

7.6 ex 16
p.527

$$\begin{cases} 2x + y + 2z = 1 \\ x + 2y + z = 2 \\ x - y - z = 0 \end{cases} \rightarrow \begin{cases} 2x + y + 2z = 1 \\ 2x + 2y + z = 2 \\ 4x - y = 1 \end{cases}$$

$$\begin{aligned} & \xrightarrow{\cdot 2} \begin{cases} 2x + y + 2z = 1 \\ 2x + 2y + z = 2 \\ 4x - y = 1 \end{cases} \\ & \xrightarrow{-} \begin{cases} 2x + y = 2 \\ 4x - y = 1 \end{cases} \\ & \xrightarrow{+} \begin{cases} 2x + y = 2 \\ 6x = 3 \end{cases} \\ & \xrightarrow{:6} \begin{cases} 2x + y = 2 \\ x = \frac{1}{2} \end{cases} \end{aligned}$$

$$\begin{aligned} 2x + y &= 2 \\ 2\left(\frac{1}{2}\right) + y &= 2 \\ 1 + y &= 2 \\ y &= 1 \end{aligned}$$

$$\left(\frac{1}{2}, 1, -\frac{1}{2}\right)$$

$$\begin{aligned} x - y - z &= 0 \\ \frac{1}{2} - 1 - z &= 0 \\ -\frac{1}{2} - z &= 0 \\ -\frac{1}{2} &= z \end{aligned}$$

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ex 18

$$\begin{cases} x + 2y + 3z = 1 \\ -x - y + 3z = 2 \\ -6x + y + z = -2 \\ 6x + 12y + 18z = 6 \end{cases} \rightarrow \begin{cases} x + 2y + 3z = 1 \\ -x - y + 3z = 2 \\ -6x + y + z = -2 \\ 6x + 12y + 18z = 6 \end{cases}$$

$$\begin{aligned} & \xrightarrow{+} \begin{cases} x + 2y + 3z = 1 \\ -x - y + 3z = 2 \\ -6x + y + z = -2 \\ 6x + 12y + 18z = 6 \end{cases} \\ & \xrightarrow{+} \begin{cases} x + 2y + 3z = 1 \\ -x - y + 3z = 2 \\ -6x + y + z = -2 \\ 6x + 12y + 18z = 6 \end{cases} \\ & \xrightarrow{+} \begin{cases} x + 2y + 3z = 1 \\ -x - y + 3z = 2 \\ -6x + y + z = -2 \\ 6x + 12y + 18z = 6 \end{cases} \\ & \xrightarrow{+} \begin{cases} x + 2y + 3z = 1 \\ -x - y + 3z = 2 \\ -6x + y + z = -2 \\ 6x + 12y + 18z = 6 \end{cases} \end{aligned}$$

$$\begin{aligned} 13y + 19z &= 4 \\ -13y - 78z &= -39 \\ \hline -59z &= -35 \\ z &= \frac{35}{59} \end{aligned}$$

$$\begin{aligned} 13y + 19z &= 4 \\ 13y + \frac{19 \cdot 35}{59} &= 4 \\ 13y + \frac{665}{59} &= 4 \\ 13y &= \frac{4 \cdot 59}{59} - \frac{665}{59} \\ 13y &= \frac{236}{59} - \frac{665}{59} \\ \frac{1}{13} \cdot 13y &= \frac{-429}{59} \cdot \frac{1}{13} \\ y &= \frac{-33}{59} \end{aligned}$$

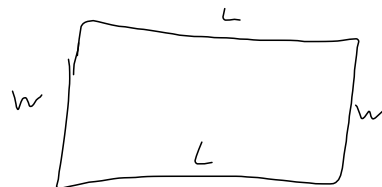
$$\begin{aligned} x + 2y + 3z &= 1 \\ x + 2\left(\frac{-33}{59}\right) + 3\left(\frac{35}{59}\right) &= 1 \\ 59x - 66 + 105 &= 59 \\ 59x + 39 &= 59 \\ 59x &= 20 \\ x &= \frac{20}{59} \end{aligned}$$

$$\left(\frac{20}{59}, -\frac{33}{59}, \frac{35}{59}\right)$$

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7.7
p. 539

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



$$\underline{w = L - 44}$$

$$2L + 2w = 288$$

$$2L + 2(L - 44) = 288$$

$$2L + 2L - 88 = 288$$

$$4L - 88 = 288$$

$$4L = 376$$

$$L = 94$$

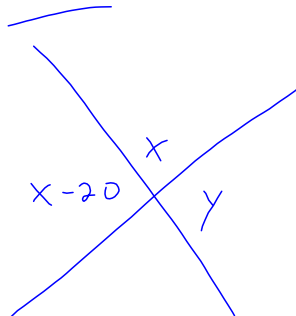
$$w = L - 44$$

$$w = 94 - 44$$

$$w = 50$$

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ex 14



$$x + x - 20 = 180$$

$$x + y = 180$$

$$x - 20 = y$$

$$2x - 20 = 180$$

$$2x = 200$$

$$x = 100^\circ$$

$$x + y = 180$$

$$\begin{array}{r} 100 + y = 180 \\ -100 \quad -100 \end{array}$$

$$y = 80^\circ$$

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ex 22

	L of soln	% as dec.	L of pure acid
weak	x	.15	.15x
strong	y	.33	.33y
new	120	.21	25.2

