

Date: _____

(1)

QUIZZ:

DIFFERENTIAL

EQUATION:

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(B)

DATE:

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SUBMITTED TO:

MAM: SHUMAIL MAZHAR

Date: _____

(2)

QUESTION:

A grain merchant
. each country.

SOLUTION:

Ratios

1:2:1

2:1:1

2:0:2

Cost of A, B, C Per kg is 40, 50, 60

$$A = \begin{array}{|c|c|} \hline P & E \\ \hline A & E \\ \hline \end{array} = 40 \quad 1:2:1$$

$$B = \begin{array}{|c|c|} \hline P & P \\ \hline A & E \\ \hline \end{array} = 50 \quad 2:1:1$$

$$C = \begin{array}{|c|c|} \hline P & P \\ \hline A & A \\ \hline \end{array} = 60 \quad 2:0:2$$

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x, y, z : Price of cotton.

$$\frac{1}{4}x + \frac{2}{4}y + \frac{1}{4}z = 40$$

$$\frac{2}{4}x + \frac{1}{4}y + \frac{1}{4}z = 50$$

$$\frac{2}{4}x + \frac{2}{4}z + \frac{0}{4}y = 60$$

$$1x + 2y + 1z = 160$$

$$2x + 1y + 1z = 200$$

$$1x + 0y + 1z = 120$$

Write the follow in Matrixes form.

$$\begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 1 \\ 1 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 160 \\ 200 \\ 120 \end{bmatrix}$$

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$$A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 1 \\ 1 & 0 & 1 \end{bmatrix}, \quad x = \begin{bmatrix} x \\ y \\ z \end{bmatrix}, \quad b = \begin{bmatrix} 160 \\ 200 \\ 120 \end{bmatrix}$$

$$Ax = B$$

$$A_1 = \begin{bmatrix} 160 & 2 & 1 \\ 200 & 1 & 1 \\ 120 & 0 & 1 \end{bmatrix}$$

$$A_2 = \begin{bmatrix} 1 & 160 & 1 \\ 2 & 200 & 1 \\ 1 & 120 & 1 \end{bmatrix}$$

$$A_3 = \begin{bmatrix} 1 & 2 & 160 \\ 2 & 1 & 200 \\ 1 & 0 & 120 \end{bmatrix}$$

$$|A| = \begin{vmatrix} 1 & 2 & 1 \\ 2 & 1 & 1 \\ 1 & 0 & 1 \end{vmatrix}$$

$$= 1(1 \times 1 - 0 \times 1) - 2(2 \times 1 - 1 \times 1) + 1(2 \times 1 - 1 \times 1)$$

$$|A| = -2$$

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$$|A_1| = \begin{vmatrix} 160 & 2 & 1 \\ 200 & 1 & 1 \\ 120 & 0 & 1 \end{vmatrix}$$

$$|A_1| = 160(1 \times 1 - 0 \times 1) - 2(200 \times 1 - 120 \times 1) + 1(200 \times 1 - 120 \times 1)$$

$$|A_1| = -120$$

$$|A_2| = \begin{vmatrix} 1 & 160 & 1 \\ 2 & 200 & 1 \\ 1 & 120 & 1 \end{vmatrix}$$

$$|A_2| = 1(200 \times 1 - 120 \times 1) - 160(2 \times 1 - 1 \times 1) + 1(2 \times 1 - 1 \times 200)$$

$$|A_2| = -40$$

$$|A_3| = \begin{vmatrix} 1 & 2 & 160 \\ 2 & 1 & 200 \\ 1 & 0 & 120 \end{vmatrix}$$

$$|A_3| = 1(1 \times 120 - 0 \times 200) - 2(2 \times 120 - 1 \times 200) + 160(2 \times 120 - 1 \times 1)$$

$$|A_3| = -120$$

$$|A| = -2 \quad |A_1| = -120 \quad |A_2| = -40 \quad |A_3| = -120$$

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CRAMER'S RULE:

$$x = \frac{|A_1|}{|A|}$$

$$x = \frac{-120}{-2}$$

$$x = 60$$

$$x = \frac{|A_2|}{|A|}$$

$$x = \frac{-40}{-2}$$

$$x = 20$$

$$x = \frac{|A_3|}{|A|}$$

$$x = \frac{-120}{-2}$$

$$x = 60$$

$$(x, y, z) = (60, 20, 60)$$