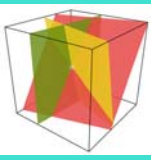


Unit 6: Systems of Equations



6.5 Applications of Systems

Ex.) The difference between two numbers is 9. The larger number is 3 more than twice the smaller number. Find the numbers.

$x = \text{smaller \#}$
 $y = \text{larger \#}$
 "define the variables"

$$y - x = 9 \quad y = (3 + 2x)$$

$$3 + 2x - x = 9 \quad y = 3 + 2(6)$$

$$3 + x = 9 \quad y = 3 + 12$$

$$-3 + x = 9 - 3 \quad y = 15$$

$$x = 6$$

Ex.) The perimeter of a rectangle is 40 meters. The width is 4 meters less than the length. Find the dimensions of the rectangle.

$l = \text{length}$
 $w = \text{width}$

$$P = 2l + 2w$$

$$40 = 2l + 2w$$

$$w = (l - 4)$$

$$40 = 2l + 2(l - 4)$$

$$40 = 2l + 2l - 8$$

$$40 = 4l - 8$$

$$+8 \quad +8$$

$$48 = 4l$$

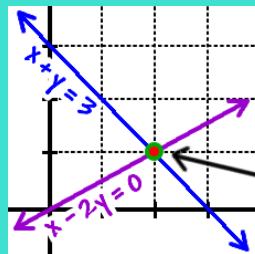
$$\frac{48}{4} = \frac{4l}{4}$$

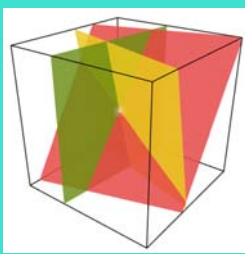
$$12m = l$$

$$w = l - 4$$

$$w = 12 - 4$$

$$w = 8m$$





Ex.) Gary had a total of \$260 in five and ten dollar bills. If he has 33 bills in total, how many of each denomination does he have?

$f = \text{\# fives}$
 $t = \text{\# tens}$

$$260 = 5f + 10t$$

$$- 10 \cdot (33 = f + t)$$

$$- 330 = -10f + -10t$$

$$260 = 5f + 10t$$

$$- 70 = -5f$$

$$\frac{-70}{-5} = \frac{-5f}{-5}$$

$$14 = f$$

$$33 = f + t$$

$$33 = 14 + t$$

$$-14 \quad -14$$

$$19 = t$$



Interest Rates

2000 5% interest
 ↑ ÷ 100
 0.05