

**Q1.** Do the following equations represent a pair of coincident lines? Justify your answer.

$$3x + \frac{1}{7}y = 3 \quad \text{and} \quad 7x + 3y = 7$$

**Q2.** Do the following equations represent a pair of coincident lines? Justify your answer.

$$-2x - 3y = 1 \quad \text{and} \quad 6y + 4x = -2$$

**Q3.** For the pair of equations  $\lambda x + 3y + 7 = 0$  and  $2x + 6y - 14 = 0$ . To have infinitely many solutions, the value of  $\lambda$  should be 1. Is the statement true? Give reasons.

**Q4.** For all real values of  $c$ , the pair of equations  $x - 2y = 8$  and  $4x - 10y = c$  have a unique solution. Justify whether it is true or false.

**Q5.** The line represented by  $x = 7$  is parallel to the X-axis. Justify whether the statement is true or not.

**Q6.** For which value(s) of  $k$  will the pair of equations

$$kx + 3y = k - 3, \quad 12x + ky = k$$

has no solution?

**Q7.** Two straight paths are represented by the equations  $x - 3y = 2$  and  $-2x + 6y = 5$ . Check whether the paths cross each other or not.

**Q8.** Write a pair of linear equations which has the unique solution  $x = -1$  and  $y = 3$ . How many such pairs can you write?

**Q9.** Do the following equations represent a pair of coincident lines? Justify your answer.

$$\frac{x}{2} + y + \frac{2}{5} = 0 \quad \text{and} \quad 4x + 8y + \frac{5}{16} = 0$$

**Q10.** Do the following pair of linear equations have no solution? Justify your answer.

$$3x + y - 3 = 0 \quad \text{and} \quad 2x + \frac{2}{3}y = 2$$

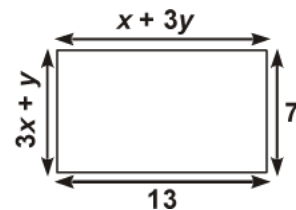
**Q11.** Do the following pair of linear equations have no solution? Justify your answer.

$$x = 2y \quad \text{and} \quad y = 2x$$

**Q12.** Do the following pair of linear equations have no solution? Justify your answer.

$$2x + 4y = 3 \quad \text{and} \quad 12y + 6x = 6$$

**Q13.** Find the values of  $x$  and  $y$  in the following rectangle



**Q14.** Are the following pair of linear equations consistent? Justify your answer.

$$-3x - 4y = 12 \quad \text{and} \quad 4y + 3x = 12$$

**Q15.** Are the following pair of linear equations consistent? Justify your answer.

$$\frac{3}{5}x - y = \frac{1}{2} \quad \text{and} \quad \frac{1}{5}x - 3y = \frac{1}{6}$$

**Q16.** Are the following pair of linear equations consistent? Justify your answer.

$$2ax + by = a \text{ and } 4ax + 2by - 2a = 0; a, b \neq 0$$

**Q17.** Find the values of  $p$  in (i) to (iv) and  $p$  and  $q$  in (v) for the following pair of equations:  
 $2x + 3y = 7$  and  $2px + py = 28 - qy$ , if the pair of equations has infinitely many solutions.

**Q18.** Find the values of  $p$  in (i) to (iv) and  $p$  and  $q$  in (v) for the following pair of equations:  
 $-x + py = 1$  and  $px - y = 1$ , if the pair of equations has no solution.

**Q19.** Find the values of  $p$  in (i) to (iv) and  $p$  and  $q$  in (v) for the following pair of equations:  
 $3x - y - 5 = 0$  and  $6x - 2y - p = 0$ , if the lines represented by these equations are parallel.

**Q20.** For which value(s) of  $\lambda$ , do the pair of linear equation  $\lambda x + y = \lambda^2$  and  $x + \lambda y = 1$  have infinitely many solutions?

**Q21.** For which value(s) of  $\lambda$ , do the pair of linear equation  $\lambda x + y = \lambda^2$  and  $x + \lambda y = 1$  have no solution?

**Q22.** Are the following pair of linear equations consistent? Justify your answer.

$$x + 3y = 11 \text{ and } 2(2x + 6y) = 22$$

**Q23.** By the graphical method, find whether the following pair of equations are consistent or not. If consistent, solve them,

$$x - 2y = 6, \quad 3x - 6y = 0$$

**Q24.** For which values of  $a$  and  $b$  will the following pair of linear equations has infinitely many solutions?

$$x + 2y = 1 \\ (a - b)x + (a + b)y = a + b - 2$$

**Q25.** If  $2x + y = 23$  and  $4x - y = 19$ , then find the values of  $5y - 2x$  and  $\frac{y}{x} - 2$ .

**Q26.** Write an equation of a line passing through the point representing solution of the pair of linear equations  $x + y = 2$  and  $2x - y = 1$ . How many such lines can we find?

