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Subject - Mathematics (Practice Worksheet)

Class- 10

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1. The pair of linear equations $2x + 3y = 5$ and $4x + 6y = 10$ is
 - (a) inconsistent
 - (b) consistent
 - (c) dependent consistent
 - (d) none of these
2. The pair of equations $y = 0$ and $y = -7$ has
 - (a) one solution
 - (b) two solutions
 - (c) infinitely many solutions
 - (d) no solution
3. The pair of equations $x = a$ and $y = b$ graphically represents lines which are
 - (a) parallel
 - (b) intersecting at (b, a)
 - (c) coincident
 - (d) intersecting at (a, b)
4. Match the Column:
 - (1) $\begin{matrix} 2x + 5y = 10 \\ 3x + 4y = 7 \end{matrix}$ (A) Unique solution
 - (2) $\begin{matrix} 2x + 5y = 10 \\ 6x + 15y = 20 \end{matrix}$ (B) Infinitely many solutions
 - (3) $\begin{matrix} 5x + 2y = 10 \\ 10x + 4y = 20 \end{matrix}$ (C) No common solution

(a) 1 – A, 2 – B, 3 – C (b) 1 – B, 2 – C, 3 – A
(c) 1 – C, 2 – B, 3 – A (d) 1 – A, 2 – C, 3 – B
5. The pair of equations $x = 4$ and $y = 3$ graphically represents lines which are
 - (a) parallel
 - (b) intersecting at $(3, 4)$
 - (c) coincident
 - (d) intersecting at $(4, 3)$
6. $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, where $a_1, b_1, c_1, a_2, b_2, c_2$ are all real numbers and $a_1^2 + b_1^2 \neq 0, a_2^2 + b_2^2 \neq 0$, is called a
 - (a) family of two different straight lines
 - (b) family of two coincident lines
 - (c) pair of linear equations in two variables
 - (d) none of these
7. Match the Column:
 - (1) $\begin{matrix} 2x + 3y = 40 \\ 6x + 5y = 10 \end{matrix}$ (A) Coincident lines

(2) $2x + 3y = 40$ (B) Intersecting lines
 $6x + 9y = 50$

(3) $2x + 3y = 10$ (C) Parallel lines
 $4x + 6y = 20$

- (a) 1 – A, 2 – B, 3 – C (b) 1 – B, 2 – A, 3 – C
 (c) 1 – B, 2 – C, 3 – A (d) 1 – C, 2 – A, 3 – B

8. A pair of linear equations which has a unique solution $x = 2$, $y = -3$ is

- (a) $x + y = -1$; $2x - 3y = -5$
 (b) $2x + 5y = -11$; $4x + 10y = -22$
 (c) $2x - y = 1$; $3x + 2y = 0$
 (d) $x - 4y - 14 = 0$; $5x - y - 13 = 0$

9. On solving the following pair of linear equations: $2x - y = 2$; $5x + 2y = 14$ by substitution method, values of x and y are _____ and _____ respectively.

10. The father's age is six times of his son's age. Four years hence, the age of the father will be four times of his son's age. The present ages, in years, of the son and the father are, respectively.

- (a) 4 and 24 (b) 5 and 30
 (c) 6 and 36 (d) 3 and 24

11. If $x = a$, $y = b$ is the solution of the pair of equations $x - y = 2$ and $x + y = 4$, then the respective values of a and b are

- (a) 3, 5 (b) 5, 3
 (c) 3, 1 (d) -1, -3

12. There are two positive numbers such that sum of twice the first and thrice the second is 39, while the sum of thrice the first and twice the second is 36. The larger of the two is _____.

13. The difference between a two digit number and the number obtained by interchanging the digits is 27. What is the difference between the two digits of the number?

- (a) 9 (b) 6 (c) 12 (d) 3

14. The pair of equations $ax + 2y = 7$ and $3x + by = 16$ represent parallel lines if

- (a) $a = b$ (b) $3a = 2b$
 (c) $2a = 3b$ (d) $ab = 6$

15. If the pair of equations $x + y = \sqrt{2}$ and $x \sin \theta + y \cos \theta = 1$ has infinitely many solutions, then $\theta =$ _____.

