For Online Tutorials, Subscribe /careerplusacademy

1

Hostel Monthly Charges

A part of monthly hostel charges in a college is fixed and the remaining depends on the number of days one has taken food in the mess. When a student Anu takes food for 25 days, she has to pay ₹ 4500 as hostel charges, whereas another student Bindu who takes food for 30 days, has to pay ₹ 5200 as hostel charges.

Considering the fixed charges per month by ₹ x and the cost of food per day by ₹ y, then answer the following questions.

(i) Represent algebraically the situation faced by both Anu and Bindu.

(a) $x + 25y = 4500, x + 30y = 5200$ (b) $25x + y = 4500, 30x + y = 5200$

(c) $x - 25y = 4500, x - 30y = 5200$ (d) $25x - y = 4500, 30x - y = 5200$

(ii) The system of linear equations, represented by above situations has

(a) No solution (b) Unique solution

(c) Infinitely many solutions (d) None of these

(iii) The cost of food per day is

(a) ₹ 120 (b) ₹ 130 (c) ₹ 140 (d) ₹ 1300

(iv) The fixed charges per month for the hostel is

(a) ₹ 1500 (b) ₹ 1200 (c) ₹ 1000 (d) ₹ 1300

(v) If Bindu takes food for 20 days, then what amount she has to pay?

(a) ₹ 4000 (b) ₹ 3500 (c) ₹ 3600 (d) ₹ 3800

For Online Tutorials, Subscribe /careerplusacademy

2

Ticket Counter on Bus Stand

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

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

(i) 1st situation can be represented algebraically as
(a) $3x - 5y = 74$ (b) $2x + 5y = 74$ (c) $2x - 3y = 46$ (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 Bengaluru to Malleswaram is
(a) ₹ 6 (b) ₹ 8 (c) ₹ 10 (d) ₹ 2

(iv) Fare from Bengaluru to Yeswanthpur is
(a) ₹ 10 (b) ₹ 12 (c) ₹ 14 (d) ₹ 16

(v) The system of linear equations represented by both situations has
(a) infinitely many solutions (b) no solution
(c) unique solution (d) none of these

3

National Highway

Points A and B representing Chandigarh and Kurukshetra respectively are almost 90 km apart from each other on the highway. A car starts from Chandigarh and another from Kurukshetra at the same time. If these cars go in the same direction, they meet in 9 hours and if these cars go in opposite direction they meet in 9/7 hours. Let X and Y be two cars starting from points A and B respectively and their speed be x km/hr and y km/hr respectively.

Then, answer the following questions.

(i) When both cars move in the same direction, then the situation can be represented algebraically as
(a) $x - y = 10$ (b) $x + y = 10$ (c) $x + y = 9$ (d) $x - y = 9$

(ii) When both cars move in opposite direction, then the situation can be represented algebraically as
(a) $x - y = 70$ (b) $x + y = 90$ (c) $x + y = 70$ (d) $x + y = 10$

(iii) Speed of car X is
(a) 30 km/hr (b) 40 km/hr (c) 50 km/hr (d) 60 km/hr

(iv) Speed of car Y is
(a) 50 km//hr (b) 40 km/hr (c) 30 km/hr (d) 60 km/hr

(v) If speed of car X and car Y, each is increased by 10 km/hr, and cars are moving in opposite direction, then after how much time they will meet?
(a) 5 hrs (b) 4 hrs (c) 2 hrs (d) 1 hr

4

Lunch Party

Mr Manoj Jindal arranged a lunch party for some of his friends. The expense of the lunch are partly constant and partly proportional to the number of guests. The expenses amount to ₹ 650 for 7 guests and ₹ 970 for 11 guests.

Denote the constant expense by ₹ x and proportional expense per person by ₹ y and answer the following questions.

(i) Represent both the situations algebraically.
(a) $x + 7y = 650, x + 11y = 970$ (b) $x - 7y = 650, x - 11y = 970$
(c) $x + 11y = 650, x + 7y = 970$ (d) $11x + 7y = 650, 11x - 7y = 970$

(ii) Proportional expense for each person is
(a) ₹ 50 (b) ₹ 80 (c) ₹ 90 (d) ₹ 100

(iii) The fixed (or constant) expense for the party is
(a) ₹ 50 (b) ₹ 80 (c) ₹ 90 (d) ₹ 100

(iv) If there would be 15 guests at the lunch party, then what amount Mr Jindal has to pay?
(a) ₹ 1500 (b) ₹ 1300 (c) ₹ 1200 (d) ₹ 1290

(v) The system of linear equations representing both the situations will have
(a) unique solution (b) no solution
(c) infinitely many solutions (d) none of these

For Online Tutorials, Subscribe /careerplusacademy

5

Office Work

In a office, 8 men and 12 women together can finish a piece of work in 10 days, while 6 men and 8 women together can finish it in 14 days. Let one day's work of a man be $1/x$ and one day's work of a woman be $1/y$.

