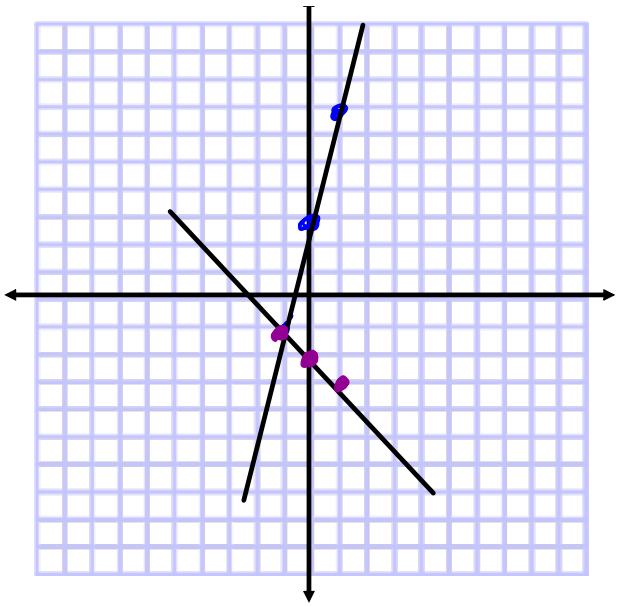
Answers

Solving Systems of Equations by Graphing

1. (3, -2)
2. (-1, -1)
3. (4, -3)
4. (2, -1)
5. (2, 2)
6. No solution (parallel lines)
7. (4, -4)
8. (3, -2)

Solving by Graphing

5. (-1, 1)
6. (2, 4)
7. (-4, -2)
8. (-3, -3)



2. 4. 6.

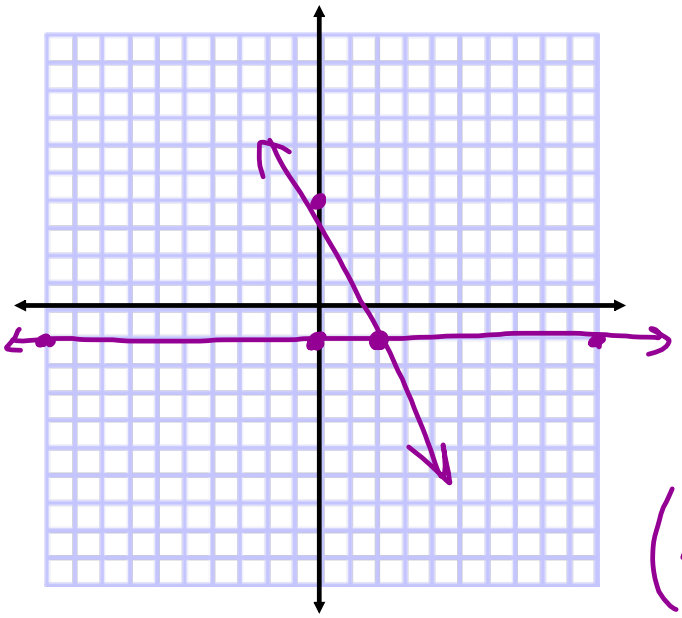
$y = 4x + 3$

$y = -x - 2$

$\frac{4}{1}$

$\frac{-1}{1}$

7. 8.



