Algebra 1

Chapter 6

Section 6-2 part 2

Substituting Values: find the value of each variable

$6x = 3y + 5$

$y = 2x + 3$

$6x = 3(2x + 3) + 5$

$6x = 6x + 9 + 5$

$6x = 6x + 14$

$-6x \quad -6x$

$0 \neq 14$

No solution

(parallel lines)

Substituting Values: find the value of y

$5x = 4$

$y = 5x - 10$

$y = 4 - 10$

$y = -6$

$-6 = 5x - 10$

$+10 \quad +10$

$\frac{4}{5} = \frac{5x}{5}$

$\frac{4}{5} = x$

solution: $(\frac{4}{5}, -6)$

Substituting Values: find the value of each variable

$3x = 3y + 21$

$\frac{3x}{3} = \frac{3y}{3} + \frac{21}{3}$

$x = y + 7$

$7y - 2x = 6$

$7y - 2(y+7) = 6$

$7y - 2y - 14 = 6$

$+14 \quad +14$

$7y - 2y = 20$

$5y = 20$

$\frac{5y}{5} = \frac{20}{5}$

$y = 4$

$x = 4 + 7$

$x = 11$

solution: $(11, 4)$

Substituting Values: find the value of each variable

$2x + 5y = 3$

$\frac{10x}{10} = \frac{15}{10} - \frac{25y}{10}$

$x = \frac{3}{2} - \frac{5}{2}y$

$2\left(\frac{3}{2} - \frac{5}{2}y\right) + 5y = 3$

$3 - 5y + 5y = 3$

$3 = 3$

Infinite solutions (same line)

At a local theater tickets cost $9.25, but with a student discount the tickets cost $6.75. One night, the theater sold all 200 of its seats and took in a total of $1795. How many of each ticket were sold?

x → regular
y → student

$x + y = 200 \rightarrow y = 200 - x$

$9.25x + 6.75y = 1795$

$9.25x + 6.75(200 - x) = 1795$

$9.25x + 1350 - 6.75x = 1795$

$-1350 \quad -1350$

$9.25 - 6.75 = 2.50$

$9.25x - 6.75x = 445$

$2.5x = 445$

$\frac{2.5x}{2.5} = \frac{445}{2.5}$

178
$2.5\overline{)445.0}$
$-25\downarrow$
195
$-175\downarrow$
200

$x = 178 \rightarrow y = 200 - 178$

$y = 22$

Two numbers add up to 50. One number is two more than three times the other number. What are the two numbers?

$x+y=50$

$x=2+3y$

$2+3y+y=50$

$2+4y=50$

$-2 \quad -2$

$\frac{4y}{4}=\frac{48}{4}$

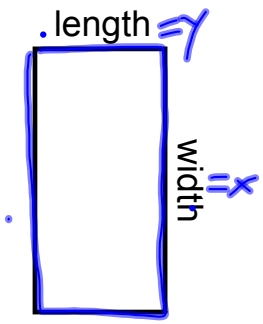
$y=12$

$x=2+3(12)$

$x=2+36$

$x=38$

A rectangle has a perimeter of 56m. The width is three times the length. Find the dimensions of the rectangle.



$2x+2y=56$

$x=3y$

$2(3y)+2y=56$

$6y+2y=56$

$\frac{8y}{8}=\frac{56}{8}$

$y=7m$

$x=3(7)$

$x=21m$