CBSE

PAIR OF LINEAR EQUATION IN TWO VARIABLE WS 7

Class 10 - Mathematics

Section A

Question No. 1 to 4 are based on the given text. Read the text carefully and answer the questions: **[4]**

A coaching institute of Mathematics conducts classes in two batches I and II and fees for rich and poor children are different. In batch I, there are 20 poor and 5 rich children, whereas in batch II, there are 5 poor and 25 rich children. The total monthly collection of fees from batch I is ₹ 9000 and from batch II is ₹ 26,000. Assume that each poor child pays ₹ x per month and each rich child pays ₹ y per month.

1. Represent the information given above in terms x and y.
2. Find the monthly fee paid by a poor child.
3. Find the difference in the monthly fee paid by a poor child and a rich child.
4. If there are 10 poor and 20 rich children in batch II, what is the total monthly collection of fees from batch II?

Question No. 5 to 8 are based on the given text. Read the text carefully and answer the questions: **[4]**

Lokesh, a production manager in Mumbai, hires a taxi everyday to go to his office. The taxi charges in Mumbai consists of a fixed charges together with the charges for the distance covered. His office is at a distance of 10 km from his home. For a distance of 10 km to his office, Lokesh paid ₹ 105. While coming back home, he took another route. He covered a distance of 15 km and the charges paid by him were ₹ 155.

5. What are the fixed charges?
6. What are the charges per km?
7. If fixed charges are ₹ 20 and charges per km are ₹ 10, then how much Lokesh have to pay for travelling a distance of 10 km?

8. Find the total amount paid by Lokesh for travelling 10 km from home to office and 25 km from office to home. [Fixed charges and charges per km are as in (i) & (ii).

Question No. 9 to 12 are based on the given text. Read the text carefully and answer the questions: **[4]**

Two schools **P** and **Q** decided to award prizes to their students for two games of Hockey ₹ x per student and Cricket ₹ y per student. School **P** decided to award a total of ₹ 9,500 for the two games to 5 and 4 students respectively; while school **Q** decided to award ₹ 7,370 for the two games to 4 and 3 students respectively.

9. Represent the following information algebraically (in terms of x and y).
10. What is the prize amount for hockey?
11. Prize amount on which game is more and by how much?
12. What will be the total prize amount if there are 2 students each from two games?

Section B

13. A part of monthly expenses of a family on milk is fixed which is ₹ 700 and remaining varies with quantity of milk taken extra at the rate of ₹ 25 per litre. Taking quantity of milk required extra as x litres and total expenditure on milk as ₹ y, write a linear equation from the above information. **[1]**

    a) 20x + 10y = 300
    b) -25x + y = 700
    c) x + 25y = 900
    d) 20x + y = 500

14. The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 3, the fraction becomes $\frac{1}{2}$, then the fraction is **[1]**

    a) $\frac{5}{7}$
    b) $\frac{8}{7}$
    c) $\frac{6}{7}$
    d) $\frac{4}{7}$

15. 5 years hence, the age of a man shall be 3 times the age of his son while 5 years earlier the age of the man was 7 times the age of his son. The present age of the man is **[1]**

    a) 50 years
    b) 45 years
    c) 47 years
    d) 40 years

16. X takes 3 hours more than Y to walk 30 km. But if X doubles his pace, he is ahead of Y by $1\frac{1}{2}$ hours. The speed of X is **[1]**

    a) $\frac{9}{7}$ km\hr
    b) 9 km\hr
    c) $\frac{10}{3}$ km\hr
    d) 5 km\hr

17. Sum of two numbers is 80 and their difference is 36. Find the numbers. **[1]**

    a) 52, 28
    b) 40, 40
    c) 44, 36
    d) 58, 22

18. The larger of two supplementary angles exceeds the smaller by 18 degrees. What is the measure of larger angle? **[1]**

    a) 81^o
    b) 54^o

c) 99^o d) 36^o

19. If ∠A and ∠B are complementary angles and ∠A is x, then which equation can be used to find ∠B which is denoted by y? **[1]**

a) y = (180° - x) b) y = (90° - x)

c) y = (90° + x) d) y = (x + 180°)

20. Two numbers are in the ratio 1 : 3. If 5 is added to both the numbers, the ratio becomes 1 : 2. The numbers are **[1]**

a) 5 and 15 b) 7 and 21

c) 4 and 12 d) 6 and 18

21. A and B are friends. A is elder to B by 5 years. B's sister C is half the age of B while A's father D is 8 years older than twice the age of B. If the present age of D is 48 years, then find the present ages of A, B and C respectively. **[1]**

a) 40 years, 20 years, 15 years b) 20 years, 15 years, 10 years

c) 50 years, 25 years, 20 years d) 25 years, 20 years, 10 years

22. The cost of a notebook is twice the cost of a pen. If the cost of a notebook is ₹ x and that of a pen is ₹ y, then a linear equation in two variables to represent the given condition is _____. **[1]**

a) 2x - y = 0 b) x - 2y = 0

c) 2x + y = 0 d) x + 2y = 0

Section C

23. A man bought 4 horses and 9 cows for Rs. 1340. He sells the horses at a profit of 10% and the cows at a profit of 20% and his whole gain is Rs. 188. What price did he pay for the horse? **[2]**