16. The equations $ax + by + c = 0$ and $dx + ey + c = 0$ represent the same straight line if

- (a) $ad = be$ (b) $ac = bd$ (c) $bc = ad$ (d) $ab = de$

17. The equations $\frac{xy}{x+y} = \frac{1}{9}$ and $\frac{xy}{x-y} = \frac{1}{4}$ are equivalent to the equations:

(a) $-\frac{1}{x} + \frac{1}{y} = 9$; $-\frac{1}{x} + \frac{1}{y} = 4$

(b) $\frac{1}{x} - \frac{1}{y} = 9$; $-\frac{1}{x} - \frac{1}{y} = 4$

(c) $\frac{1}{x} + \frac{1}{y} = -4$; $\frac{1}{x} + \frac{1}{y} = -9$

(d) $\frac{1}{x} + \frac{1}{y} = 9$; $-\frac{1}{x} + \frac{1}{y} = 4$

18. On solving the following equations: $\frac{5}{x} + 6y = 3$; $\frac{-5}{x} + 3y = 6$, values of x and y are _____ and _____ respectively.
19. Using the following equations: $\frac{4}{x} + 6y = 10$; $\frac{1}{x} - 6y = 5$, find the value of p if $p = 5x$.
(a) 1 (b) 2 (c) 3 (d) 4
20. Find the number of solutions of the following pair of linear equations:
 $x + 2y - 8 = 0$
 $2x + 4y = 16$
21. Write whether the following pair of linear equations is consistent or not.
 $x + y = 14$, $x - y = 4$
22. Given the linear equation $3x + 4y - 8 = 0$, write another linear equation in two variables such that the geometrical representation of the pair so formed is parallel lines.
23. Find the value of k so that the following system of equations has no solution:
 $3x - y - 5 = 0$, $6x - 2y + k = 0$
24. Find the value of k so that the following system of equation has infinite solutions:
 $3x - y - 5 = 0$, $6x - 2y + k = 0$
25. For which values of p , does the pair of equations given below has unique solution?
 $4x + py + 8 = 0$ and $2x + 2y + 2 = 0$
26. Determine k for which the system of equations has infinite solutions:
 $4x + y = 3$ and $8x + 2y = 5k$
27. Sum of two numbers is 35 and their difference is 13. Find the numbers.
28. Half the perimeter of a rectangular garden, whose length is 12 m more than its width is 60 m. Find the dimensions of the garden.
29. The larger of two supplementary angles exceeds the smaller by 20 degrees. Find the angles
30. Which type of solution will equations $x + 2y = 4$ and $2x + y = 5$ have?
31. Check whether the pair of equations $x + 3y = 6$, $2x - 3y = 12$ is consistent.
32. Without drawing the graph, find out wheather the lines representing the following pair of linea equations intersect at a point, are parallel or coincident.
 $18x - 7y = 24$; $\frac{9}{5}x - \frac{7}{10}y = \frac{9}{10}$
33. Find whether the lines representing the following pair of linear equations intersect at a point, parallel or coincident:
 $2x - 3y + 6 = 0$; $4x - 5y + 2 = 0$
34. Find the value of k for which the system $3x + ky = 7$, $2x - 5y = 1$ will have infinitely many solutions.
35. For what value of k , the system of equations $2x - ky + 3 = 0$, $4x + 6y - 5 = 0$ is consistent?
36. For what value of k , the system of equations $kx - 3y + 6 = 0$, $4x - 6y + 15 = 0$ represents parallel lines?
37. For what value of p , the pair of linear equations $5x + 7y = 10$, $2x + 3y = p$ has a unique solutio
38. Determine, by drawing graphs, whether the following system of linear equations has a unique solution or not: $2x - 3y = 6$, $x + y = 1$

