y = \frac{1}{2}x + 6$

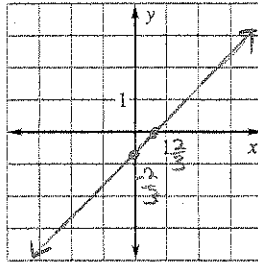
6. A line passes through the points $(3k, 6k - 5)$ and $(-1, -7)$ and has a y -intercept of -5 . Find the value of k and the equation of the line. $k = \frac{1}{3}$ $y = 5x - 2$

Graph the equation.

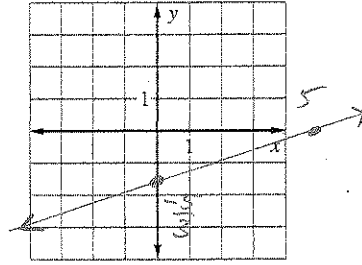
28. $2x + 4y = 3$



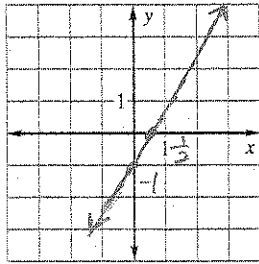
29. $-3x + 3y = -2$
 $x + 3y = 4x - 2$



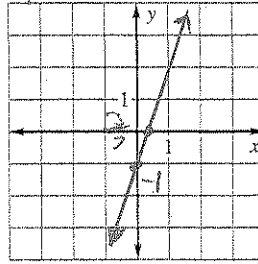
30. $x - 2y = y + 5$
 $x - 3y = 5$



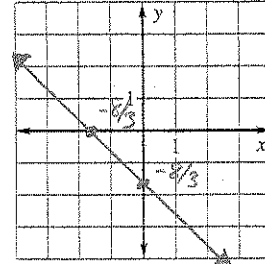
31. $4(x - 2) + 2 = 2y - 4$
 $4x - 8 + 2 = 2y - 4$
 $4x - 2y = 2$



32. $3(y - 4) = 7x - 15$
 $3y - 12 = 7x - 15 \rightarrow 3 = 7x - 3y$

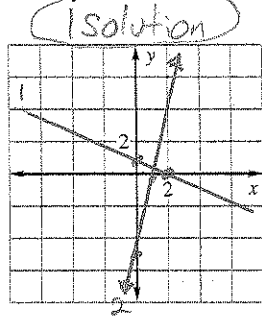


33. $2(y + 1) = 3x + 5(y + 2)$
 $2y + 2 = 3x + 5y + 10$
 $-8 = 3x + 3y$

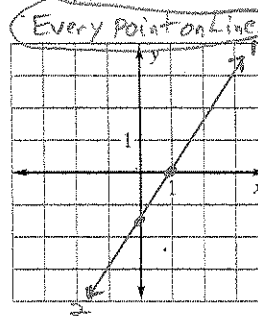


Graph the linear equations. Then use the graph to estimate how many solutions the equations share.

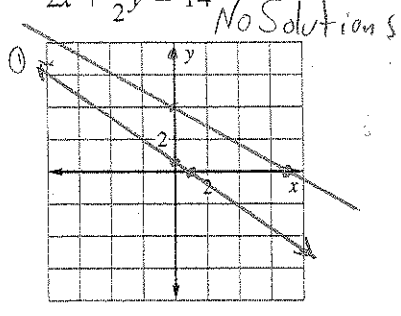
34. $x + 3y = 2$ Line 1
 $3x - y = 5$ Line 2



35. $3x - 2y = 3$ Line 1
 $6x - 4y = 6$ Line 2



36. $4x + 7y = 4$
 $2x + \frac{7}{2}y = 14$



In Exercises 37–39, use the following information.

Amusement Park The cost of admission to an amusement park is \$175 for a season pass or \$35 per visit.

37. Write an equation to model each situation. $y = 175$
 $y = 35x$

38. Graph each equation.

39. What is the break-even point? 5 visits

