

Page Warm-ups
 388 : (42-44)

3:00:00

42. Find the value of the y-coordinate of the solution to the given system.

$$\begin{aligned} 5x + 5y &= 179 \\ x &= 5y - 143 \end{aligned}$$

$$\begin{aligned} 5(5y - 143) + 5y &= 179 \\ 25y - 715 + 5y &= 179 \\ 30y - 715 &= 179 \\ 30y &= 894 \\ y &= 29.8 \end{aligned}$$

43. Find the value of the y-coordinate of the solution to the given system.

$$\begin{aligned} y &= 9x + 3480 \\ y &= 81x - 7104 \end{aligned}$$

$$\begin{aligned} 9x + 3480 &= 81x - 7104 \\ -9x & \quad -9x \\ \hline 3480 &= 72x - 7104 \\ +7104 & \quad +7104 \\ \hline 10584 &= 72x \\ 147 &= x \end{aligned}$$

$y = 4903$

44. Tina has \$220 in her account. Cliff has \$100 in his account. Starting in July, Tina adds \$25 to her account on the first of each month, while Cliff adds \$35 to his. How many dollars will they have in their accounts when the amounts are the same?

month 5

$$\begin{aligned} y &= 25x + 220 \text{ Tina} \\ y &= 35x + 100 \text{ Cliff} \end{aligned}$$

$$\begin{aligned} 25x + 220 &= 35x + 100 \\ -25x & \quad -25x \\ \hline 220 &= 10x + 100 \\ -100 & \quad -100 \\ \hline 120 &= 10x \\ 12 &= x \end{aligned}$$

\$520

x (cones) \$1.10
 37 y (sundaes) \$2.35

Sold combo (172)
 \$294.20

$$1.10x + 2.35y = 294.20$$

$$x + y = 172$$

8 gals, 3 brush \$152.50

$$8g + 3b = 152.50$$

$$6g + 2b = 113$$

15, 22, 12, 19, 16

⑫ $3x - 2y = 0$
 $x + y = -5$
 $-y \quad -y$
 $x = -y - 5$
 $x = (-3) - 5$
 $x = -3 - 5$
 $x = -8$
 $3(-y - 5) - 2y = 0$
 $-3y - 15 - 2y = 0$
 $-5y - 15 = 0$
 $-5y + 15 = 15$
 $-5y = 15$
 $y = -3$

$(-2, -3)$

⑮ $2x + 4y = -6$
 $x - 3y = 7$
 $+3y \quad +3y$
 $-x = 3y + 7$
 $2(3y + 7) + 4y = -6$
 $6y + 14 + 4y = -6$
 $10y + 14 = -6$
 $10y = -20$
 $y = -2$
 $x = 3(-2) + 7$
 $x = -6 + 7$
 $x = 1$

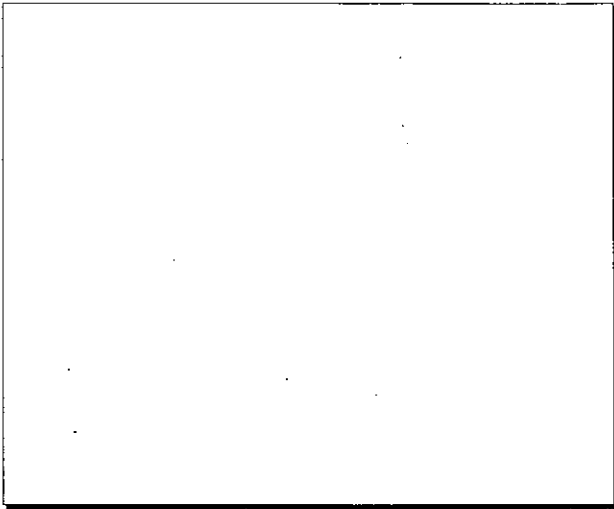
$(1, -2)$

⑯ $5x - 3y = -4$
 $x + y = -4$
 $-y \quad -y$
 $x = -y - 4$
 $5(-y - 4) - 3y = -4$
 $-5y - 20 - 3y = -4$
 $-8y - 20 = -4$
 $-8y + 20 = 16$
 $-8y = 16$
 $y = -2$
 $x = -(-2) - 4$
 $x = 2 - 4$
 $x = -2$