Section D

24. Ratio between the girls and boys in a class of 40 students is 2:3. Five new students joined the class. How many of them must be boys so that the ratio between girls and boys becomes 4: 5? **[2]**

25. Taxi charges in a city consist of fixed charges and the remaining depending upon the distance travelled in kilometres. If a person travels 60 km, he pays ₹960, and for travelling 80 km, he pays ₹1260. Find the fixed charges and the rate per kilometre. **[2]**

26. A lab assistant has a solution of 50% acid and other which has 25% acid. How much of each should be mixed to make 10 litres of a 40% acid solution? **[2]**

27. Taxi charges in a city consist of fixed charges and the remaining charges depend upon the distance travelled. For a journey of 10 km, the charge paid is ₹ 75 and for a journey of 15 km, the charge paid is ₹ 110. Find the fixed charge and charges per km. Hence, find the charge of covering a distance of 35 km. **[2]**

28. Sabina went to a bank ATM to withdraw ₹ 2,000. She received ₹ 50 and ₹ 100 notes only. If Sabina got 25 notes in all, how many notes of ₹ 50 and ₹ 100 did she receive? **[2]**

29. The coach of cricket team buys 7 bats and 6 balls for ₹ 3,800. Later, she buys 3 bats and 5 balls for ₹ 1750. Find the cost of each bat and each ball. **[2]**

30. The taxi charges in a city consist of a fixed charge together with the charge for the distance covered. For a distance of 10 km, the charge paid is ₹ 105 and for a journey of 15 km the charge paid is ₹ 155. What are the fixed charges and the charge per km? How much does a person have to pay for travelling a distance of 25 km? Find them by substitution method. **[2]**

31. The age of a father is equal to the sum of the ages of his 5 children. After 15 years, sum of the ages of the children will be twice the age of the father. Find the age of father. **[2]**

32. 8 chairs and 5 tables for a classroom cost ₹10500, while 5 chairs and 3 tables cost ₹6450. Find the cost of each chair and that of each table. **[2]**

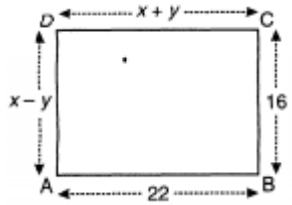
33. Half the perimeter of a rectangle garden, whose length is 4 m more than its width, is 36 m. Find the dimensions of the garden. **[2]**

34. A father's age is three times the sum of the ages of his two children. After 5 years his age will be two times the sum of their ages. Find the present age of the father. **[2]**

35. A lending library has a fixed charge for first three days and an additional charge for each day thereafter. Rittik paid ₹ 27 for a book kept for 7 days and Manmohan paid ₹ 21 for a book kept for 5 days. Find the fixed charges and the charge for each extra day. **[2]**

36. 5 books and 7 pens together cost Rs.79 whereas 7 books and 5 pens together cost Rs.77. find the total cost of 1 book and 2 pens. **[2]**

37. In the figure given below, ABCD is a rectangle. Find the values of x and y. **[2]**



38. Ankita travels 14 km to her home partly by rickshaw and partly by bus. She takes half an hour if she travels 2 km by rickshaw, and the remaining distance by bus. On the other hand, if she travels 4 km by rickshaw and the remaining distance by bus, she takes 9 minutes longer. Find the speed of the rickshaw and of the bus. **[2]**

39. The taxi charges in a city comprise of a fixed charge together with the charge for the distance covered. For a journey of 10 km the charge paid is Rs.75 and for a journey of 15 km the charge paid is Rs.110. What will a person have to pay for travelling a distance of 25 km? **[2]**

40. A railway half ticket costs half the full fare and the reservation charge is the same on half ticket as on full ticket. One reserved first class ticket from Mumbai to Delhi costs ₹4150 while one full and one half reserved first class tickets cost ₹6255. What is the basic first class full fare and what is the reservation charge? **[2]**

41. 37 pens and 53 pencils together cost Rs 955, while 53 pens and 37 pencils together cost Rs 1115. Find the cost of a pen and that of a pencil. **[2]**

42. A man purchased 47 stamps of 20 p and 25 p for ₹10. Find the number of each type of stamps. **[2]**

43. A part of monthly hostel charges in a school is fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 22 days, he has to pay ₹4250 as hostel charges, whereas a student B, who takes food for 28 days, pays ₹5150 as hostel charges. Find the fixed charges and the cost of food per day. **[2]**

44. The present age of a father is three years more than three times the age of his son. Three years hence the father’s age will be 10 years more than twice the age of the son. Determine their present ages. **[2]**

45. Taxi charges in a city consist of fixed charges and the remaining depending upon the distance travelled in kilometres. If a man travels 80 km, he pays ₹1330, and travelling 90 km, he pays ₹1490. Find the fixed charges and rate per km. **[2]**

46. A railway half ticket costs half the full fare, but the reservation charges are the same on a half ticket as on a full ticket. One reserved first class ticket from the station A to B costs Rs 2530. Also, one reserved first class ticket **[2]**

and one reserved first class half ticket from A to B costs Rs 3810. Find the full first class fare from station A to B, and also the reservation charges for a ticket.

47. In a competitive examination, one mark is awarded for each correct answer while $\frac{1}{2}$ mark is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly. **[2]**

48. Five year hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages? Solve by substitution method. **[2]**