MATHS

BOOKS - OSWAAL PUBLICATION

MATHS (KANNADA ENGLISH)

PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

Topic 1 Graphical Solution Of Linear Equations In Two Variables Consistency Inconsistency Very Short Answer Type Questions

1. Find whether the pair of linear equations y = 0 and $y = -5$ has no solution, unique solution or infinitely many solutions.

2. If am = bl, then find whether the pair of linear equations $ax + by = c$ and $lx + my = n$ has no solution, unique solution or infinitely many solutions.

3. If $ad \neq bc$, then find whether the pair of linear equations $ax + by = p$ and $cx + dy = q$ has no solution, unique solution or infinitely many solutions.

4. Two lines are given to be parallel. The equation of one of the lines is $4x + 3y = 14$, then find the equation of the second line.

1. Solve for x and $y: 2x + y = 6, 2x - y = 2.$

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2. Find whether the lines represented by $2x + y = 3$ and $4x + 2y = 6$ are parallel, coincident or intesecting.

3. Find whether the following pair of linear equations is consistent or inconsistent :

$$3x + 2y = 8$$

$$6x - 4y = 9$$

4. Is the system of linear equations $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$

consistent ? Justify your answer.

5. Given the linear equation $3x + 4y = 9$. Write another linear equation in these two variables such that the geometrical representation of the pair so formed is :

(i) intersecting lines

(ii) coincident lines.

6. For what value of p does the pair of linear equations given below has unique solution ?

$4x + py + 8 = 0$ and $2x + 2y + 2 = 0$.

7. For what value of k, the pair of linear equations $kx - 4y = 3, 6x - 12y = 9$ has an infinite number of solutions ?

8. For what value of $k, 2x + 3y = 4$ and $(k + 2)x + 6y = 3k + 2$ will have infinitely many solutions ?

9. For what value of 'k', the system of equations $kx + 3y = 1, 12x + ky = 2$ has no solution.

1. Solve the pair of equations graphically :

$4x - y = 4$ and $3x + 2y = 14$

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2. Determine the values of m and n so that the following system of linear equations have infinite number of solutions :

$$(2m - 1)x + 3y - 5 = 0$$

$$3x + (n - 1)y - 2 = 0$$

3. Find the values of α and β for which the following pair of linear equations has infinite number of solutions :

$$2x + 3y = 7, 2\alpha x + (\alpha + \beta)y = 28.$$

4. Represent the following pair of linear equations graphically and hence comment on the condition of consistency of this pair.

$$x - 5y = 6, 2x - 10y = 12.$$

5. For what value of p will the following system of equations have no solution ?

$$(2p - 1)x + (p - 1)y = 2p + 1, y + 3x - 1 = 0$$

.

6. Find the value of k for which the following pair of equations has no solution :

$$x + 2y = 3, (k - 1) + (k + 1)y = (k + 2).$$

Topic 1 Graphical Solution Of Linear Equations In Two Variables Consistency Inconsistency Long Answer Type Questions Ii

1. Solve the equations graphically

$$2x - y = 2$$

$$4x - y = 4$$

2. For Uttarakhand flood victims two sections A and B of class X contributed Rs. 1,500. If the contribution of X - A was Rs. 100 less than that of X - B, find graphically the amounts contributed by both the sections.

3. Determine graphically whether the following

pair of linear equations :

$3x - y = 7$

$2x + 5y + 1 = 0$ has :

(i) a unique solution

(ii) infinitely many solutions or

(iii) no solution.

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4. Draw the graphs of the pair of linear equations : $x + 2y = 5$ and $2x - 3y = -4$ Also find the points where the lines meet the x - axis.

5. Solve graphically the pair of linear equations $3x - 4y + 3 = 0$ and $3x + 4y - 21 = 0$. Find the coordinate of the vertices of

triangular region formed by these lines and x-axis. Also calculate the area of this triangle.

6. Solve the following pair of linear equations graphically :

$2x + 3y = 12$ and $x - y = 1$.