$(-2, -2)$

⑰ $3x - 1y = 4$
 $2x + y = 16$
 $-2x \quad -2x$
 $y = -2x + 16$
 $3x - (-2x + 16) = 4$
 $3x + 2x - 16 = 4$

⑱ $2x + 5y = -6$
 $4x + y = -12$
 $-4x \quad -4x$
 $2x + 5 = -20x$
 $y = -4x - 12$
 $2x + 5(-4x - 12) = -6$
 $2x - 20x - 60 = -6$
 $-18x - 60 = -6$



7.3 Notes: Part 1 Day 56

Solving Systems by Elimination
(A.K.A. Linear Combination)

- use if there are opposite coefficients, same coefficients, or if all variables have coefficients besides -1 or 1.

$$\begin{array}{r} -3x + y = 6 \quad x + 4y = 12 \\ 3x - 3y = 9 \quad 7x + 4y = -2 \end{array}$$

$$\begin{array}{r} 3x - 9y = 5 \\ 4x + 2y = 6 \end{array}$$

Solve by elimination.

1. $2x + 5y = 17$

$6x - 5y = -9$

$8x + 0 = 8$

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

$x = 1$

$2 \cdot 1 + 5y = 17$

$2 + 5y = 17$

$5y = 15$

$y = 3$

If you already have opposite coefficients -

coefficients -

Add each column in both eqs, then solve.

Take that value, substitute it into either equation, and solve for the remaining variable.

2. $7x + 2y = 10$ $(2, -2)$
 $+ -7x + y = -16$

$\frac{3y}{3} = \frac{-6}{3}$

$y = -2$

$7x + 2(-2) = 10$

$7x - 4 = 10$

$+4 +4$

$7x = 14$

$\frac{7x}{7} = \frac{14}{7}$

$x = 2$

$-7x + 2 = -16$
 $+2 +2$
 $-7x = -14$
 $\frac{-7x}{-7} = \frac{-14}{-7}$
 $x = 2$

$(2, -2)$

3. $2x - 3y = 61$
 $2x + y = -7$

$2x - 3y = 61$
 $-2x - y = +(-7)$

 $-4y = 54$
 $y = -13.5$

$2x + (-13.5) = -7$
 $+13.5 +13.5$

 $2x = 6.5$
 $x = 3.25$

$(3.25, -13.5)$

If you have the same coefficients, **SUBTRACT** each column in the eqs, & solve.
 -Then take that value & subst. into either eq. to find the other variable.

4. $8x + 11y = 20$
 $5x - 11y = -59$

5. $2x + 18y = -9$
 $4x + 18y = -27$

SUBTRACT

$2x + 18y = -9$
 $-4x + 18y = -27$

6. $2x + y = 3$
 $-2x + y = 1$

$$\begin{aligned} 9. \quad x + y &= 30 \\ x - y &= 6 \end{aligned}$$

7. The sum of two numbers is 20. Their difference is 4.
- Write a system of equations that describes this situation.
 - Solve by elimination to find the two numbers.

$$\begin{aligned} 12. \quad 3x + 5y &= 10 \\ x - 5y &= -10 \end{aligned}$$

$$\begin{aligned} 15. \quad 2x + 6y &= 0 \\ -2x - 5y &= 0 \end{aligned}$$

$$\begin{aligned} 18. \quad 3x + 7y &= 48 \\ 5x - 7y &= -32 \end{aligned}$$

Assignment:

Elimination WKsts 1+2

turn-in

Evans Only -
on Both Sides

37. At an ice cream parlor, ice cream cones cost \$1.10 and sundaes cost \$2.35. One day, the receipts for a total of 172 cones and sundaes were \$294.20. How many cones were sold?

You purchase 8 gal of paint and 3 brushes for \$152.50. The next day, you purchase 6 gal of paint and 2 brushes for \$113.00. How much does each gallon of paint and each brush cost?