**Q27.** Determine graphically, the vertices of the triangle formed by the lines

$$y = x, \quad 3y = x \text{ and } x + y = 8$$

**Q28.** If the angles of a triangle are  $x$ ,  $y$  and  $40^\circ$  and the difference between the two angles  $x$  and  $y$  is  $30^\circ$ . Then, find the value of  $x$  and  $y$ .

**Q29.** Find the values of  $p$  in (i) to (iv) and  $p$  and  $q$  in (v) for the following pair of equations:  
 $2x + 3y - 5 = 0$  and  $px - 6y - 8 = 0$ , if the pair of equations has a unique solution.

**Q30.** Find the values of  $p$  in (i) to (iv) and  $p$  and  $q$  in (v) for the following pair of equations:  
 $-3x + 5y = 7$  and  $2px - 3y = 1$ , if the lines represented by these equations are intersecting at a unique point.

**Q31.** For which value(s) of  $\lambda$ , do the pair of linear equation  $\lambda x + y = \lambda^2$  and  $x + \lambda y = 1$  have a unique solution?

**Q32.** By the graphical method, find whether the following pair of equations are consistent or not. If consistent, solve them,

$$x + y = 3, \quad 3x + 3y = 9$$

**Q33.** If  $(x + 1)$  is a factor of  $2x^3 + ax^2 + 2bx + 1$ , then find the value of  $a$  and  $b$  given that  $2a - 3b = 4$ .

**Q34.** Two years ago, Salim was thrice as old as his daughter and six years later, he will be four year older than twice her age. How old are they now?

- Q35.** The age of the father is twice the sum of the ages of his two children. After 20 year, his age will be equal to the sum of the ages of his children. Find the age of the father.
- Q36.** 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 hence the values of the four angles.
- Q37.** In a competitive examination, 1 mark is awarded for each correct answer while  $1/2$  mark is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly?
- Q38.** A shopkeeper gives books on rent for reading. She takes a fixed charge for the first two days and an additional charge for each day thereafter. Latika paid Rs. 22 for a book kept for six days, while Anand paid Rs. 16 for the book kept for four days. Find the fixed charges and the charge for each extra day.
- Q39.** There are some students in the two examination halls  $A$  and  $B$ . To make the number of students equal in each hall, 10 students are sent from  $A$  to  $B$  but, if 20 students are sent from  $B$  to  $A$ , the number of students in  $A$  becomes double the number of students in  $B$ , then find the number of students in the both halls.
- Q40.** Two numbers are in the ratio 5 : 6. If 8 subtracted from each of the numbers, the ratio becomes 4 : 5, then the numbers.
- Q41.** Determine, algebraically, the vertices of the triangle formed by the lines
- $$3x - y = 3, \quad 2x - 3y = 2 \quad \text{and} \quad x + 2y = 8$$
- Q42.** The cost of 4 pens and 4 pencils boxes is Rs. 100. Three times the cost of a pen is Rs. 15 more than the cost of a pencil box. From the pair of linear equations for the above situation. Find the cost of a pen and a pencil box.
- Q43.** A two-digit number is obtained by either multiplying the sum of the digits by 8 and then subtracting 5 or by multiplying the difference of the digits by 16 and then adding 3. Find the number.
- Q44.** A motorboat can travel 30 km upstream and 28 km downstream in 7 h. It can travel 21 km upstream and return in 5 h. Find the speed of the boat in still water and the speed of the stream.
- Q45.** A person, rowing at the rate of 5 km/h in still water, takes thrice as much time in going 40 km upstream as in going 40 km downstream. Find the speed of the stream.
- Q46.** 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 min longer. Find the speed of the rickshaw and of the bus.
- Q47.** A shopkeeper sells a saree at 8% profit and a sweater at 10% discount, thereby, getting a sum Rs. 1008. If she had sold the saree at 10% profit and the sweater at 8 discount, she would have got Rs 1028 then find the cost of the saree and the list price (price before discount) of the sweater.
- Q48.** A railway half ticket cost 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 stations  $A$  to  $B$  costs Rs. 2530. Also, one reserved first class ticket and one reserved first class half ticket from stations  $A$  to  $B$  costs Rs. 3810. Find the full first class fare from stations  $A$  to  $B$  and also the reservation charges for a ticket.
- Q49.** Solve the following pairs of equations
- $$x + y = 3.3, \quad \frac{0.6}{3x - 2y} = -1, \quad 3x - 2y \neq 0$$
- Q50.** Susan invested certain amount of money in two schemes  $A$  and  $B$ , which offer interest at the rate of 8% per annum and 9% per annum, respectively. She received Rs. 1860 as annual interest. However, had she interchanged the amount of investments in the two schemes, she would have received Rs. 20 more as annual interest. How much money did she invest in each scheme?