39. Given below are three equations. Two of them have infinite solution and two have unique solution. State the two pairs:
(i) $3x - 2y = 4$ (ii) $6x + 2y = 4$ (iii) $9x - 6y = 12$
40. Solve the following pair of linear equations by substitution method $2x - 3y + 15 = 0$; $3x - 5 = 0$
41. Solve the following pair of linear equations by substitution method $y - 5 = 0$; $3x + 4y - 20 = 0$
42. Solve the following pair of linear equations by substitution method: $2x - y = 1$; $4x + 3y = 27$
43. Solve the following pair of linear equations by substitution method: $2x + 3y = 8$; $4x + 6y = 12$
44. Solve the following pair of linear equations by substitution method: $2x - y = -10$; $-6x + 3y = 30$
45. Solve the following pair of linear equations by substitution method: $x + y = 8$; $x - y = 4$
46. Solve for x and y by the method of elimination: $2x - y = 5$; $3x - 5y = 4$
47. Solve for x and y by the method of elimination: $4x - 3y = 1$; $5x - 7y = -2$
48. Solve for x and y : $2x + 3y = 7$; $4x + 3y = 11$
49. Solve for x and y by the method of elimination: $2x - 3y = 7$; $5x + 2y = 10$
50. Solve for x and y : $2x + 3y = 9$; $4x + 6y = 15$
51. Find the value of m for which the pair of linear equations $2x + 3y - 7 = 0$ and $(m - 1)x + (m + 1)y = (3m - 1)$ has infinitely many solutions.
52. For what value of p will the following pair of linear equations have infinitely many solutions?
 $(p - 3)x + 3y = p$; $px + py = 12$
53. For what value of k will the system of linear equations has infinite number of solutions?
 $kx + 4y = k - 4$, $16x + ky = k$
54. Find the values of a and b for which the following system of linear equations has infinite number of solutions:
 $2x - 3y = 7$, $(a + b)x - (a + b - 3)y = 4a + b$
55. For what value of k will the equations $x + 2y + 7 = 0$, $2x + ky + 14 = 0$ represent coincident lines?
56. For what value of k , the following system of equations $2x + ky = 1$, $3x - 5y = 7$ has
(i) a unique solution (ii) no solution
57. For what value of k , the following pair of equations has no solution:
 $2x + 3y = 5$ and $6x + ky = 15$
58. Find the value of α for which the following pair of equation has infinitely many solution.
 $x - 4y - 9 = 0$, $2x - \alpha y - 27 = 0$
59. Solve for x and y : $x + \frac{6}{y} = 6$, $3x - \frac{8}{y} = 5$
60. Solve the following equations for x and y : $\frac{a^2}{x} - \frac{b^2}{y} = 0$; $\frac{a^2b}{x} + \frac{b^2a}{y} = a + b$; $x, y \neq 0$.
61. Solve for x and y : $5x + \frac{4}{y} = 9$, $7x - \frac{2}{y} = 5$, $y \neq 0$
62. Solve for x and y : $\frac{4}{x} - \frac{9}{y} = -1$, $\frac{15x}{2} - 5y = 0$
63. Solve for x and y : $8x - 9y = 6xy$; $10x + 6y = 19xy$

64. Solve for x and y using substitution method: $2x - 7y + 3 = 0$, $x - 1 = 0$
65. Solve for x and y using substitution method: $7x + 2y + 5 = 0$, $2y + 3 = 0$
66. Solve for x and y using elimination method: $2x - 3y = 10$; $4x - 6y = 20$
67. Solve for x and y using elimination method: $x + 2y = 5$; $\frac{3x}{2} + 3y = 10$
68. Solve for x and y using elimination method: $2x + y = 10$; $3x - 2y = 1$
69. Solve for x and y using elimination method: $5x + 6y = 8$; $-5x - 4y = 10$
70. Solve for x and y using elimination method: $7x - 2y = 9$; $4x + 6y = 15$
71. For what value of k , the pair of linear equations $2x + 7y = 5$, $6x + ky = 15$ has no solution.
72. For what value of p , the pair of linear equations $4x + 2y - 3 = 0$, $2x + py - 6 = 0$ has infinite many solution.
73. Find the value of k for which the pair of linear equations $kx + 3y = k - 2$ and $12x + ky = k$ has no solution.
74. Find the values of a and b for which the following pair of linear equations has infinitely many solutions:
 $2x + 3y = 7$; $(a + b)x + (2a - b)y = 21$
75. For what value of p will the following system of equations has no solution; $(2p - 1)x + (p - 1)y = 2p + 1$; $y + 3x - 1 = 0$
76. Determine the value of k for which the following system of linear equations has infinite number of solutions: $(k - 3)x + 3y = k$, $kx + ky = 12$
77. Solve for x and y : $\frac{3}{x} + 4y = 7$, $-\frac{2}{x} + 7y = 5$, $x \neq 0$
78. Solve for x and y : $\frac{4}{x} + 5y = 7$, $\frac{3}{x} + 4y = 5$, $x \neq 0$
79. Solve for x and y : $\frac{m}{x} - \frac{n}{y} = a$, $px - qy = 0$
80. Solve the following pairs of equations: $4x + \frac{6}{y} = 15$; $6x - \frac{8}{y} = 14$, $y \neq 0$
81. Determine by drawing graphs, whether the following pair of linear equations has a unique solution or not: $3x + 4y = 12$; $y = 2$
82. Determine by drawing graphs, whether the following pair of linear equations has a unique solution or not: $2x - 5 = 0$, $y + 4 = 0$.
83. Determine by drawing graphs, whether the following pair of linear equations has infinite number of solutions or not: $y = 5$; $y + 3 = 0$
84. Draw the graphs of the equations
 $4x - y - 8 = 0$ and $2x - 3y + 6 = 0$
 Also, determine the vertices of the triangle formed by the lines and x -axis.
85. Solve the following system of linear equations graphically:
 $3x - 2y - 1 = 0$; $2x - 3y + 6 = 0$
 Shade the region bounded by the lines and x -axis.
86. From a stationary shop, Archana bought two pencils and three pens for ₹ 40 and Indu bought one pencil and two pens for ₹ 25. Find the price of one pencil and one pen graphically.

