

Solve using the substitution method on your own paper!

1) $2x + 8y = 20$

$y = 2$

(2, 2)

2) $x = 5$

$2x + y = 10$

(5, 0)

See work on next pages

3) $5x - 2y = 3$

$y = 2x$

(3, 6)

4) $2y + x = -15$

$x = 3y$

(-9, -3)

5) $4x + 7y = 19$

$y = x + 9$

(-4, 5)

6) $y = 6x + 11$

$2y - 4x = 14$

(-1, 5)

7) $2x - 8y = 6$

$y = -7 - x$

(-5, -2)

8) $x = 2y - 1$

$3x - 2y = -3$

(-1, 0)

9) $x + y = 3$

$3y + x = 5$

(-7, 10)

10) $2x - 3y = -4$

$x + 3y = 7$

(1, 2)

11) $5x - 10y = 15$
 $3x + 7y = 31$

($\frac{83}{13}$, $\frac{22}{13}$)

12) $2x + 7y = 10$
 $14y = -4x + 28$

\emptyset

13) Greg bought 5 hot dogs and 3 soft drinks at the ball game for \$11.50. Renaldo bought 4 hot dogs and 2 soft drinks for \$8.50. How much does a single hot dog and a single drink cost?

\$1.25

\$1.75

$$\textcircled{1} \quad 2x + 8y = 20 \quad y = 2 \quad (2, 2)$$

$$2x + 8(2) = 20$$

$$2x + 16 = 20$$

$$\underline{-16 \quad -16}$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

$$\textcircled{2} \quad x = 5 \quad 2x + y = 10 \quad (5, 0)$$

$$2(5) + y = 10$$

$$10 + y = 10$$

$$\underline{-10 \quad -10}$$

$$y = 0$$

$$\textcircled{3} \quad 5x - 2y = 3 \quad y = 2x \quad (3, 6)$$

$$y = 2(3)$$

$$5x - 2(2x) = 3$$

$$5x - 4x = 3$$

$$x = 3$$

$$y = 6$$

$$\textcircled{4} \quad 2y + x = -15 \quad x = 3y \quad (-9, -3)$$

$$2y + 3y = -15$$

$$\frac{5y}{5} = \frac{-15}{5}$$

$$y = -3$$

$$x = 3(-3)$$

$$x = -9$$

$$\textcircled{5} \quad 4x + 7y = 19 \quad y = x + 9 \quad (-4, 5)$$

$$4x + 7(x + 9) = 19 \quad \begin{array}{l} y = -4 + 9 \\ y = 5 \end{array}$$

$$4x + 7x + 63 = 19$$

$$11x + 63 = 19$$

$$\underline{\quad -63 \quad -63}$$

$$\frac{11x}{11} = \frac{-44}{11}$$

$$x = -4$$

$$\textcircled{6} \quad y = 6x + 11 \quad 2y - 4x = 14 \quad (-1, 5)$$

$$y = 6(-1) + 11 \quad 2(6x + 11) - 4x = 14$$

$$y = -6 + 11 \quad 12x + 22 - 4x = 14$$

$$y = 5 \quad 8x + 22 = 14$$

$$\underline{\quad -22 \quad -22}$$

$$\frac{8x}{8} = \frac{-8}{8}$$

$$x = -1$$

$$\textcircled{7} \quad 2x - 8y = 6 \quad y = -7 - x \quad (-5, -2)$$

$$2x - 8(-7 - x) = 6 \quad \begin{array}{l} y = -7 - 5 \\ y = -7 + 5 \\ y = -2 \end{array}$$

$$2x + 56 + 8x = 6$$

$$10x + 56 = 6$$

$$\underline{\quad -56 \quad -56}$$

$$\frac{10x}{10} = \frac{-50}{10}$$

$$x = -5$$

8 $X = 2y - 1$

$$\begin{aligned} X &= 2(0) - 1 \\ X &= 0 - 1 \\ X &= -1 \end{aligned}$$

$$\begin{aligned} 3X - 2y &= -3 \\ 3(2y - 1) - 2y &= -3 \\ 6y - 3 - 2y &= -3 \\ 4y - 3 &= -3 \\ \underline{+3 \quad +3} & \\ 4y &= 0 \\ \frac{4y}{4} &= \frac{0}{4} \\ y &= 0 \end{aligned}$$

$(-1, 0)$

9 $X + y = 3$

Easy to isolate y

$$\begin{array}{r} X + y = 3 \\ -X \quad -X \\ \hline y = -X + 3 \end{array}$$

$$\begin{aligned} y &= -(-7) + 3 \\ y &= 7 + 3 \\ y &= 10 \end{aligned}$$

$3y + X = 5$

$$\begin{aligned} 3(-X + 3) + X &= 5 \\ -3X - 9 + X &= 5 \\ -2X - 9 &= 5 \\ \underline{+9 \quad +9} & \\ -2X &= 14 \\ \underline{-2 \quad -2} & \\ X &= -7 \end{aligned}$$