Find the area of the region bounded by the two lines representing he above equations and Y - axis.

7. Solve the following pair of linear equations graphically :

$x + 3y = 6, 2x - 3y = 12$

Also shade the region bounded by the line $2x - 3y = 12$ and both the co-ordinate axes.

8. Solve the following pair of linear equations graphically :

$x - y = 1$

$2x + y = 8.$

Also find the co-ordinates of the points where the lines represented by the above equation intersect Y - axis.

9. Draw the graphs of the following equations :

$2x - y = 1, x + 2y = 13$

Find the solution of the equations from the

graph and shade the triangular region formed by the lines and the Y - axis.

10. Amit bought two pencils and three chocolates for Rs. 11 and Sumeet bought one pencil and two chocolates for Rs. 7. Represent this situation in the form of a pair of linear equations. Find the price of one pencil and that of one chocolate graphically.

11. Solve the following pair of equations graphically :

$$2x + 3y = 12, \ x - y - 1 = 0.$$

Shade the region between the two lines represented by the above equations and the X - axis.

12. Solve the following pair of linear equations graphically :

$2x + 3y = 12, 2y - 1 = x$

determine the co-ordinates of the vertices of the triangle formed by the lines represented by these equations with the x-axis.

13. Shayam went to a stationary shop and purchased 2 pens and 3 pencils for Rs. 9. His friend Rahim saw the new variety of pens and pencils with Shyam and he also bought 4 pens and 6 pencils of the same kind for Rs. 18.

(i) from the linear equation.

(ii) Represent this situation graphically.

(iii) Which person have been more beneficial ?

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Topic 2 Algebraic Methods To Solve Pair Of Linear Equations And Equations Reducible To Linear Equations Short Answer Type Questions

1. Solve the following pair of linear equations

by cross multiplication method :

$$x + 2y = 2$$

$$x - 3y = 7$$

2. Solve the following pair of linear equations

by substitution method :

$$3x + 2y - 7 = 0$$
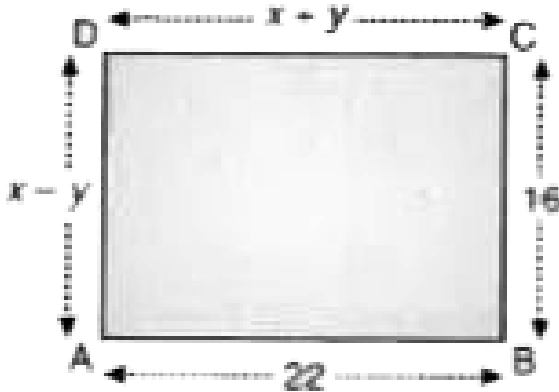
$$4x + y - 6 = 0$$

3. In the figure given below, ABCD is a rectangle. Find the values of x and y.

4. Solve : $99x + 101y = 499$

$101x + 99y = 501$

5. Solve the following system of linear equations by substitution method :

$$2x - y = 2$$

$$x + 3y = 15$$

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1. A two digit number is four times the sum of the digits. It is also equal to 3 times the product of digits. Find the number.

2. The numerator of a fraction is 3 less than its denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and original fraction is $\frac{29}{20}$. Find the original number.

3. Sum of the ages of a father and the son is 40 years. If father's age is three times that of his son, then find their respective ages.

4. Solve using cross multiplication method :

$5x + 4y - 4 = 0$

$x - 12y - 20 = 0$

5. A part of monthly hostel charge is fixed and the remaining depends on the number of days one has taken food in the mess. When Swati takes food for 20 days, she has to pay Rs. 3,000 as hostel charges whereas Mansi who takes food for 25 days Rs. 3,500 as hostel charges. Find the fixed charges and the cost of food per day.