87. Two numbers are in the ratio 4:5. If 30 is subtracted from each numbers, the ratio becomes 1:2. Form the pair of linear equations for the above situation and represent them graphically.
88. The perimeter of a rectangle is 52 cm, where length is 6 cm more than the width of the rectangle. Form the pair of linear equations for the above situation and find the dimensions of the rectangle graphically.
89. Solve the following pair of linear equations by substitution method: $2x - 7y = -10$; $3x + 2y = 10$
90. Solve for x and y using substitution method.
 $x + 2y - 3 = 0$; $3x - 2y + 7 = 0$
91. Solve for x and y using substitution method.
 $\sqrt{7}x + \sqrt{13}y = 0$; $\sqrt{5}x + \sqrt{17}y = 0$
92. Solve for x and y using substitution method.
 $\frac{ax}{b} - \frac{by}{a} = a + b$; $ax - by = 2ab$
93. Solve the following pair of linear equations for x and y :
 $2(ax - by) + (a + 4b) = 0$; $2(bx + ay) + (b - 4a) = 0$
94. A number consists of two digits. Where the number is divided by the sum of its digits, the quotient is 7. If 27 is subtracted from the number, the digits interchange their places, find the number.
95. 2 tables and 3 chairs together cost ₹ 2000 whereas 3 tables and 2 chairs together cost ₹ 2500. Find the total cost of 1 table and 5 chairs.
96. A part of monthly expenses of a family is constant and the remaining varies with the price of wheat. When the rate of wheat is ₹ 250 a quintal, the total monthly expenses of the family are ₹ 1000 and when it is ₹ 240 a quintal, the total monthly expenses are ₹ 980. Find the total monthly expenses of the family when the cost of wheat is ₹ 350 a quintal.
97. Solve the following system of equations by cross multiplication method:
 $\frac{x}{a} + \frac{y}{b} = a + b$; $\frac{x}{a^2} + \frac{y}{b^2} = 2$
98. Solve for x and y by cross multiplication method:
 $7x - 9y - 19 = 0$, $4x + 5y - 21 = 0$
99. Solve for x and y , using cross multiplication method
 $\frac{b}{a}x + \frac{a}{b}y = a^2 + b^2$, $x + y = 2ab$
100. Solve for x and y : $\frac{6}{x+y} = \frac{7}{x-y} + 3$, $\frac{1}{2(x+y)} = \frac{1}{3(x-y)}$, where $x + y \neq 0$ and $x - y \neq 0$.
101. Solve for x and y : $\frac{xy}{x+y} = \frac{1}{5}$, $\frac{xy}{x-y} = \frac{1}{7}$, $x + y \neq 0$ and $x \neq y$.
102. Solve for x and y : $\frac{1}{7x} + \frac{1}{6y} = 3$, $\frac{1}{2x} - \frac{1}{3y} = 5$.
103. Solve for x and y : $\frac{x+y}{xy} = 2$, $\frac{x-y}{xy} = 6$
104. Solve for u and v : $2(3u - v) = 5uv$; $2(u + 3v) = 5uv$
105. Determine by drawing the graphs, whether the following system of linear equations has a unique solution or not: $2x + 5y = 10$; $x - 3 = 0$.

