

### EXAMPLE 1: TRIM LOSS PROBLEM

A manufacturer of cylindrical containers receives tin sheets in widths of 30 cm and 60 cm respectively. For these containers the sheets are to be cut to three different widths of 15 cm, 21 cm and 27 cm respectively. The number of containers to be manufactured from these three widths are 400, 200 and 300 respectively. The bottom plates and top covers of the containers are purchased directly from the market. There is no limit on the lengths of standard tin sheets. Formulate the LPP for the production schedule that minimises the trim losses.

The possible cutting combinations (plans) for both types of sheets are shown in the table below:

Width (cm)	i = I (30 cm)			i = II (60 cm)					
	X <sub>11</sub>	X <sub>12</sub>	X <sub>13</sub>	X <sub>21</sub>	X <sub>22</sub>	X <sub>23</sub>	X <sub>24</sub>	X <sub>25</sub>	X <sub>26</sub>
15	2	0	0	4	2	2	1	0	0
21	0	1	0	0	1	0	2	1	0
27	0	0	1	0	0	1	0	1	2
Trim Loss (cm)	0	9	3	0	9	3	3	12	6

Solve by using LPP

### EXAMPLE 2: DIET PROBLEM

Vitamins B<sub>1</sub> and B<sub>2</sub> are found in two foods F<sub>1</sub> and F<sub>2</sub>. 1 unit of F<sub>1</sub> contains 3 units of B<sub>1</sub> and 4 units of B<sub>2</sub>. 1 unit of F<sub>2</sub> contains 5 units of B<sub>1</sub> and 3 units of B<sub>2</sub> respectively.

Minimum daily prescribed consumption of B<sub>1</sub> & B<sub>2</sub> is 50 and 60 units respectively.

Cost per unit of F<sub>1</sub> & F<sub>2</sub> is Rs. 6 & Rs. 3 respectively.

Formulate as LPP.

### EXAMPLE 3: FARM PLANNING

A farmer has 200 acres of land. He produces three products X, Y & Z. Average yield per acre for X, Y & Z is 4000, 6000 and 2000 kg.

Selling price of X, Y & Z is Rs. 2, 1.5 & 4 per kg respectively. Each product needs fertilizers. Cost of fertilizer is Rs. 1 per kg. Per acre need for fertilizer for X, Y & Z is 200, 200 & 100 kg respectively. Labour requirements for X, Y & Z is 10, 12 & 10 man hours per acre. Cost of labour is Rs. 40 per man hour. Maximum availability of labour is 20,000 man hours.

Formulate as LPP to maximise profit.