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6. Solve for x and y :

$$\frac{x}{2} + \frac{2y}{3} = -1$$

$$x - \frac{y}{3} = 3$$

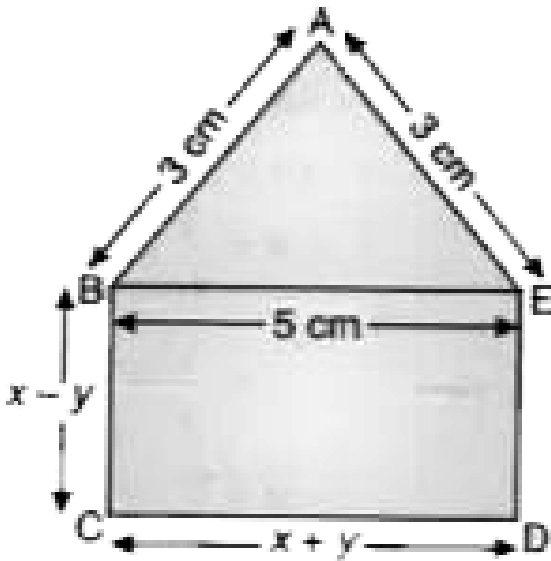**7.** 2 men and 7 boys can do a piece of work in 4 days. It is done by 4 men and 4 boys in 3 days. How long would it take for one man or one boy to do it ?

8. In the figure below ABCDE is a pentagon with $BE \parallel CD$ and $BC \parallel DE$. BC is perpendicular to CD. If the perimeter of ABCDE is 21 cm, find the values of x and y.

9. Solve for x and y :

$$\frac{x+1}{2} + \frac{y-1}{3} = 9, \ \frac{x-1}{3} + \frac{y+1}{2} = 8.$$

10. Solve for x and y :

$$\frac{6}{x-1} - \frac{3}{y-2} = 1$$

$$\frac{5}{x-1} - \frac{1}{y-2} = 2, \text{where } x \neq 1, y \neq 2.$$

11. Solve the following pair of equations for x and y :

$$\frac{a^2}{x} - \frac{b^2}{y} = 0, \quad \frac{a^2 b}{x} + \frac{b^2 a}{y} = a + b,$$

$x \neq 0, y \neq 0.$

12. Solve for x and y :

$$ax + by = \frac{a + b}{2}$$

$$3x + 5y = 4.$$

13. Solve the following pair of equations for x and y :

$$4x + \frac{6}{y} = 15, 6x - \frac{8}{y} = 14$$

and also find the value of p such that $y = px - 2$.

14. Find whether the following pair of linear equations has a unique solution. If yes, find

the solution :

$$7x - 4y = 49, \ 5x - 6y = 57$$

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1. 4 chairs and 3 tables cost Rs. 2100 and 5 chairs and 2 tables cost Rs. 1750. Find the cost of one chair and one table separately.

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2. Solve the following of equations :

$$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2 \text{ and } \frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$$

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3. Solve for x and y :

$$2x - y + 3 = 0$$

$$3x - 5y + 1 = 0$$

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4. The ratio of incomes of two persons is 11 : 7 and the ratio of their expenditures is 9 : 5. If each of them manages to save Rs. 400 per month, find their monthly incomes.

5. A and B are two points 150 km apart on a highway. Two cars start from A and B at the same time. If they move in the same direction they meet in 15 hours. But if they move in the

opposite direction, they meet in 1 hour. Find their speeds.

6. If 2 is subracted from the numerator and 1 is added to the denominator, a fraction becomes $\frac{1}{2}$, but when 4 is added to the numerator and 3 is subracted from the denominator, it becomes $\frac{3}{2}$. Find the fraction.

7. If a bag containing red and white balls, half the number of white balls is equal to one - third the number of red balls. Thrice the total number of balls by 6. How many balls of each colour does the bag contain ?

8. A two digit number is obtained by either multiplying the sum of digits by 8 and then subtracting 5 or by multiplying the difference of digits by 16 and adding 3. Find the number.

9. The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and the breadth is increased by 3 units. The area is increased by 67 square units if length is increased by 3 units and breadth is increased by 2 units. Find the perimeter of the rectangle.