106. Determine by drawing the graphs, whether the following system of linear equations has a unique solution or not: $x + 2 = 0$; $2y - 7 = 0$.
107. Determine by drawing the graphs, whether the following system of linear equations has a unique solution or not: $3x - 2y = 12$; $x - \frac{2}{3}y - 4 = 0$.
108. Determine by drawing graphs, whether the following pair of linear equations has infinite many solution or not $x - 2y - 2 = 0$; $3x - 6y - 12 = 0$
109. Given a linear equation $3x - 5y = 1$ form another linear equation in these variables such that the geometric representation of pair so formed is:
(i) intersecting lines (ii) coincident lines (iii) parallel lines
110. Solve graphically: $x + 4y = 10$, $y - 2 = 0$
111. Solve graphically: $2x - 3y = 6$, $x - 6 = 0$
112. Solve the following system of equations graphically: $3x - 5y + 1 = 0$, $2x - y + 3 = 0$
Also find the points where the lines represented by the given equations intersect the x-axis.
113. Solve the following system of equations graphically: $3x - 4y - 1 = 0$, $2x - \frac{8}{3}y - 4 = 0$
Also find the points where the lines represented by the given equations intersect the x-axis.
114. Solve the following system of equations graphically: $x - 5y = 6$, $2x - 10y = 10$
Also find the points where the lines represented by the given equations intersect the x-axis.
115. The sum of the digits of a two digit number is 15. The number obtained by interchanging the digits exceeds the given number by 9. Find the number. (Graphically)
116. The sum of the digits of a two-digit number is 12. The number obtained by interchanging the two digits exceeds the given number by 18. Find the number. (Graphically)
117. The sum of numerator and denominator of a fraction is 3 less than twice the denominator. If each of the numerator and denominator is decreased by 1, the fraction becomes $\frac{1}{2}$. Find the fraction. (Graphically)
118. 5 books and 7 pens together cost ₹ 79 whereas 7 books and 5 pens together cost ₹ 77. Find the total cost of 1 book and 2 pens. (Graphically)
119. Solve the following pair of linear equations graphically.
 $x + 3y = 6$; $2x - 3y = 12$
Also find the area of the triangle formed by the lines representing the given equations with y-axis.
120. Solve for x and y using substitution method: $4x + \frac{y}{3} = \frac{8}{3}$; $\frac{x}{2} + \frac{3y}{4} = -\frac{5}{2}$
121. Solve for x and y using substitution method: $2x + 3y = 7$, $6x + 9y = 11$
122. Solve for x and y using substitution method: $0.4x + 3y = 1.2$, $7x - 2y = \frac{17}{6}$
123. Solve for x and y using substitution method: $3x - 4y - 1 = 0$; $2x - \frac{8}{3}y + 5 = 0$
124. Solve for x and y using substitution method: $4x - y = 10$; $2x - \frac{1}{2}y - 5 = 0$
125. Solve for x and y using substitution method: $3x - 4y = 15$; $2x + 7y = 9$
126. Solve for x and y using substitution method: $\frac{x}{4} + \frac{2y}{3} = 7$; $\frac{x}{6} + \frac{3y}{5} = 11$

127. Solve for x and y using substitution method: $a^2x - b^2y = a^2 - 2b^2$; $b^2x + a^2y = b^2 + 2a^2$

128. The sum of the digits of a two digit number is 8 and the difference between the number and that formed by reversing the digits is 18. Find the number.

129. Students of a class are made to stand in rows. If 4 students are extra in a row, there would be two rows less. If 4 students are less in a row, there would be four more rows. Find the number of students in the class.

130. The sum of the digits of a two digit number is 9. The number obtained by reversing the order of digits of the given number exceeds the given number by 27. Find the given number.

131. The sum of a two digit number and the number formed by reversing the order of digits is 154. If the two digits differ by 4, find the number.

132. Solve for x and y : $a^2x + b^2y = c^2$; $b^2x + a^2y = d^2$

133. Solve for x and y by cross multiplication method: $2x + 3y = 7$; $6x - 5y = 11$

134. Solve for x and y by cross multiplication method: $6x + 5y = 11$; $9x + 10y = 12$

135. Solve for x and y by cross multiplication method: $7x - 2y = 3$; $11x - \frac{3}{2}y = 8$

136. Solve for x and y by cross multiplication method: $2x + 3y - 46 = 0$; $3x + 5y - 74 = 0$

137. Solve for x and y by cross multiplication method: $x + 20y - 1000 = 0$; $x + 26y - 1180 = 0$

138. Solve for x and y by cross multiplication method: $3x - y - 3 = 0$; $4x - y - 8 = 0$

139. Solve for x and y by cross multiplication method: $\frac{x}{a} + \frac{y}{b} = 2$; $ax - by = a^2 - b^2$

140. Solve for x and y by cross multiplication method: $ax + by = 1$; $bx + ay = \frac{(a+b)^2}{a^2+b^2} - 1$

141. Solve for x and y by cross multiplication method: $\frac{x}{a} - \frac{y}{b} = 0$; $ax + by = a^2 + b^2$

142. Solve the following pairs of equations for x and y : $\frac{15}{x-y} + \frac{22}{x+y} = 5$, $\frac{40}{x-y} + \frac{55}{x+y} = 13$

$$x \neq y, x \neq -y$$

143. Solve for x and y : $\frac{57}{x+y} + \frac{6}{x-y} = 5$, $\frac{38}{x+y} + \frac{21}{x-y} = 9$, $x + y \neq 0$, $x - y \neq 0$.

144. Solve for x and y : $\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}$, $\frac{10}{x+1} + \frac{2}{y-1} = \frac{5}{2}$, $x \neq -1$ and $y \neq 1$.

145. Solve for x and y : $\frac{2}{y} + \frac{3}{x} = \frac{7}{xy}$, $\frac{6}{y} + \frac{9}{x} = \frac{11}{xy}$, $x \neq 0, y \neq 0$.

