

Solve the system using substitution.

$$1. \begin{cases} y = 5x - 10 \\ y = 3x + 8 \end{cases} \quad (9, 35)$$

$$5x - 10 = 3x + 8$$

$$2x = 18$$

$$x = 9$$

$$y = 3(9) + 8$$

$$y = 35$$

$$2. \begin{cases} y = x + 5 \\ 4x + y = 20 \end{cases} \quad (3, 8)$$

$$4x + x + 5 = 20$$

$$5x = 15$$

$$x = 3$$

$$y = 8$$

$$3. \begin{cases} x = 2y + 10 \\ \frac{1}{2}x - 2y = 4 \end{cases} \quad (12, 1)$$

$$\frac{1}{2}(2y + 10) - 2y = 4$$

$$-y + 5 = 4$$

$$-y = -1$$

$$y = 1$$

$$x = 2 + 10 = 12$$

$$4. \begin{cases} y = 4x + 3 \\ 2x - 3y = 21 \end{cases} \quad (-3, -9)$$

$$2x - 3(4x + 3) = 21$$

$$-10x = 30$$

$$x = -3$$

$$y = 4(-3) + 3$$

$$y = -9$$

$$5. \begin{cases} x = y - 8 \\ -x - y = 0 \end{cases} \quad (-4, 4)$$

$$-(y - 8) - y = 0$$

$$-2y = -8$$

$$y = 4$$

$$x = -4$$

$$6. \begin{cases} y = -3x + 2 \\ 4x + y = 20 \end{cases} \quad (18, -52)$$

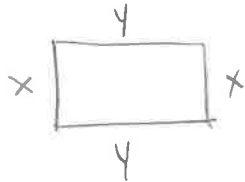
$$4x - 3x + 2 = 20$$

$$x = 18$$

$$y = -3(18) + 2 = -52$$

## Word Problems

1. The length of a rectangle is 3 more than its width. The perimeter of the rectangle is 58 cm. What are the rectangle's dimensions?



$$2x + 2y = 58$$
$$x = (3 + y)$$

$$2(3 + y) + 2y = 58$$

$$4y = 52$$

$$y = 13$$

13 cm by  
16 cm

2. Carla and Benicio work in a men's clothing store. They earn commission from each suit and each pair of shoes they sell. For selling 3 suits and one pair of shoes, Carla has earned \$47 in commission. For selling 7 suits and 2 pairs of shoes, Benicio has earned \$107 in commission. How much do the salespeople earn for the sale of a suit? for the sale of a pair of shoes?

\$13 - suit  
\$8 - shoes

$$3x + y = 47 \rightarrow y = 47 - 3x$$

$$7x + 2y = 107$$

$$7x + 2(47 - 3x) = 107$$

$$x = 13$$

3. The school band sells carnations on Valentine's Day for \$2 each. They buy the carnations from a florist for \$0.50 each, plus a \$16 delivery charge. How many carnations would the school band need to sell in order to break even?

BUY:  $y = 0.50x + 16$

SELL:  $y = 2x$

} set  
equal

$$.50x + 16 = 2x$$

$$\frac{16}{1.5} = \frac{1.5x}{1.5}$$

$$x = 10.67$$

11 carnations