10. Solve for x and y :

$$2(3x - y) = 5xy, \; 2(x + 3y) = 5xy,$$

11. The present age of the father is twice the sum of the ages of his 2 children. After 20 years, his age will be equal to the sum of the ages of his children. Find the age of the father.

12. A fraction becomes $\dfrac{9}{11}$ if 2 is added to both numerator and denominator. If 3 is added to both numerator and denominator it becomes $\dfrac{5}{6}$. Find the fraction.

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13. A motor boat can travel 30 km upstream and 28 km downstream in 7 hours. It can travel 21 km upstream and return in 5 hours. Find the speed of the boat in still water and the speed of the stream.

14. A boat covers 32 km upstream and 36 km downstream in 7 hours. Also, it covers 40 km upstream and 48 km downstream in 9 hours. Find the speed of the boat in still water and that of the stream.

15. For what values of a and b does the following pair of linear equations have infinite number of solution ?

$$2x + 3y = 7, a(x + y) - b(x - y) = 3a + b - 2$$

16. Atul is sitting on a boat which goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, he can go 40 km upstream and 55 km down - stream.

(i) From the linear equation

(ii) Determine the speed of the stream and that of the boat in still water.

(iii) Which mathematical concept is used in the above problem.

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Textbook Corner Exercise 3 1

1. Aftab tells his daughter "Seven years ago I was seven times as old were then. Also, three

years from now, I shall be three times as old as you will be". Represent the situation algebraically and graphically.

2. The coach of a cricket team buys 3 bats and 6 balls for Rs. 3900. Later, she buys another bat and 3 more balls of the same kind for Rs. 1300. Represent this situation algebraically and geometrically.

3. The cost of 2 kg of apples and 1 kg of grapes on a day was found to be Rs. 160. After a month, the cost of 4 kg of apples and 2 kg of grapes is Rs. 300. Represent the situation algebraically.

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Textbook Corner Exercise 3 2

1. Form the pair of linear equations in the following problems, and find their solutions.

10 students of Class X took part in a Mathematics quiz. If the number of girls is 4 more than the number of boys, find the number of boys and girls who took part in the quiz.

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2. Form the pair of linear equations in the following problems, and find their solutions .

5 pencils and 7 pens cost Rs. 50, whereas 7 pencils 5 pens together cost Rs. 46. Find the cost of one pencil and that of one pen.

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3. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$, find out whether the lines representing the following pairs of linear equations intersect at

a point, are parallel or coincident :

$$5x - 4y + 8 = 0$$

$$7x + 6y - 9 = 0$$

4. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$, find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincident :

$$9x + 3y + 12 = 0$$

$$18x + 6y + 24 = 0$$

5. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$, find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincident :

$$6x - 3y + 10 = 0$$

$$2x - y + 9 = 0$$

6. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$ find out whether the following pair of linear equations are consistent, or inconsistent.

$3x + 2y = 5,\ 2x - 3y = 7$

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7. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$ find out whether the following pair of linear equations are consistent, or inconsistent.

$2x - 3y = 8,\ 4x - 6y = 9$

8. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$ find out whether the following pair of linear equations are consistent, or inconsistent.

$$\dfrac{3}{2}x + \dfrac{5}{3}y = 7, 9x - 10y = 14$$

9. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$ find out whether the following pair of linear

equations are consistent, or inconsistent.

$$5x - 3y = 11, \quad -10x - 10x + 6y = -22$$

10. On comparing the ratios $\dfrac{a_1}{a_2}$, $\dfrac{b_1}{b_2}$ and $\dfrac{c_1}{c_2}$, find out whether the following pair of linear equations are consistent, or inconsistent.

$$\frac{4}{3}x + 2y = 8, \quad 2x + 3y = 12$$

11. Which of the following pairs of linear equations are consistent/ inconsistent? If consistent, obtain the solution graphically.