$y = -1$

$y = 0x - 1$

$-\frac{5}{2}$

$(2, -1)$

7. $0 = 8 + 2x$ ①

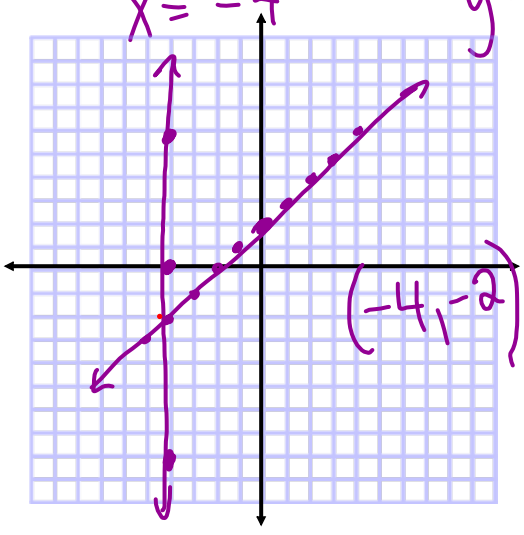
$2 - y = -x$ ②

① $\frac{2x}{2} = \frac{-8}{2}$

$x = -4$

② $\frac{-y}{-1} = \frac{-x}{-1} - \frac{2}{-1}$

$y = x + 2$



$(-4, -2)$

$\frac{1}{1}$

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

$2x + 3 = y$ ②

$y = 2x + 3$

① $\boxed{\frac{2}{3}} \times \boxed{-1} = y$

Bonus from test

$3kx - 7y - 10 = 0$ | $2x + y - 7 = 0$

$\frac{-7y}{-7} = \frac{-3kx}{-7} + \frac{10}{-7}$ | $y = -2x + 7$ ①

$y = \boxed{\frac{3}{7}k}x - \frac{10}{7}$ ① | $m = -2$

$m = \frac{3}{7}k$ | $m_\perp = \frac{1}{2}$ ①

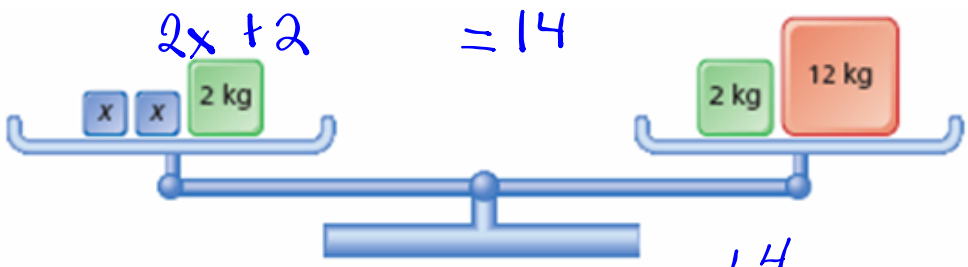
$\frac{3}{7}k = \frac{1}{2}$ ①

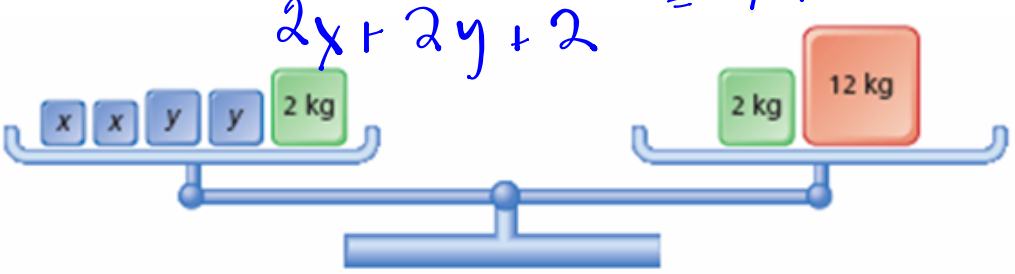
$\frac{3k}{3} = \frac{7}{2} \div 3$

$k = \frac{7}{6}$

7.4 Using a Substitution Strategy to Solve a System of Linear Equations

$6x = 12$





Solving Systems of Equations

There are a number of different ways in which to solve systems of equations. The second method we are going to look at is called *substitution.*

When we refer to solving a system of equations, we want to **solve for a numerical value** for each variable.

Rules for Substitution as a method for solving a system of equations.

$6x = 12$

- **There must be the same number of equations as variables.**

  - If there are two variables, there must be two equations; three variables, three equations, etc.

- **One of the equations can easily be substituted into the other equation to solve for one variable.**

Steps when solving systems of equations using substitution

Ex $-8x + y = 0$ ①
$x + 2y + 17 = 0$ ②

Step 1: Isolate one of the variables with the coefficient 1.

① $-8x + y = 0$ isolate y
$y = 8x$

Step 2: Substitute into the other equation.

② $x + 2y + 17 = 0$
$x + 2(8x) + 17 = 0$

Step 3: Solve for the variable

$x + 2(8x) + 17 = 0$
$x + 16x + 17 = 0$
$17x + 17 = 0$
$17x = -17$
$x = -1$
$(-1, -8)$

Step 4 use what you found in step 1 to find y

$y = 8x$
$y = 8(-1)$
$y = -8$

Solve the follwoing systems of equations using substitution

$y - 3x = 5$ ①
$y + x = 3$ ②

Step 1 → Isolate y in ①

① $y - 3x = 5$
$y = 3x + 5$

Step 2 → substitute

② $y + x = 3$
$3x + 5 + x = 3$

Step 3 Solve for x

$4x + 5 = 3$
$-5 \quad -5$
$\frac{4x}{4} = \frac{-2}{4}$
$x = -\frac{1}{2}$

Step 4 find y

$y = 3x + 5$
$y = \frac{3}{1}\left(-\frac{1}{2}\right) + 5$
$y = -\frac{3}{2} + \frac{5}{1} \cdot \frac{2}{2}$
$y = -\frac{3}{2} + \frac{10}{2}$
$y = \frac{7}{2}$

$\left(-\frac{1}{2}, \frac{7}{2}\right)$

Pg 425

Period 1
#4 a, b

Period 2
#4 a-d

If you need another example pg 418