

STATEMENT OF TASK

An automobile company produces three types of cars C_1 , C_2 and C_3 using three types of steel S_1 , S_2 and S_3 . The steel requirement (in tons) for each type of car is given below:

| Type of steel | Cars | | | Supplies of steel |
|---------------|-------|-------|-------|-------------------|
| | C_1 | C_2 | C_3 | |
| S_1 | 2 | 3 | 4 | 29 |
| S_2 | 1 | 1 | 2 | 13 |
| S_3 | 3 | 2 | 1 | 16 |

Determine the number of cars of each type which can be produced using 29, 13 and 16 tons of steel of three types respectively.

Let's create *the mathematical model*.

Let x_1 , x_2 and x_3 denote the number of cars that can be produced of each type. Then we have

$$S_1 : 2x_1 + 3x_2 + 4x_3 = 29$$

$$S_2 : x_1 + x_2 + 2x_3 = 13$$

$$S_3 : 3x_1 + 2x_2 + x_3 = 16$$

Then get the system of equations:

$$\begin{cases} 2x_1 + 3x_2 + 4x_3 = 29 \\ x_1 + x_2 + 2x_3 = 13 \\ 3x_1 + 2x_2 + x_3 = 16 \end{cases} .$$