$x + y = 120$
 $.15x + .33y = 25.2$
 $-15x - 15y = -1800$
 $15x + 33y = 2520$

$18y = 720$
 $y = 40$ L of 33% acid soln.
 $x = 80$ L of 15% soln.

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$15x + 33y = 2520$

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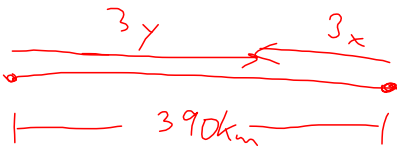
ex 26	L of drink	% dec.	L of juice	
50% juice	x	.50	.50x	$x + y = 200$
30% juice	y	.30	.30y	$.50x + .30y = 90$
mixture	200	.45	90	$x + y = 200$ $.50x + .30y = 90$

top $\cdot (-3) \rightarrow -3x - 3y = -600$
 bottom $\rightarrow 5x + 3y = 900$

$2x = 300$
 $x = 150$ L of 50% drink
 $y = 50$ L of 30% drink

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ex 30	r	t	d
F	x	3	3x
E	y	3	3y



$3x + 3y = 390$
 $x = y - 30$
 $x = 80 - 30$
 $x = 50$ km per hour

$3(y - 30) + 3y = 390$
 $3y - 90 + 3y = 390$
 $6y - 90 = 390$
 $6y = 480$
 $y = 80$ km per hour

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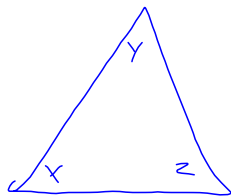
ex 38 $C = \text{cost of a cappuccino}$
 $L = \text{ " " " " Latte}$

$$\begin{array}{r} 2c + 3L = 17.55 \\ c + 2L = 10.57 \xrightarrow{\cdot(-2)} \end{array} \quad \begin{array}{r} 2c + 3L = 17.55 \\ -2c - 4L = -21.14 \\ \hline -L = -3.59 \\ L = 3.59 \end{array}$$

$$\begin{aligned} C + 2(3.59) &= 10.57 \\ C + 7.18 &= 10.57 \\ C &= 3.39 \end{aligned}$$

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ex 42



eq. #1

$$(y-10) + y + z = 180$$

$$2y + z - 10 = 180$$

$$2y + z = 190$$

$$-y + z = 10$$

$$\begin{array}{r} 2y + z = 190 \\ y - z = -10 \\ \hline 3y = 180 \\ y = 60 \end{array}$$

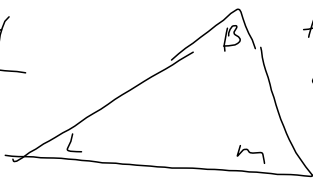
$$\begin{array}{l} x = y - 10 \longrightarrow x = y - 10 \\ x = z - 20 \xrightarrow{\cdot(-1)} -x = -z + 20 \\ \hline 0 = y - z + 10 \end{array}$$

$$\begin{aligned} x &= y - 10 \\ x &= 60 - 10 \\ x &= 50 \end{aligned}$$

$$\begin{aligned} x + y + z &= 180 \\ 50 + 60 + z &= 180 \\ 110 + z &= 180 \\ z &= 70 \end{aligned}$$

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ex44



B = biggest angle
 L = littlest angle
 m = medium-sized angle

$$L + m + B = 180$$

$$B = L + m \quad -12$$

$$L = B - 58$$

$$L = B - 58$$

$$L = 84 - 58$$

$$L = 26$$

$$L + m + B = 180$$

$$\underline{-L - m + B = -12}$$

$$2B = 168$$

$$B = 84$$

$$L + m + B = 180$$

$$84 + m + 26 = 180$$

$$m + 110 = 180$$

$$m = 70$$

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ex50

C = cost of close ones
 m = cost of middle ones
 F = far out prices

$$C = m + 10$$

$$m = F + 10$$

$$2C = 3F + 20$$

$$C = (F + 10) + 10$$

$$C = F + 20$$

$$2(F + 20) = 3F + 20$$

$$2F + 40 = 3F + 20$$

$$\$20 = F$$

$$C = m + 10$$

$$m = F + 10$$

$$C = 30 + 10$$

$$m = 20 + 10$$

$$C = \$40$$

$$m = \$30$$

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