

Nov. 28 2012

Section 4.3

Application of Systems

② three times one number minus a second is 8, and the sum of the number is ~~12~~. Find the numbers.

$$3x - y = 8$$

$$x + y = 12$$

$$\begin{array}{r} 3x - y = 8 \\ x + y = 12 \\ \hline 4x = 20 \end{array}$$

$$x = 5$$

$$\begin{array}{r} x + y = 12 \\ 5 + y = 12 \\ \hline y = 7 \end{array}$$

①

311 tickets sold

(T)	student	\$0.50	\$0.50
(N)	non-student	\$1.50	\$1.50

~~$$\begin{array}{l} T + N = 311 \\ 0.50T + 1.50N = 385.50 \end{array}$$~~

$$\begin{array}{l} T + N = 311 \\ 5T + 15N = 3855 \end{array}$$

$$T = 311 - N$$

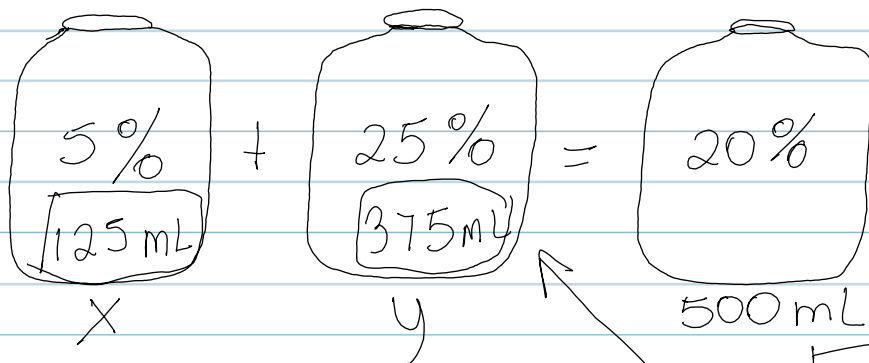
$$\begin{aligned} 5(311 - N) + 15N &= 3855 \\ 1555 - 5N + 15N &= 3855 \\ 10N &= 3855 - 1555 \\ 10N &= 2300 \end{aligned}$$

$N = 230$
non-student
tickets

$T + N = 311$
 $T + 230 = 311$
 $T = 81$
student
tickets

Nov 28, 2012

8



$$\begin{aligned} X + y &= 500 \\ 0.05X + 0.25y &= 0.20(500) \\ 0.05X + 0.25y &= 100 \\ 5X + 25y &= 10000 \end{aligned}$$

Elimination Method

$$\begin{aligned} \textcircled{1} \quad X + y &= 500 \\ \textcircled{2} \quad 5X + 25y &= 10000 \end{aligned}$$

$$\begin{aligned} -5 \textcircled{1} \quad -5X - 5y &= -2500 \\ 5X + 25y &= 10000 \\ \hline \end{aligned}$$

$$20y = 7500$$

$$\begin{aligned} y &= 375 \text{ mL} \\ &25\% \text{ soln} \end{aligned}$$

$$\begin{aligned} X + y &= 500 \\ X + 375 &= 500 \end{aligned}$$

$$\begin{aligned} X &= 125 \text{ mL} \\ &5\% \text{ soln} \end{aligned}$$

Nov 28, 2012

⑥ $D = R \cdot T$
 $R \cdot T = D$

$$\begin{array}{rcl} \text{UP} & \times & 1 & 6.8 \\ \text{down} & y & 1 & 10.6 \end{array}$$

$$\begin{array}{l} x = 6.8 \\ y = 10.6 \end{array}$$

$w = \text{still water}$

$c = \text{Current}$

down $y = 10.6$

$$\boxed{w + c = 10.6}$$

up $x = 6.8$

$$\boxed{w - c = 6.8}$$

$$w - \cancel{c} = 6.8$$

$$w + \cancel{c} = 10.6$$

$$2w = 17.4$$

$$\boxed{w = 8.7 \text{ Km/hr}} \\ \text{still water}$$
 ✓

$$w + c = 10.6$$

$$8.7 + c = 10.6$$

$$c = 10.6 - 8.7$$

$$\boxed{c = 1.9 \text{ Km/hr}} \\ \text{Current water}$$
 ✓