Based on the above information, answer the following questions.

(i) 1st situation can be represented algebraically as

(a) $\frac{80}{x}-\frac{120}{y}=1$ (b) $\frac{120}{x}-\frac{80}{y}=1$ (c) $\frac{120}{x}+\frac{80}{y}=1$ (d) $\frac{80}{x}+\frac{120}{y}=1$

(ii) 2nd situation can be represented algebraically as

(a) $\frac{112}{x}-\frac{84}{y}=1$ (b) $\frac{84}{x}-\frac{112}{y}=1$ (c) $\frac{84}{x}+\frac{112}{y}=1$ (d) $\frac{112}{x}+\frac{84}{y}=1$

(iii) One woman alone can finish the work in

(a) 220 days (b) 140 days (c) 280 days (d) 160 days

(iv) One man alone can finish the work in

(a) 140 days (b) 220 days (c) 160 days (d) 280 days

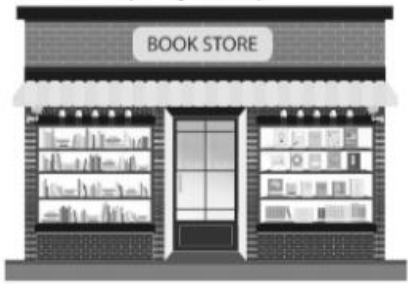
(v) If 14 men and 28 women work together, then in what time, the work will be completed?

(a) 2 days (b) 3 days (c) 4 days (d) 5 days

6

Book Store

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



For Online Tutorials, Subscribe /careerplusacademy

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) ₹ 80 (b) ₹ 100 (c) ₹ 150 (d) ₹ 200

(iv) The price of one Mathematics book is

(a) ₹ 80 (b) ₹ 100 (c) ₹ 150 (d) ₹ 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

7

Boating in River

A boat in the river Ganga near Rishikesh covers 24 km upstream and 36 km downstream in 6 hours while it covers 36 km upstream and 24 km downstream in $6\frac{1}{2}$ hours. Consider speed of the boat in still water be x km/hr and speed of the stream be y km/hr and answer the following questions.

(i) Represent the 1st situation algebraically.

(a) $\frac{24}{x-y}+\frac{36}{x+y}=6$ (b) $\frac{24}{x+y}+\frac{36}{x-y}=6$ (c) $24x + 36y = 6$ (d) $24x - 36y = 6$

(ii) Represent the 2nd situation algebraically.

(a) $\frac{36}{x+y}+\frac{24}{x-y}=\frac{13}{2}$ (b) $\frac{36}{x-y}+\frac{24}{x+y}=\frac{13}{2}$ (c) $36x-24y=\frac{13}{2}$ (d) $36x+24y=\frac{13}{2}$

(iii) If $u=\frac{1}{x-y}$ and $v=\frac{1}{x+y}$, then $u =$

(a) $\frac{1}{4}$ (b) $\frac{1}{12}$ (c) $\frac{1}{8}$ (d) $\frac{1}{6}$

(iv) Speed of boat in still water is

(a) 4 km/hr (b) 6 km/hr (c) 8 km/hr (d) 10 km/hr

(v) Speed of stream is

(a) 3 km/hr (b) 4 km/hr (c) 2 km/hr (d) 5 km/hr

For Online Tutorials, Subscribe /careerplusacademy

8

Profit and Loss

Piyush sells a saree at 8% profit and a sweater at 10% discount, thereby, getting a sum of ₹ 1008. If he had sold the saree at 10% profit and the sweater at 8% discount, he would have got ₹ 1028.

Denote the cost price of the saree and the list price (price before discount) of the sweater by ₹ x and ₹ y respectively and answer the following questions.

(i) The 1st situation can be represented algebraically as
(a) $2.08x + 1.9y = 2008$ (b) $1.08x + 0.9y = 1008$ (c) $10x + 8y = 1008$ (d) $8x + 10y = 1008$

(ii) The 2nd situation can be represented algebraically as
(a) $10x + 8y = 1028$ (b) $2.1x + 1.92y = 1028$ (c) $1.1x + 0.92y = 1028$ (d) $8x + 10y = 1028$

(iii) Linear equation represented by 1st situation intersect the x-axis at
(a) (2800, 0) (b) (2500, 0) (c) $\left(\frac{2500}{3}, 0\right)$ (d) $\left(\frac{2800}{3}, 0\right)$