$x + y = 5, 2x + 2y = 10$

12. Which of the following pairs of linear equations are consistent/inconsistent ? If consistent, obtain the solution graphically :

$x - y = 8, 3x - 3y = 16$

13. Which of the following pairs of linear equations are consistent/inconsistent ? If consistent, obtain the solution graphically :

$$2x + y - 6 = 0, 4x - 2y - 4 = 0$$

14. Which of the following pairs of linear equations are consistent/inconsistent ? If

consistent, obtain the solution graphically :

$$2x - 2y - 2 = 0, 4x - 4y - 5 = 0$$

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15. Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m. Find the dimensions of the garden.

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16. Given the linear equation $2x + 3y - 8 = 0$ write another linear equation in two variables such that the geometrical representation of the pair so formed is :

intersecting lines

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17. Given the linear equation $2x + 3y - 8 = 0$ write another linear equation in two variables such that the geometrical representation of

the pair so formed is :

parallel lines

18. Given the linear equation $2x + 3y - 8 = 0$

write another linear equation in two variables

such that the geometrical representation of

the pair so formed is :

coincident lines

19. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the co-ordinates of the vertices of the triangle formed by these lines and the x-axis and shade the triangular region.

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Textbook Corner Exercise 3 3

1. Solve the following pair of linear equations by the substitution method.

$$x + y = 14$$

$$x - y = 4$$

2. Solve the following pair of linear equations by the substitution method.

$$s - t = 3$$

$$\frac{s}{3} + \frac{t}{2} = 6$$

3. Solve the pair of linear equations by the substitution method :

$$3x - y = 3$$

$$9x - 3y = 9$$

4. Solve the pair of linear equations by the substitution method :

$$0.2x + 0.3y = 1.3$$

$$0.4x + 0.5y = 2.3$$

5. Solve the pair of linear equations by the substitution method :

$$\sqrt{2}x + \sqrt{3}y = 0$$

$$\sqrt{3}x - \sqrt{8}y = 0$$

6. Solve the following pair of linear equations by the substitution method.

$$\frac{3x}{2} - \frac{5y}{3} = -2, \ \frac{x}{3} + \frac{y}{2} = \frac{13}{6}$$

7. Solve $2x + 3y = 11$ and $2x - 4y = -24$ and hence find the value of 'm' for which $y = mx + 3$.

8. From the pair of linear equations for the following problems and find their solution by substitution method.

The difference between two numbers is 26, and one number is three times the other. Find them.

9. From the pair of linear equations for the following problems and find their solution by substitution method.

The larger of two supplementary angles exceeds the smaller by 18 degrees. Find them.

10. From the pair of linear equations for the following problems and find their solution by substitution method.

The coach ofa a cricket team buys 7 bats and 6 balls for Rs. 3800. Later, she buys 3 bats and 5 balls for Rs. 1750. Find the cost of each bat and each ball.

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11. From the pair of linear equations for the following problems and find their solution by substitution method.

The taxi charge 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 Rs. 105 and for a journey of 15 km, the charge paid is Rs. 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 ?

12. Form the pair of linear equations for the following problems and find their solution by substitution method.

A fraction becomes $\dfrac{9}{11}$, if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator it becomes $\dfrac{5}{6}$. Find the fraction.

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13. Form the pair of linear equations for the following problems and find their solution by substitution method.

Five years 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 ?

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Textbook Corner Exercise 3 4

1. Solve the following pair of linear equations by the elimination method and the substitution method.

$x + y = 5$ and $2x - 3y = 4$

2. Solve the following pair of linear equations by the elimination method and the substitution method.

$3x + 4y = 10$ and $2x - 2y = 2$

3. Solve the following pair of linear equations by the elimination method and the substitution method.

$3x - 5y = 7 - 3$ and $9x = 2y + 7$

4. Solve the following pair of linear equations by the elimination method and the

substitution method.

$$\frac{x}{2} + \frac{2y}{3} = -1 \text{ and } x - \frac{y}{3} = 3$$

5. Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :

If we add 1 to the numerator and subtract 1 from the denominator, a fraction reduces to 1. It becomes $\frac{1}{2}$ if we only add 1 to the denominator. What is the fraction ?

6. Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :

Five years ago, Nuri was thrice as old as Sonu. Ten years later, Nuri will be twice as old as Sonu. How old are Nuri and Sonu ?

7. Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :

The sum of the digits of a two - digit number is 9. Also, nine times this numbers is twice the number obtained by reversing the order of the digits. Find the number.

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8. Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :

Meena went to a bank to withdraw Rs. 2,000. She asked the cashier to give her Rs. 50 and Rs. 100 notes only. Meena got 25 notes in all. Find how many notes of Rs. 50 and Rs. 100 she received.

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9. Form the pair of linear equations in the following problems, and find their solutions (if they exist) by the elimination method :

A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Saritha paid Rs. 27 for a book kept for seven days, while Susy paid Rs. 21 for the book she kept for five days. Find the fixed charge and the charge for each extra day.

1. Which of the followings pairs of linear equations has unique solution, no solution, or infinitely many solutions. In case there is a unique solution, find it by using cross multiplication method.

$x - 3y - 3 = 0$

$3x - 9y - 2 = 0$

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2. Which of the followings pairs of linear equations has unique solution, no solution, or infinitely many solutions. In case there is a unique solution, find it by using cross multiplication method.

$2x + y = 5$

$3x + 2y = 8$

3. Which of the followings pairs of linear equations has unique solution, no solution, or infinitely many solutions. In case there is a unique solution, find it by using cross multiplication method.

$3x - 5y = 20$

$6x - 10y = 40$

4. Which of the followings pairs of linear equations has unique solution, no solution, or infinitely many solutions. In case there is a unique solution, find it by using cross multiplication method.

$$x - 3y - 7 = 0$$

$$3x - 3y - 15 = 0$$

5. For which values of a and b does the following pair of linear equations have an infinite number of solutions ?

$$2x + 3y = 7$$

$$(a - b)x + (a + b)y = 3a + b - 2$$

6. For which value of k will the following pair of linear equations have no solution ?

$$3x + y = 1$$

$$(2k - 1)x + (k - 1)y = 2k + 1$$

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7. Solve the following pair of linear equations by the substitution and cross - multiplication methods :

$$8x + 5y = 9$$

$$3x + 2y = 4$$

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8. Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method :

A part of monthly hostel charges 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 20 days she has to pay Rs. 1,000 as hostel charges whereas a student B, who takes food for 26 days, pays Rs. 1,180 hostel charges. Find the fixed charges and the cost of food per day.

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9. Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method :

A fraction becomes $\dfrac{1}{3}$ when 1 is subtracted from the numerator and it becomes $\dfrac{1}{4}$ when 8 is added to its denominator. Find the fraction.

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10. Form the pair of linaer equations in the following problems and find their solutions (if

they exist) by any algebraic method :

Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test ?

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11. Form the pair of linear equations in the following problems and find their solutions (if they exist) by any algebraic method :

Places A and B are 100 km apart on a highway. One car starts from A and another from B at same time. If the cars travel in the same direction at different speeds, they meet in 5 hours. If they travel towards each other, they meet in 1 hour. What are the speeds of the two cars ?

12. Form the pair of linaer equations in the following problems and find their solutions (if they exist) by any algebraic method :

The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and breadth is increased by 3 units. If we increase the length by 3 units and the breadth by 2 units, the area increases by 67 square units. Find the dimensions of the rectangle.

1. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$\frac{1}{2x} + \frac{1}{3y} = 2$$
$$\frac{1}{3x} + \frac{1}{2y} = \frac{13}{6}$$

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2. Solve the following pair of linear equations by the substitution method.

$$x + y = 14$$

$$x - y = 4$$

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3. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$\frac{4}{x} + 3y = 14$$
$$\frac{3}{x} - 4y = 23$$

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4. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$\frac{5}{x-1} + \frac{1}{y-2} = 2$$

$$\frac{6}{x-1} - \frac{3}{y-2} = 1$$

5. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$\frac{7x-2y}{xy} = 5$$

$$\frac{8x+7y}{xy} = 15$$

6. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$6x + 3y = 6xy$$

$$2x + 4y = 5xy$$

7. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$\frac{10}{x+y} + \frac{2}{x-y} = 4$$

$$\frac{15}{x+y} - \frac{5}{x-y} = -2$$

8. Solve the following pairs of equations by reducing them to a pair of linear equations :

$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}$$

$$\frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = \frac{-1}{8}$$

9. Formulate the following problems as a pair of equations, and hence find their solutions :

Ritu can row downstream 20 km in 2 hours, and upstream 4 km in 2 hours. Find her speed of rowing in still water and the speed of the current.

10. Formulate the following problems as a pair of equations, and hence find their solutions :

2 women and 5 men can together finish an cmbroidcry work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone.

11. Formulate the following problems as a pair of equations, and hence find their solutions :

Roohi travels 300 km to her home partly by train and partly by bus. She takes 4 hours if

she travels 60 km by train and the remaining by bus. If she travels 100 km by train and the remaining by bus, she takes 10 minutes longer. Find the speed of the train and the bus separately.

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Textbook Corner Exercise 3 7

1. The ages of two friends Anil and Biju differ by 3 years. Anil's father Dharam is twice as old

as Ani and Biju is twice as old as his sister Cathy. The ages of Cathy and Dharam differ by 30 years. Find the ages of Ani and Biju.

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2. One says, "Give me a hundred, friend ! I shall then become twice as rich as you". The other replies, "If you give me ten, I shall be six times as rich as you". Tell me what is the amount of their (respective) capital ?

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3. A train covered a certain distance at a uniform speed. If the train would have been 10 km/h faster, it would have taken 2 hours less than the scheduled time. And, if the train were slower by 10 km/h , it would have taken 3 hours more than the scheduled time. Find the distance covered by the train.

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4. The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the numer of students in the class.

5. In a $\triangle ABC$, $\angle C = 3\angle B = 2(\angle A + \angle B)$. Find the three angles.

6. Draw the graphs of the equations $5x - y = 5$ and $3x - y = 3$. Determine the coordinates of the vertices of the triangle formed by these lines and y-axis.

7. Solve the following pair of linear equations :

$$px + qy = p - q$$

$$qx - py = p + q$$

8. Solve the following pair of linear equations :

$$ax + by = c$$

$$bx + ay = 1 + c$$

9. Solve the following pair of linear equations :

$$\frac{x}{a} - \frac{y}{b} = 0$$

$$ax + by = a^2 + b^2$$

10. Solve the following pair of linear equations

:

$$(a - b)x + (a + b)y = a^2 - 2ab - b^2$$

$$(a + b)(x + y) = a^2 + b^2$$

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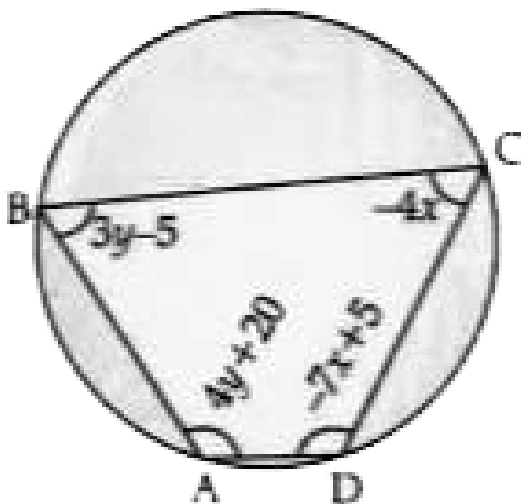**11.** Solve the following pair of linear equations

:

$$152x - 378y = -74$$

$$-378x + 152y = -604$$

12. ABCD is a cyclic quadrilateral. Find the angle A of the cyclic quadrilateral.