

Quiz NO # 01

Student ID # 7625

Name # Farhat Ullah

Section # B

Given Data #

Pakistani, Egyptian and American
Cotton ratio :-

A	:	B	:	C
2	:	1	:	1
1	:	2	:	1
2	:	0	:	2

A, B and C cost \Rightarrow 50, 40 and 60 Rs
respectively.

we write the given data in system
of linear equation.

$$2x + y + z = 50$$

$$x + 2y + z = 40$$

$$2x + 0y + 2z = 60$$

you can write
it as:

$$x + 2y + z = 40$$

$$2x + y + z = 50$$

$$2x + 2z = 60$$

Now use Gauss-Jordan-Elimination
method to find the values of x, y, z
where x, y and z are the cost of
a cotton in kg of each country.

Augmented matrix of the given system.

$$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 40 \\ 2 & 1 & 1 & 50 \\ 2 & 0 & 2 & 60 \end{array} \right]$$

$$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 40 \\ 0 & -3 & -1 & -30 \\ 0 & -4 & 0 & -20 \end{array} \right] \sim \begin{array}{l} R_2 - 2R_1 \\ R_3 - 2R_1 \end{array}$$

$$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 40 \\ 0 & 1 & 1/3 & 10 \\ 0 & -4 & 0 & -20 \end{array} \right] \sim -\frac{1}{3} R_2$$

$$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 40 \\ 0 & 1 & 1/3 & 10 \\ 0 & 0 & 4/3 & 20 \end{array} \right] \sim R_3 + 4R_2$$

$$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 40 \\ 0 & 1 & 1/3 & 10 \\ 0 & 0 & 1 & 15 \end{array} \right] \sim \frac{3}{4} R_3$$

$$\left[\begin{array}{ccc|c} 1 & 2 & 0 & 25 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 15 \end{array} \right] \sim \begin{array}{l} R_1 - R_3 \\ R_2 - \frac{1}{3} R_3 \end{array}$$

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$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 15 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 15 \end{array} \right] \sim R_1 - 2R_2$$

Here

$$x = 15$$

$$y = 5$$

$$z = 15$$

Required
ANS

The End