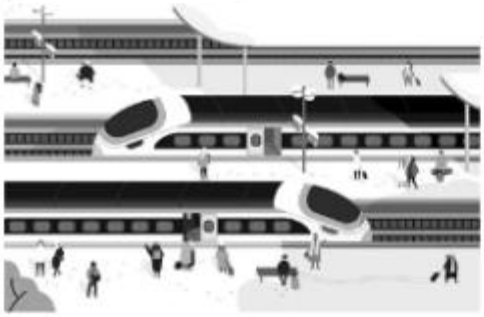
(iv) Linear equation represented by 2nd situation intersect the y-axis at
(a) $\left(0, \frac{25700}{23}\right)$ (b) (0, 25700) (c) $\left(0, \frac{25800}{23}\right)$ (d) (0, 26800)

(v) Both linear equations represented by situation 1st and 2nd intersect each other at
(a) (400, 600) (b) (600, 400) (c) (200, 200) (d) (800, 600)

9

Metro Track

Puneet went for shopping in the evening by metro with his father who is an expert in mathematics. He told Puneet that path of metro A is given by the equation $2x + 4y = 8$ and path of metro B is given by the equation $3x + 6y = 18$. His father put some questions to Puneet.
Help Puneet to solve the questions.



For Online Tutorials, Subscribe /careerplusacademy

(i) Equation $2x + 4y = 8$ intersects the x-axis and y-axis respectively at

(a) (4, 0), (0, 2) (b) (0, 4), (2, 0) (c) (4, 0), (2, 0) (d) (0, 4), (0, 2)

(ii) Equation $3x + 6y = 18$ intersects the x-axis and y-axis respectively at

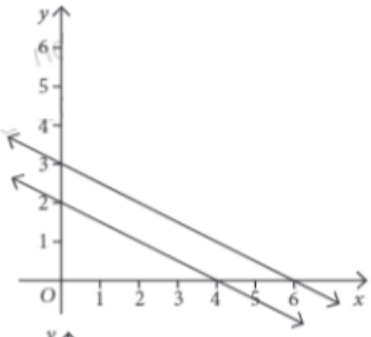
(a) (6, 0), (0, 8) (b) (0, 6), (0, 8) (c) (6, 0), (0, 3) (d) (0, 6), (0, 3)

(iii) Coordinates of point of intersection of two given equations are

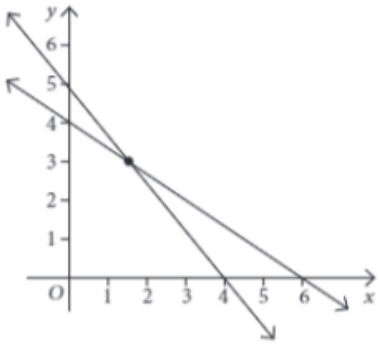
(a) (1, 2) (b) (2, 4) (c) (3, 7) (d) does not exist

(iv) Represent the equations, $2x + 4y = 8$ and $3x + 6y = 18$ graphically.

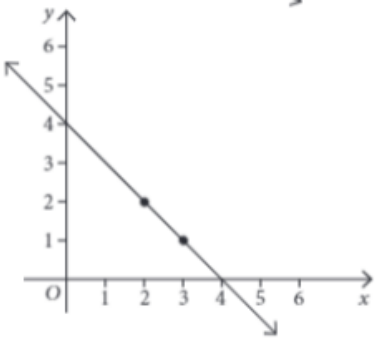
(a)



(b)



(c)



(d) None of these

(v) System of linear equations represented by two given lines is

(a) inconsistent (b) having infinitely many solutions

(c) consistent (d) overlapping each other

For Online Tutorials, Subscribe /careerplusacademy

10

Dry Fruit Shop

Raman usually go to a dry fruit shop with his mother. He observes the following two situations.

On 1st day : The cost of 2 kg of almonds and 1 kg of cashew was ₹ 1600.

On 2nd day : The cost of 4 kg of almonds and 2 kg of cashew was ₹ 3000.

Denoting the cost of 1 kg almonds by ₹ x and cost of 1 kg cashew by ₹ y, answer the following questions.

(i) Represent algebraically the situation of day-I.

(a) $x + 2y = 1000$ (b) $2x + y = 1600$ (c) $x - 2y = 1000$ (d) $2x - y = 1000$

(ii) Represent algebraically the situation of day-II.

(a) $2x + y = 1500$ (b) $2x - y = 1500$ (c) $x + 2y = 1500$ (d) $2x + y = 750$

(iii) The linear equation represented by day-I, intersect the x axis at

(a) (0, 800) (b) (0, –800) (c) (800, 0) (d) (–800, 0)

(iv) The linear equation represented by day-II, intersect the y-axis at

(a) (1500, 0) (b) (0, –1500) (c) (–1500, 0) (d) (0, 1500)

(v) Linear equations represented by day-I and day -II situations, are

(a) non parallel (b) parallel

(c) intersect at one point (d) overlapping each other.