146. Solve the equations graphically:

$$2x + y = 2; 2y - x = 4$$

What is the area of the triangle formed by the two lines and the line $y = 0$?

147. Draw the graphs of the following equations:

$$x + y = 5, x - y = 5$$

(i) Find the solution of the equations from the graph.

(ii) Shade the triangular region formed by the lines and the y -axis.

148. 4 men and 6 boys can finish a piece of work in 5 days while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone or that by 1 boy alone.

149. Solve for x and y : $\frac{2}{3x+2y} + \frac{3}{3x-2y} = \frac{17}{5}$; $\frac{5}{3x+2y} + \frac{1}{3x-2y} = 2$

150. A takes 3 hours more than B to walk 30 km. But if A doubles his pace, he is ahead of B by $3\frac{1}{2}$ hours. Find their speed of walking.

151. Solve the following system of equations graphically for x and y : $3x + 2y = 12$; $5x - 2y = 4$
Find the co-ordinates of the points where the lines meet the y -axis.

152. Draw the graphs of the equations $x = 3$, $x = 5$ and $2x - y - 4 = 0$. Also find the area of the quadrilateral formed by the lines and the x -axis.

153. Solve the following system of linear equations graphically: $3x + y - 12 = 0$; $x - 3y + 6 = 0$
Shade the region bounded by the lines and x -axis. Also, find the area of shaded region.

154. Solve for x and y : $\frac{148}{x} + \frac{231}{y} = \frac{527}{xy}$; $\frac{231}{x} + \frac{148}{y} = \frac{610}{xy}$, $x \neq y$, $y \neq 0$

155. 8 men and 12 boys can finish a piece of work in 10 days while 6 men and 8 boys can finish it in 14 days. Find the time taken by one man alone and that by one boy alone to finish the work.

156. Solve for x and y : $4x + \frac{6}{y} = 15$; $x - \frac{4}{y} = 7$, $y \neq 0$. Hence find the value of p if $2y = 3px + 7$

157. Solve for x and y : $\frac{8}{2x-3y} + \frac{21}{2x+3y} = 11$; $\frac{5}{2x-3y} + \frac{7}{2x+3y} = 6$, ($2x - 3y \neq 0$, $2x + 3y \neq 0$)

158. $\frac{6}{x+2y} + \frac{5}{x-2y} = -3$; $\frac{3}{x+2y} + \frac{7}{x-2y} = -6$ ($x + 2y \neq 0$; $x - 2y \neq 0$)

159. $\frac{3}{3x-y} + \frac{2}{3x+y} = 2$, $\frac{10}{3x-y} + \frac{2}{3x+y} = \frac{11}{2}$ ($3x - y \neq 0$, $3x + y \neq 0$)

160. Mohit and Sahil are driving on two roads represented by the equation $2x + 3y = 7$ and $4x + 6y = 12$
They drive within the speed limit.
(a) Will they meet at some point? Justify your answer.
(b) What value is depicted by Mohit and Sahil?

161. 5 books and 7 pens together cost ₹ 285. Also, 4 books and 4 pens together cost ₹ 220. Monu purchased 3 books and 5 pens and calculated total cost to be ₹ 195. He paid ₹ 195 to the shopkeeper. Shopkeeper rechecked and returned some money to Monu.
(a) How much money did shopkeeper returned to Monu?
(b) What value is depicted by the shopkeeper?

162. A test consists of 'True' or 'False' questions. One mark is awarded for every correct answer while $\frac{1}{4}$ mark is deducted for every wrong answer. A student knew answers to some of the questions. Rest of the questions he attempted by cheating. He answered 120 questions and got 90 marks. If answer to all questions he attempted by cheating were wrong, then how many questions did he answer correctly? How the habit of cheating will affect his character building?

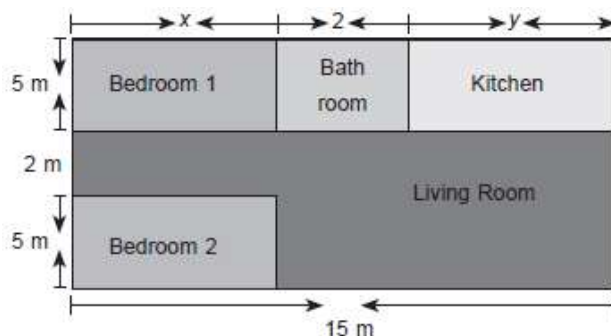
163. A man wished to donate some money to a group of poor people. He decided to give ₹ 120 to each person and found that he fell short of ₹ 60, when he wanted to give to all the people present. He, therefore, distributed ₹ 90 to each person and found that ₹ 90 were left over. How much money did he have and how many people were there?
What value is depicted by the man?

