

QB365

Important Questions - Pair of Linear Equation in Two Variables

10th Standard CBSE

Maths

Reg.No. : 

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Time : 01:00:00 Hrs

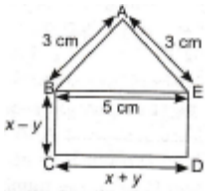
Total Marks : 50

**Section - A**

- 1) Find whether the pair of linear equations  $y = 0$  and  $y = -5$  has no solution, unique solution or infinitely many solutions. 1
- 2) If  $am=bl$ , then find whether the pair of linear equations  $ax + by = c$  and  $lx + my = n$  has no solutions, unique solution or infinitely many solutions. 1
- 3) If  $ad \neq bc$ , then find whether the pairs of linear equations  $ax + by = p$  and  $cx + dy = q$  has no solution, unique solution or infinitely many solutions. 1
- 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
- 5) Father's age is 3 times the sum of ages of his two children. After 5 yr, his age will be twice the sum of ages of the two children. Find the age of father. 1
- 6) Find a, if the line  $3x+ay=8$  passes through the intersection of lines represented by equations  $3x-2y=10$  and  $5x+y=8$ . 1
- 7) For what value of k, the pair of equations  $kx+2y=5$ ,  $3x-4y=10$  has no solution? 1
- 8) Solve the following pair of equations by elimination method. 1  
 $11x+15y+23=0$ ;  $7x-2y-20=0$
- 9) The sum of two numbers is 120 and one of the numbers is 3 times the other. Find the value of the numbers. 1
- 10) Solve the following system of equations. 1  
 $\frac{27}{x+y} - \frac{15}{x-y} = -2$   
and  $\frac{30}{x+y} - \frac{1}{x-y} = 3$

**Section - B**

- 11) The angles of a cyclic quadrilateral ABCD are  $\angle A = (6x + 10)^\circ$ ,  $\angle B = (5x)^\circ$ ,  $\angle C = (x + y)^\circ$  and  $\angle D = (3y - 10)^\circ$  Find x and y and then the values of the four angles. 2
- 12) 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: 2
  - (i) intersecting lines
  - (ii) parallel lines
  - (iii) coincident lines.

- 13) Determine the values of  $m$  and  $n$  so that the following system of linear equations have infinite number of solutions: 2
- $$(2m - 1)x + 3y - 5 = 0$$
- $$3x + (n - 1)y - 2 = 0$$
- 14) For what value of  $p$  will the following system of equations have no solution? 2
- $$(2p-1)x + (p-1)y = 2p + 1; Y + 3x - 1 = 0.$$
- 15) Solve using cross multiplication method: 2
- $$5x + 4y - 4 = 0$$
- $$x - 12y - 20 = 0$$
- 16) Solve for  $x$  and  $y$ : 2
- $$\frac{x}{2} + \frac{2y}{3} = -1$$
- $$x - \frac{y}{3} = 3$$
- 17) 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  $y$ . 2
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- 18) Solve the following pair of equations for  $x$  and  $y$ :  $\frac{a^2}{x} - \frac{b^2}{y} = 0, \frac{a^2b}{x} + \frac{b^2a}{y} = a + b,$  2
- $$x \neq 0; y \neq 0.$$
- 19) Solve for  $x, y$ : 2
- (a)  $\frac{x+y-8}{2} = \frac{x+2y-14}{3} = \frac{3x+y-12}{11}$
- (b)  $7(y+3) - 2(x+2) = 14, 4(y-2) + 3(x-3) = 2$
- 20) The length of the sides of a triangle are  $2x + \frac{y}{2}, \frac{5x}{2} + y + \frac{1}{2}$  and  $\frac{2}{3}x + 2y + \frac{5}{2}$ . 2
- If the triangle is equilateral, find its perimeter.

### Section - C

- 21) Reduce the following pair of equations into a pair of linear equations and solve them 5
- (i)  $\frac{2xy}{x+y} = \frac{3}{2}, \frac{xy}{2x-y} = \frac{-3}{10}; x + y \neq 0, 2x - y \neq 0$
- (ii)  $\frac{2}{2x+3y} + \frac{3}{3x-2y} = \frac{17}{15},$   
 $\frac{5}{3x+2y} + \frac{1}{3x-2y} = 2$
- 22) Draw the graphs of the pair of linear equations:  $x + 2y = 5$  and  $2x - 3y = -4$  5
- Also find the points where the lines meet the  $x$ -axis.
- 23) Solve the following pair of equations:  $\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2$  and  $\frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$  5

24) Atul is sitting on a boat which goes 30 km upstream and 44 km downstream in 10 hr. In 13 hr, he can go 40 km upstream and 55 km downstream.

- (i) Form 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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