

Algebra 1

6.4

Solve systems by elimination

Solve problems using
elimination

solve

elimination

DRT charts

whiteboards

speed dating (if time)

← zero
pairs
x or y

$$\begin{array}{l} \rightarrow (2x - 1y = 4) \xrightarrow{3} 6x - 3y = 12 \\ \rightarrow 7x + 3y = 27 \end{array}$$

What is the plan?

$$\begin{array}{r} 2 \cdot 3 - y = 4 \\ 6 - y = 4 \\ -6 \quad 0 \quad -6 \end{array}$$

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

$$x = 3$$

$$(x, y)$$

$$(3, 2)$$

$$\begin{array}{r} -y = -2 \\ \hline -1 \quad -1 \\ y = 2 \end{array}$$

$$\begin{array}{l} 7 \cdot 3 + 3 \cdot 2 = 27 \\ 21 + 6 = 27 \quad \checkmark \end{array}$$

$$\begin{array}{l} 2. \ 2x + 7y = 1 \\ \quad x + 5y = 2 \end{array} \Rightarrow$$

$$\begin{array}{r} 2x + 7y = 1 \\ -2x + -10y = -4 \\ \hline \end{array}$$

$$(-3, 1)$$

$$2x + 7 \cdot 1 = 1$$

$$\begin{array}{r} 2x + 7 = 1 \\ -7 \quad -7 \end{array}$$

$$\begin{array}{r} 2x = -6 \\ \hline 2 \quad 2 \end{array}$$

$$x = -3$$

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

$$y = 1$$

$$-3 + 5 \cdot 1 = 2$$

$$-3 + 5 = 2$$

✓

$$\begin{array}{l} 3 \quad 4x + 2y = -14 \xrightarrow{-3} -12x + -6y = 42 \\ \quad 5x + 3y = -17 \xrightarrow{2} 10x + 6y = -34 \end{array}$$

$$(-4, 1)$$

$$\begin{array}{r} -2x = 8 \\ \hline -2 \quad -2 \\ \hline x = -4 \end{array}$$

$$4 \cdot -4 + 2y = -14$$

$$\begin{array}{r} -16 + 2y = -14 \\ +16 \quad +16 \end{array}$$

$$\begin{array}{r} 2y = 2 \\ \hline 2 \quad 2 \end{array}$$

$$\begin{array}{l} 5 \cdot -4 + 3 \cdot 1 = -17 \\ -20 + 3 = -17 \end{array} \quad \text{!!}$$

$$\begin{array}{rcl}
 4. \quad 9a + 2b = -8 & \xrightarrow{3} & 27a + 6b = -24 \\
 -7a + 3b = 12 & \xrightarrow{2} & -14a + 6b = 24
 \end{array}
 \quad (a, b)$$

$$\begin{array}{r}
 13a = 0 \\
 \hline
 13 \quad 13
 \end{array}$$

$$(0, 4)$$

$$a = 0$$

$$9 \cdot 0 + 2b = -8$$

$$\begin{array}{r}
 0 + 2b = -8 \\
 \hline
 \quad 2 \quad 2
 \end{array}$$

$$b = 4$$

$$-7 \cdot 0 + 3 \cdot 4 = 12$$

$$\therefore 0 + 12 = 12$$

$$\begin{array}{rcl} \rightarrow 5x - 3y = 6 & \xrightarrow{5} & 25x - 15y = 30 \\ 2x + 5y = -10 & \xrightarrow{3} & 6x + 15y = -30 \\ \hline \end{array}$$

$$5 \cdot 0 + -3y = 6$$

$$0 + -3y = 6$$

$$\frac{-3}{-3} \quad \frac{-6}{-3}$$

$$y = -2$$

$$\frac{3|x}{31} = \frac{0}{31}$$

$$2 \cdot 0 + 5 \cdot -2 = -10$$

$$0 + -10 = -10$$

$$x = 0$$

$$(0, -2)$$

$$7 \cdot 3 + 3 \cdot 2 = 27$$

$$21 + 6 = 27 \quad \checkmark$$

$$2x - y = 4 \xrightarrow{3} 6x - 3y = 12$$

$$7x + 3y = 27 \rightarrow 7x + 3y = 27$$

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

$$x = 3$$

$$(3, 2)$$

$$2 \cdot 3 - y = 4$$

$$6 - y = 4$$

$$\begin{array}{r} -6 \quad -6 \end{array}$$

$$\begin{array}{r} -y = -2 \\ \hline -1 \quad -1 \end{array}$$

$$7x + 3y = -1$$

$$x + y = -3 \xrightarrow{-3}$$

$$7x + 3y = -1$$

$$-3x + -3y = 9$$

$$7 \cdot 2 + 3y = -1$$

$$14 + 3y = -1$$

$$\begin{array}{r} -14 \\ 14 + 3y = -1 \\ -14 \end{array}$$

$$\underline{3y = -15}$$

$$y = -5$$

$$\frac{4}{4}x = \frac{8}{4}$$

$$x = 2$$

$$D = R * T$$

wind

current

upstream

downstream

5. **CCSS SENSE-MAKING** A kayaking group with a guide travels 16 miles downstream, stops for a meal, and then travels 16 miles upstream. The speed of the current remains constant throughout the trip. Find the speed of the kayak in still water.



Leave	10:00 A.M.
Stop for meal	12:00 noon
Return	1:00 P.M.
Finish	5:00 P.M.