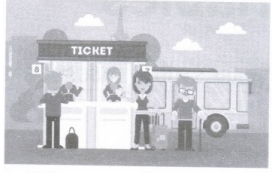
QB365 QUESTION BANK SOFTWARE

10th Maths Important Case Question for Pair Of Linear Equation In Two Variables 2024

Section A

2 x 4 = 8

1) From Bengaluru bus stand, if Riddhima buys 2 tickets to Malleswaram and 3 tickets to Yeswanthpur, then total cost is Rs 46; but if she buys 3 tickets to Malleswaram and 5 tickets to Yeswanthpur, then total cost is Rs 74.



Consider the fares from Bengaluru to Malleswaram and that to Yeswanthpur as Rs x and Rs y respectively and answer the following questions.

(i) 1st situation can be represented algebraically as

(a) 3x-5y=74 (b) 2x+5y=74 (c) 3x-2y=46 (d) 2x+3y=46

(ii) 2nd situation can be represented algebraically as

(a) 5x + 3y = 74 (b) 5x- 3y= 74 (c) 3x + 5y = 74 (d) 3x- 5y=74

(iii), Fare from Ben~aluru to Malleswaram is

(a) Rs 6 (b) Rs 8 (c) Rs 10 (d) Rs 2

(iv) Fare from Bengaluru to Yeswanthpur is

(a) Rs 10 (b) Rs 12 (c) Rs 14 (d) Rs 16

(v) The system oflinear equations represented by both situations has

(a) infinitely many solutions

(b) no solution

(c) unique solution

(d) none of these

Answer : (i) (d): 1st situation can be represented algebraically as 2x + 3y = 46

(ii) (c): 2nd situation can be represented algebraically as 3x + 5y = 74

(iii) (b): We have, 2x + 3y = 46 .....(i)

3x+5y=74..... (ii)

Multiplying (i) by 5 and (ii) by 3 and then subtracting,

we get 10x - 9x = 230 - 222 $\Rightarrow$ x = 8

$\therefore$ Fare from Bengaluru to Malleswaram is Rs 8.

(iv) (a): Putting the value of x in equation (i), we get

3y = 46 - 2 x 8 = 30 $\Rightarrow$ Y = 10

$\therefore$ Fare from Bengaluru to Yeswanthpur is Rs 10.

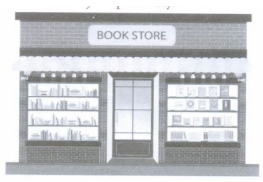
(v) (c): We have, a_1 = 2, b_1, = 3, c_1 = -46 and

$a_2 = 3, b_2 = 5, c_2 = -74$

$\therefore \quad \frac{a_1}{a_2} = \frac{2}{3}, \frac{b_1}{b_2} = \frac{3}{5}, \frac{c_1}{c_2} = \frac{-46}{-74} = \frac{23}{37} \Rightarrow \frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

Thus system oflinear equations has unique solution.

2) From a shop, Sudhir bought 2 books of Mathematics and 3 books of Physics of class X for Rs 850 and Suman bought 3 books of Mathematics and 2 books of Physics of class X for Rs 900. Consider the price of one Mathematics book and that of one Physics book be Rs x and Rs y respectively.



Based on the above information, answer the following questions.

(i) Represent the situation faced by Sudhir, algebraically,

(a) 2x + 3y = 850 **(b) 3x+2y=850** **(c) 2x - 3y = 850** **(d) 3x - 2y = 850**

(ii) Represent the situation faced by Suman, algebraically

(a) 2x + 3y = 90 **(b) 3x + 2y = 900** **(c) 2x - 3y = 900** **(d) 3x - 2y = 900**

(iii) The price of one Physics book is

(a) Rs 80 **(b) Rs 100** **(c) Rs 150** **(d) Rs 200**

(iv) The price of one Mathematics book is

(a) Rs 80 **(b) Rs 100** **(c) Rs 150** **(d) Rs 200**

(v) The system of linear equations represented by above situation, has

(a) unique solution **(b) no solution**
(c) infinitely many solutions **(d) none of these**

Answer : **(i) (a):** Situation faced by Sudhir can be represented algebraically as 2x + 3y = 850

(ii) (b): Situation faced by Suman can be represented algebraically as 3x + 2y = 900

(iii) (c) : We have 2x + 3y = 850 .....(i)

and 3x + 2y = 900 .....(ii)

Multiplying (i) by 3 and (ii) by 2 and subtracting, we get

5y = 750 $\Rightarrow$ Y = 150

Thus, price of one Physics book is Rs 150.

(iv) (d): From equation (i) we have, 2x + 3 x 150 = 850

$\Rightarrow$ 2x = 850 - 450 = 400 $\Rightarrow$ x = 200

Hence, cost of one Mathematics book = Rs 200

(v) (a): From above, we have

$a_1 = 2, b_1 = 3, c_1 = -850$

and $a_2 = 3, b_2 = 2, c_2 = -900$

$\therefore \quad \frac{a_1}{a_2} = \frac{2}{3}, \frac{b_1}{b_2} = \frac{3}{2}, \frac{c_1}{c_2} = \frac{-850}{-900} = \frac{17}{18} \Rightarrow \frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

Thus system of linear equations has unique solution.