1.1 a)

$$\left|\begin{array}{l} 20000x + 30000y + 10000z = 5'200'000 \\ 10000x + 17000y + 6000z = 3'000'000 \\ 2000x + 3000y + 2000z = 760'000 \end{array}\right|$$

20000	30000	10000	5'200'000	: 20000
10000	17000	6000	3'000'000	
2000	3000	2000	760000	

1	3/2	1/2	260	
10000	17000	6000	3000000	II − 10000 · I
2000	3000	2000	760000	

1	3/2	1/2	260	
0	2000	1000	400000	
2000	3000	2000	760000	III − 2000 · I

1	3/2	1/2	260	
0	2000	1000	400000	: 2000
0	0	1000	240000	: 1000

1	3/2	1/2	260	I − 3/2 · II
0	1	1/2	200	
0	0	1	240	

1	0	−1/4	−40	I − −1/4 · III
0	1	1/2	200	II − 1/2 · III
0	0	1	240	

1	0	0	20	x = 20
0	1	0	80	y = 80
0	0	1	240	z = 240

b) $A = \begin{pmatrix} 20000 & 30000 & 10000 \\ 10000 & 17000 & 6000 \\ 2000 & 3000 & 2000 \end{pmatrix}$

$L = \begin{pmatrix} 1 & 0 & 0 \\ 0{,}5 & 1 & 0 \\ 0{,}1 & 0 & 1 \end{pmatrix}$

$R = \begin{pmatrix} 20000 & 30000 & 10000 \\ 0 & ? & ? \\ 0 & ? & ? \end{pmatrix}$

$A' = \begin{pmatrix} 20000 & 30000 & 10000 \\ 0 & 2000 & 1000 \\ 0 & 2700 & 1800 \end{pmatrix}$

$L = \begin{pmatrix} 1 & 0 & 0 \\ 0{,}5 & 1 & 0 \\ 0{,}1 & 1{,}35 & 1 \end{pmatrix}$ $R = \begin{pmatrix} 20000 & 30000 & 10000 \\ 0 & 2000 & 1000 \\ 0 & ? & ? \end{pmatrix}$

$A'' = \begin{pmatrix} 20000 & 30000 & 10000 \\ 0 & 2000 & 1000 \\ 0 & 0 & 270 \end{pmatrix}$

$R = \begin{pmatrix} 20000 & 30000 & 10000 \\ 0 & 2000 & 1000 \\ 0 & 0 & 270 \end{pmatrix}$ $L = \begin{pmatrix} 1 & 0 & 0 \\ 0{,}5 & 1 & 0 \\ 0{,}1 & 1{,}35 & 1 \end{pmatrix}$

c) $\left|\begin{array}{l} 20000x_1 + 30000x_2 + 10000x_3 = 5'720'000 \\ 10000x_1 + 17000x_2 + 6000x_3 = 3'300'000 \\ 2000x_1 + 3000x_2 + 2000x_3 = 836'000 \end{array}\right|$

$Ly = b$

$y_1 = 5720000$

$0{,}5y_1 + y_2 = 3'300'000$

$0.1y_1 + 1{,}35y_2 + y_3 = 836000$

y_2: $0{,}5 \cdot 5'720'000 + y_2 = 3'300'000$

$y_2 = 440'000$

y_3 $0{,}1 \cdot 5'720'000 + 1{,}35 \cdot 440'000 + y_3 = 836000$

$y_3 = -330000$

$Rx = y$

$20'000x_1 + 30'000x_2 + 10'000x_3 = 5'720'000$

$2000x_2 + 1000x_3 = 440'000$

$270x_3 = -330'000$

$x_3 = 270x_3 - 330'000$

$x_3 = -1222{,}22$

$x_2 = 2000x_2 + 1000 \cdot (-1222{,}22) = 440000$

$x_2 = 831.11$

$x_1 = 20000x_1 + 30000 \times 831{,}11 - 10000 \times 1222{,}22 = 5'720'0$

$x_1 = -345{,}54$