164. A trust has ₹ 30,000. It is invested in two different types of bonds. The first bond pays 5% interest per annum which will be given to orphanage and second bond pays 7% interest per annum which will be given to an N.G.O. for cancer aid. Trust obtains an annual interest of ₹ 1800.
 (a) How much amount is invested in each type of bond?
 (b) Which value is depicted by trust?

165. A test consists of 'True' or 'False' questions. One mark is awarded for every correct answer while $\frac{1}{4}$ mark is deducted for every wrong answer. A student knew answers to some of the questions. Rest of the questions he attempted by guessing. He answered 120 questions and got 90 marks.

Type of Question	Marks given for correct answer	Marks deducted for wrong answer
True/False	1	0.25

- (a) If answer to all questions he attempted by guessing were wrong, then how many questions did he answer correctly?
 (b) How many questions did he guess?
 (c) If answer to all questions he attempted by guessing were wrong and answered 80 correctly, then how many marks he got?
 (d) If answer to all questions he attempted by guessing were wrong, then how many questions answered correctly to score 95 marks?
166. Amit is planning to buy a house and the layout is given below. The design and the measurement has been made such that areas of two bedrooms and kitchen together is 95 sq.m.



Based on the above information, answer the following questions:

- (a) Form the pair of linear equations in two variables from this situation.
 (b) Find the length of the outer boundary of the layout.
 (c) Find the area of each bedroom and kitchen in the layout.
 (d) Find the area of living room in the layout.
 (e) Find the cost of laying tiles in kitchen at the rate of ₹ 50 per sq.m
167. General form of pair of linear equations in two variables is $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$.

If graph of pairs of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$. represent two intersecting lines then point of intersection is the solution of pair of linear equations. If graph

represent two parallel lines then pair of linear equations has no common solutions. If graph represents two coincident lines then pair of linear equations has infinitely many solutions.

Answer the questions based on above.

(a) The pair of equations $x = 5$ and $y = 5$ graphically represents lines which are

(i) parallel

(ii) intersecting at (2, 2)

(iii) coincident

(iv) intersecting at (5, 5)

(b) For the linear equation $2x + 5y - 8 = 0$, the another linear equation in two variables such that the graphical representation of the pair so formed represents parallel lines is

(i) $4x + 10y - 20 = 0$

(ii) $14x + 20y - 20 = 0$

(iii) $16x + 15y - 20 = 0$

(iv) $2x - 5y - 20 = 0$

(c) Determine by drawing graph, that system of linear equations $3x - 2y = 12$ and $\frac{3}{2}x - \frac{2}{3}y - 6 = 0$ represents

(i) Unique solutions

(ii) infinitely many solutions

(iii) no solutions

(iv) $x = 0$ and $y = 0$

(d) The graph of linear equations $x = 3$ and $x = 5$ and $2x - y - 4 = 0$ and x-axis represents.

(i) triangle (ii) equilateral triangle (iii) quadrilateral (iv) collinear points

(e) Area of the region formed by lines $x = 2$, $y = 5$, $x = 0$ and $y = 0$ is

(i) 0 sq units (ii) 2 sq units (iii) 5 sq units (iv) 10 sq units

168. It is common that Government revise travel fares from time to time based on various factors such as inflation (a general increase in prices and fall in the purchasing value of money) on different types of vehicles like auto, rickshaws, taxis, radio cab, etc. The auto charges in a city comprise of a fixed charge together with the charge for the distance covered. Study the following situations



Name of the city	Distance travelled (Km)	Amount paid (₹)
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City A	10	75
	15	110
City B	8	91
	14	145

Situation 1: In city A, for a journey of 10 km, the charge paid is ₹ 75 and for a journey of 15 km, the charge paid is ₹ 110.

Situation 2: In a city B, for a journey of 8 km, the charge paid is ₹ 91 and for a journey of 14 km, the charge paid is ₹ 145. [CBSE Question Bank]

Refer situation 1

(a) If the fixed charges of auto rickshaw be ₹ x and the running charges be ₹ y km/hr, the pair of linear equations representing the situation is