**Q51.** Solve the following pairs of equations

$$\frac{x}{3} + \frac{y}{4} = 4, \quad \frac{5x}{6} - \frac{y}{8} = 4$$

**Q52.** By the graphical method, find whether the following pair of equations are consistent or not. If consistent, solve them,

$$3x + y + 4 = 0, \quad 6x - 2y + 4 = 0$$

**Q53.** Solve the following pairs of equations

$$43x + 67y = -24, \quad 67x + 43y = 24$$

**Q54.** Solve the following pairs of equations

$$4x + \frac{6}{y} = 15, \quad 6x - \frac{8}{y} = 14, \quad y \neq 0$$

**Q55.** 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.

**Q56.** Graphically, solve the following pair of equations

$$2x + y = 6 \quad \text{and} \quad 2x - y + 2 = 0$$

Find the ratio of the areas of the two triangles formed by the lines representing these equations with the X-axis and the lines with the Y-axis.

**Q57.** Draw the graph of the pair of equations  $2x + y = 4$  and  $2x - y = 4$ . Write the vertices of the triangle formed by these lines and the Y-axis, find the area of this triangle?

**Q58.** Find the solution of the pair of equation  $\frac{x}{10} + \frac{y}{5} - 1 = 0$  and  $\frac{x}{8} + \frac{y}{6} = 15$  and find  $\lambda$ , if  $y = \lambda x + 5$ .

**Q59.** Solve the following pairs of equations

$$\frac{2xy}{x+y} = \frac{3}{2}, \quad \frac{xy}{2x-y} = \frac{-3}{10}, \quad x+y \neq 0, \quad 2x-y \neq 0$$

**Q60.** Solve the following pairs of equations

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

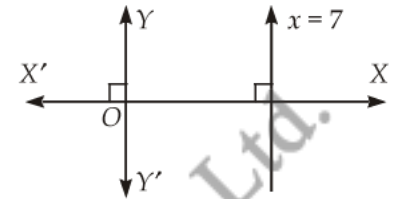
**Q61.** Solve the following pairs of equations

$$\frac{1}{2x} - \frac{1}{y} = -1, \quad \frac{1}{x} + \frac{1}{2y} = 8, \quad x, y \neq 0$$

**Q62.** Vijay had some bananas and he divided them into two lots A and B. He sold the first lot at the rate of Rs. 2 for 3 bananas and the second lot at the rate of Rs. 1 per banana and got a total of Rs. 400. If he had sold the first lot at the rate of Rs. 1 per banana and the second lot at the rate of Rs. 4 for 6 bananas, his collection would have been Rs 460. Find the total number of bananas he had.

- S1.** No.
- S2.** Yes.
- S3.** No. (Reason explain by teacher).
- S4.** False, at  $c = 40$ , the system of linear equations does not have a unique solution.

- S5.** Not true, by graphically, we observe that  $x = 7$  is parallel to Y-axis and perpendicular to X-axis.



- S6.**  $k = -6$ .
- S7.** Two straight paths represented by the given equations never cross each other because they are parallel to each other.
- S8.**  $-a_1 + 3b_1 + c_1 = 0$  and  $-a_2 + 3b_2 + c_2 = 0$ .  
Infinitely many pairs of linear equations are possible.
- S9.** No.
- S10.** No.
- S11.** No.
- S12.** Yes.
- S13.** The required values of  $x$  and  $y$  are 1 and 4, respectively.
- S14.** No.
- S15.** Yes.
- S16.** Yes.
- S17.** The pair of equations has infinitely many solutions for the values of  $p = 4$  and  $q = 8$ .
- S18.** The given pair of linear equations, has no solution for  $p = 1$ .
- S19.** The given pair of linear equations are parallel for all real values of  $p$  except 10 i.e.,  $P \in R - \{10\}$ .
- S20.**  $\lambda = 1$
- S21.**  $\lambda = -1$
- S22.** No.

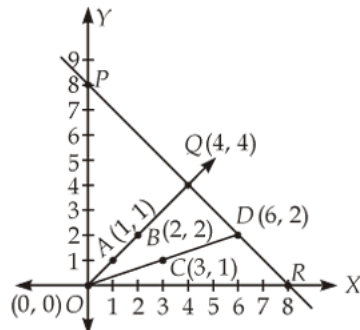
S23. Inconsistent

S24.  $a = 3, b = 1$ .

S25. The values of  $(5y - 2x)$  and  $(y/x - 2)$  are 31 and  $-5/7$ , respectively.

