Example 3.6: We start by making a table of the information we are given:

	Sweet Eugene's	Pastries and Coffee.	Advised study time
Chapter 1	0.4 hours	0.1 hours	2.4 hours
Chapter 2	0.1 hours	0.15 hours	2.1 hours
Chapter 3	0.05 hours	0.15 hours	1.5 hours
Coffee	\$ 2	\$ 3	

Since we are asked about how many times should the student go to Sweet Eugene's and how many to Pastries and Coffee, we set:

x : number of times going to Sweet Eugene's

y : number of times going to Pastries and Coffee.

Since we are asked to minimize the amount on money spent on coffee, this means:

$2 \cdot x + 3 \cdot y$ is the objective function to be minimized.

The amount of study time is:

$0.4x + 0.1y$ for Chapter 1, with a minimum of 2.4 hours.

$0.1x + 0.15y$ for Chapter 2, with a minimum of 2.1 hours.

$0.05x + 0.15y$ for Chapter 3, with a minimum of 1.5 hours.

Thus the problem is to minimize

$2x + 3y$ (minimize) subject to
$$0.4x + 0.1y \geq 2.4$$
$$0.1x + 0.15y \geq 2.1$$
$$0.05x + 0.15y \geq 1.5$$
and $x \geq 0$, $y \geq 0$.

Example 3.7.: We start by making a table with the information provided:

Shipping costs:

	Bryan	College Station	Sleep Hollow
Texas	\$ 0.20	\$ 0.08	\$ 0.10
University	\$ 0.12	\$ 0.22	\$ 0.18

Amount of correspondence shipped:

	Bryan	College Station	Sleep Hollow	Maximum volume
Texas	x_1	x_2	x_3	400
University	x_4	x_5	x_6	600

Minimum requests for warehouses to operate:

Bryan	College Station	Sleep Hollow
200	300	400

Where it is key that each shipment from a post office (Texas or University) to a warehouse (Bryan, College Station, Sleep Hollow) needs to be treated as an event, with its own variable.

We are told that the shipping costs need to be minimized, so the objective function is:
$$0.20\,x_1 + 0.08\cdot x_2 + 0.10\cdot x_3 + 0.12\,x_4 + 0.22\,x_5 + 0.18\,x_6 .$$

The maximum volume of correspondence that the offices can manage yield:

$x_1 + x_2 + x_3 \leq 400$ (Texas)

$x_4 + x_5 + x_6 \leq 600$ (University)

The minimum requirements of the warehouses yield:

$x_1 + x_4 \geq 200$ (Bryan)

$x_2 + x_5 \geq 300$ (College Station)

$x_3 + x_6 \geq 400$ (Sleep Hollow)

Thus the problem is to minimize:

$$0.20x_1 + 0.08x_2 + 0.10x_3 + 0.12x_4 + 0.22x_5 + 0.18x_6 \quad \text{(minimize)}$$

subject to:

$$x_1 + x_2 + x_3 \leq 400 \qquad \text{and} \qquad x_1 \geq 0$$

$$x_4 + x_5 + x_6 \leq 600 \qquad x_2 \geq 0$$

$$x_1 + x_4 \geq 200 \qquad x_3 \geq 0$$

$$x_2 + x_5 \geq 300 \qquad x_4 \geq 0$$

$$x_3 + x_6 \geq 400 \qquad x_5 \geq 0$$

$$x_6 \geq 0$$