$(-7, 10)$

10 $2X - 3y = -4$

$$\begin{aligned} 2(-3y + 7) - 3y &= -4 \\ -6y + 14 - 3y &= -4 \\ -9y + 14 &= -4 \\ \underline{-14 \quad -14} & \\ -9y &= -18 \\ \underline{-9 \quad -9} & \\ y &= 2 \end{aligned}$$

$X + 3y = 7$ easy to isolate x

$$\begin{array}{r} X + 3y = 7 \\ -3y \quad -3y \\ \hline X = -3y + 7 \end{array}$$

$$\begin{aligned} X &= -3(2) + 7 \\ X &= -6 + 7 \\ X &= 1 \end{aligned}$$

$(1, 2)$

isolating
x will NOT
make
fractions

11

$$5x - 10y = 15$$

$$\begin{array}{r} +10y \quad +10y \\ \hline 5x = 10y + 15 \\ \hline \end{array}$$

$$x = 2y + 3$$

$$x = 2\left(\frac{22}{13}\right) + 3$$

$$x = \frac{44}{13} + \frac{39}{13}$$

$$x = \frac{83}{13}$$

$$3x + 7y = 31$$

$$3(2y + 3) + 7y = 31$$

$$6y + 9 + 7y = 31$$

$$13y + 9 = 31$$

$$\begin{array}{r} -9 \quad -9 \\ \hline 13y = 22 \\ \hline \end{array}$$

$$y = \frac{22}{13}$$

$$\left(\frac{83}{13}, \frac{22}{13}\right)$$

No "easy"
choice
but at least
solving
for x
would only
make
1 fraction

12

$$2x + 7y = 10$$

$$\begin{array}{r} -7y \quad -7y \\ \hline 2x = -7y + 10 \\ \hline \end{array}$$

$$x = -\frac{7}{2}y + 5$$

$$14y = -4x + 28$$

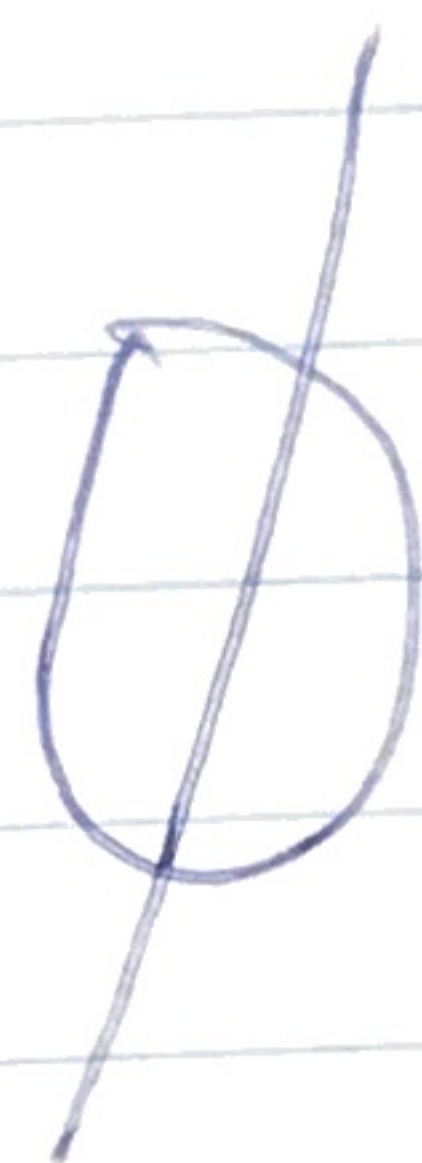
$$14y = -4\left(-\frac{7}{2}y + 5\right) + 28$$

$$14y = 14y - 20 + 28$$

$$14y = 14y + 8$$

$$\begin{array}{r} -14y \quad -14y \\ \hline 0 = 8 \\ \hline \end{array}$$

False



13

$$5h + 3d = 11.50$$

$$4h + 2d = 8.50 \quad \text{solve for } d$$

$$5h + 3(-2h + 4.25) = 11.50$$

$$5h - 6h + 12.75 = 11.50$$

$$-1h + 12.75 = 11.50$$

$$\begin{array}{r} -12.75 \quad -12.75 \\ \hline -1h = -1.25 \\ \hline \end{array}$$

$$-1h = -1.25$$

$$h = 1.25$$

$$\begin{array}{r} -4h \quad -4h \\ \hline 2d = -4h + 8.50 \\ \hline \end{array}$$

$$2d = -4h + 8.50$$

$$d = -2h + 4.25$$

$$d = -2(1.25) + 4.25$$

$$d = -2.50 + 4.25$$

$$d = \$1.75$$

h: Cost of hotdog: \$1.25
d: Cost of drink: \$1.75