S26. Infinite lines can pass through the intersection point of linear equation  $x + y = 2$  and  $2x - y = 1$ , i.e.,  $E(1, 1)$  line as  $y = x, 2x + y = 3, x + 2y = 3$  and so on.

S27.



Vertices of the triangle is  $O(0, 0), D(6, 2)$ , and  $Q(4, 4)$ .

S28. The required values of  $x$  and  $y$  are  $85^\circ$  and  $55^\circ$  respectively.

S29. The pair of linear equations has a unique solution for all values of  $p$  except i.e.,  $P \in \mathbb{R} - [-4]$ .

S30. The lines representing by these equations are intersecting at a unique point for all real values of  $p$  except  $9/10$ .

S31. All real values of  $\lambda$  except  $\pm 1$

S32. Consistent, lines represented by these eqn. are coincident.

S33. The required values of  $a$  and  $b$  are 5 and 2, respectively.

S34. Salim and his daughter's age are 38 years and 14 years respectively.

S35. The father's age is 40 years.

S36. The required values of  $x$  and  $y$  are  $20^\circ$  and  $30^\circ$  respectively and the values of the four angles i.e.,  $\angle A, \angle B, \angle C$  and  $\angle D$  are  $130^\circ, 100^\circ, 50^\circ$  and  $80^\circ$  respectively.

S37. Jayanti answered correctly 100 questions.

S38. The fixed charge = Rs. 10 and the charge for each extra day = Rs. 3.

S39. 100 students are in hall A and 80 students are in hall B.

S40. The required numbers are 40 and 48.

S41. The vertices of the  $\Delta ABC$  formed by the given lines are  $A(2, 3), B(1, 0)$  and  $C(4, 2)$ .

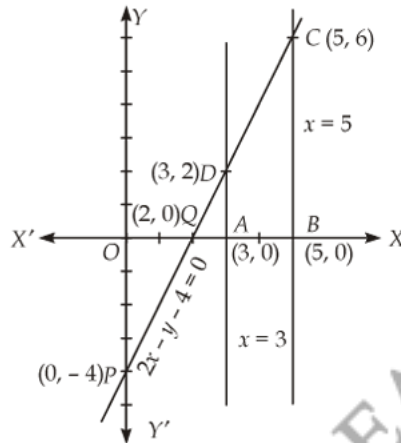
S42. The cost of a pen and a pencil box are Rs. 10 and Rs. 15 respectively.

S43. The required two digit number 83.

S44. The speed of the motorboat in still water is 10 km/h and the speed of the steam 4 km/h.

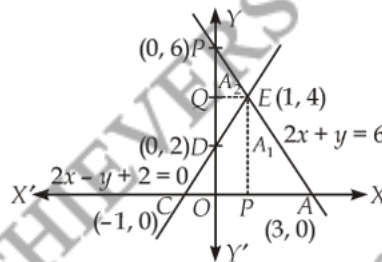
S45. The speed of the stram is 2.5 km/h.

- S46.** The speed of rickshaw and the bus are 10 km/h and 40 km/h, respectively.
- S47.** The cost price of the saree and the list price (price before discount) of the sweater are Rs. 600 and Rs. 400 respectively.
- S48.** Full first class fare from station A to B is Rs. 2500 and the reservation for a ticket is Rs. 30.
- S49.**  $x = 1.2, y = 2.1$
- S50.** She invested Rs. 12,000 and Rs. 10,000 in two schemes A and B respectively.
- S51.**  $x = 6, y = 8$
- S52.** Consistent,  $x = -1, y = -1$
- S53.**  $x + 1, y = -1$
- S54.**  $x = 3, y = 2$
- S55.**



Area of the required quadrilateral is 8 sq. units.

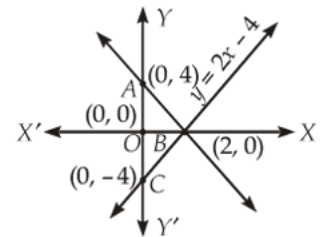
**S56.**



Let,  $A_1 = \text{Area of } \triangle ACE = 8$  and  $A_2 = \text{Area } \triangle BDE = 2$ , Hence, Ratio of area = 4 : 1.

**S57.** Vertices of a  $\triangle ABC$  are A(0, 4), B(2, 0) and C(0, -4).

The required area of the triangle is 8 sq. units.



**S58.** The solution of the pair of equations is  $x = 340, y = -165$  and the required value of  $\lambda$  is  $-1/2$ .

**S59.**  $x = 1/2, y = -3/2$

**S60.**  $x = a^2, y = b^2$

**S61.**  $x = 1/6, y = 1/4$

**S62.** He has 500 bananas.

SMARTACHIEVERS LEARNING Pvt. Ltd.  
[www.smartachievers.in](http://www.smartachievers.in)