(i) $x + 10y = 110$, $x + 15y = 75$

(ii) $x + 10y = 75$, $x + 15y = 110$

(iii) $10x + y = 110$, $15x + y = 75$

(iv) $10x + y = 75$, $15x + y = 110$

(b) A person travels a distance of 50 km. The amount he has to pay is

(i) ₹ 155 (ii) ₹ 255 (iii) ₹ 355 (iv) ₹ 455

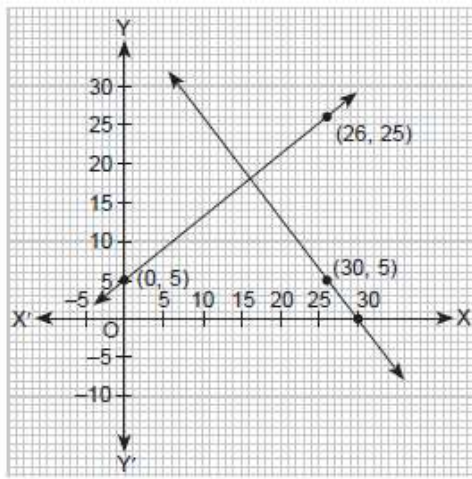
Refer situation 2

(c) What will a person have to pay for travelling a distance of 30 km?

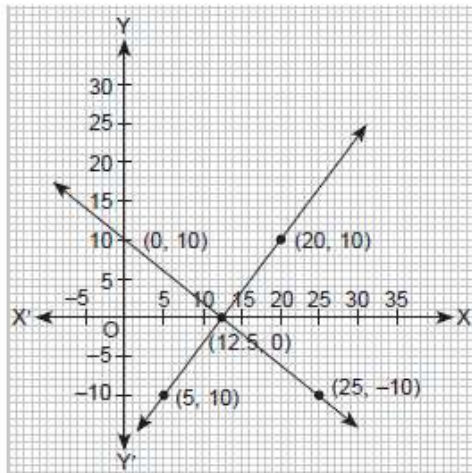
(i) ₹ 185 (ii) ₹ 289 (iii) ₹ 275 (iv) ₹ 305

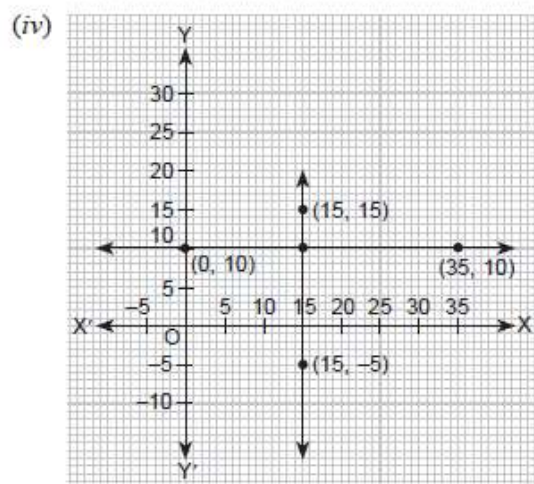
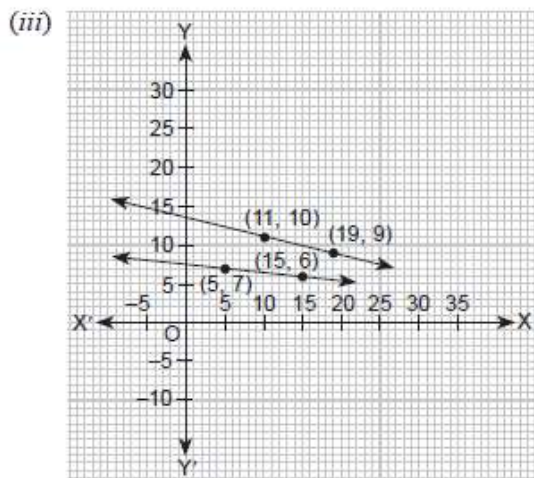
(d) The graph of lines representing the conditions are: (situation 2)

(i)



(ii)





169. For a pair of linear equations in two variables, $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$.

- (a) If $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then such a pair of linear equations has unique solution.
- (b) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$, then such a pair of linear equations has no solutions.
- (c) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then such a pair of linear equations has infinitely many solutions.

Answer the questions based on above

(a) What is condition for pair of linear equations $ax + 2y = 7$ and $3x + by = 16$ have no common solutions?

(b) For what value of q , the pair of linear equations $\frac{x}{\sqrt{2}} + \frac{y}{\sqrt{2}} = 1$ and $x \cos \theta + y \sin \theta = 1$ have infinitely many solutions.

(c) Determine the value of p and q , for which the pair of linear equations $2x + 3y = 7$ and $(p + q)x + (2p - q)y + 21 = 0$ has infinitely many solution.

(d) Check whether the given pair of linear equations $x - y = 4$ and $x + y = 8$ have unique solution or not. If yes, then what are the respective values of x and y ?

(e) Verify, when $k \neq -2$, the pair of linear equations $3x + y = 1$ and $(2k - 1)x + (k - 1)y = 2k + 1$ have no solutions?