

099 §4.3 #s 7, 9, 11, 13, 17, 20

(7) 925 tickets sold, for \$1150 total.

Adults cost \$2, Kids cost \$1.

How many of each kind?

Let $x =$ the # of adult tickets sold
& $y =$ " " " Kids " "

Then $x + y = 925$ and $\left. \begin{array}{l} 2x + 1y = 1150 \end{array} \right\}$ system of eq's.

$\left(\begin{array}{l} 2 \\ \text{adult} \end{array} \right)$ (adults) = \$ Money! Good.

$$x = 925 - y \Rightarrow$$

$$2x + y = 1150 \quad \text{is}$$

$$2(925 - y) + y = 1150$$

$$1850 - 2y + y = 1150$$

$$-y = -700$$

$$\boxed{y = 700} \text{ Kids tickets} \Rightarrow$$

$$x = 925 - 700 = \boxed{225} = x \text{ Adult tickets}$$

099 § 4.3 # 9, 11, 13, 17, 20

(9) \$20,000 to invest.

Part @ 6%, part @ 7%.

\$1280 in interest at the end of 1 year.

How much invested at each rate?

$x =$ amt invested @ 6% (in \$)
$y =$ " " " 7% " "

Then $x + y = 20,000$ } $\Rightarrow y = 20,000 - x$
system
& $.06x + .07y = 1280$

$$.06x + .07(20,000 - x) = 1280$$

$$.06x + 1400 - .07x = 1280$$

$$6x + 140,000 - 7x = 128,000$$

$$-x = -12,000$$

$x = 12,000$

$$\Rightarrow y = 20,000 - 12,000$$

$= 8,000 = y$

099 § 4B #s 13, 17, 20

(13)

$$z = 3x$$

$$x + y + z = \text{Total} = 2200$$

$$.06x + .08y + .09z = 178 \text{ \textit{i} interest.}$$

$$x + y + (3x) = 2200$$

$$.06x + .08y + .09(3x) = 178$$

$$6x + 8y + 9(3x) = 17800$$

$$6x + 8y + 27x = 17800$$

$$33x + 8y = 17800$$

$$4x + y = 2200 \Rightarrow y = 2200 - 4x$$

$$\hookrightarrow 33x + 8(2200 - 4x) = 17800$$

$$33x + 17600 - 32x = 17800$$

$$x = 17800 - 17600 = \boxed{200 = x}$$

$$y = 2200 - 4x = 2200 - 800 = \boxed{1400 = y}$$

$$z = 3x = 3(200) = 600$$

$$\boxed{600 = z}$$

099 § 4/3 #5 17,20

⑦ 16% soln to be made from 20% & 14% solns. How much of each soln to make 15 gal. of 16% soln?

Let x = amt of 20% soln (gallons)

y = " " 14% soln (gallons)

Then $x + y = 15$ TOTAL SOLN

$.2x + .14y = .16(15)$ PURE DISINFECTANT

$$20x + 14y = 16(15) = 240$$

$$y = 15 - x \rightarrow$$

$$20x + 14(15 - x) = 240$$

$$20x + 210 - 14x = 240$$

$$6x = 30$$

$$\boxed{x = 5}$$

$$\rightarrow y = 15 - 5 = \boxed{10 = y}$$

099 § 4.3 #20

(20) 3 different acid solns?

Let x = amt of 20% acid (liters)

y = " " 40% " "

z = " " 60% " "

Want 60 liters of 50% acid, using twice as much 60% as 40%. How much of each?

TOTAL $x + y + z = 60$

Pure Acid $.2x + .4y + .6z = .5(60)$

Twice as much 60% as 40%

MISC

$$z = 2y$$

Again, beware $y = 2z$!

$$x + y + z = x + y + 2y = \underline{x + 3y = 60}$$

$$2x + 4y + 6z = 300$$

$$2x + 4y + 6(2y) = 300$$

$$\underline{2x + 16y = 300}$$

$$2(60 - 3y) + 16y = 300$$

$$120 - 6y + 16y = 300$$

$$10y = 180$$

$$\boxed{y = 18 \text{ l}}$$

$$z = 2(18) = \boxed{36 \text{ l} = z}$$

$$x = 60 - 3(18) = 60 - 54 = \boxed{6 \text{ l} = x}$$