

## MATHS

# **BOOKS - RD SHARMA MATHS (ENGLISH)**

# PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

#### Others

**1.** 37 pens and 53 pencils together cost Rs. 320, while 53 pens and 37 pencils together cost Rs. 400. Find the cost of a pen and that of a pencil.



**2.** A and B each have certain number of oranges. A says to B, if you

give me 10 of your oranges, I will have twice the number of oranges

left with you. B replies, if you give me 10 of your oranges, I will have the same number of oranges as left with you. Find the number of oranges with A and B separately.



**3.** Prove that there is a value of  $c(\neq 0)$  for which the system  $6x + 3y = c - 3 \ 12x + cy = c$  has infinitely many solutions. Find this value.

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**4.** Find the values of k for which the system 2x + ky = 1 3x - 5y = 7 will have (i) a unique solution, and (ii) no solution. Is there is a value of k for which the system has infinitely many solutions?



 $12x + \alpha y = \alpha$  will have no solution?



7. Determine the values of a and b for which the following system of linear equations has infinite solutions: 2x - (a - 4)y = 2b + 1 and 4x - (a - 1)y = 5b - 1

8. 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



**9.** Find the values(s) of k for which the system of equations  $kx - y = 2 \ 6x - 2y = 3$  has (i) a unique solution (ii) no solution. Is

there a value of k for which the system has infinitely many solutions?



**11.** In each of the following systems of equations determine whether the system has a unique solution, no solution or infinitely many solutions. In case there is a unique solution, find it.

(1) 
$$2x + 3y = 7$$
,  $6x + 5y = 11$   
(2)  $6x + 5y = 11$ ,  $9x + \frac{15}{2}y = 21$   
(3)  $-3x + 4y = 5$ ,  $\frac{9}{2}x - 6y + \frac{15}{2} = 0$ 

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**12.** Solve : 
$$a(x+y) + b(x-y) = a^2 - ab + b^2$$
,

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

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13. Solve: 
$$rac{x}{a}+rac{y}{b}=a+b,$$
  $rac{x}{a^2}+rac{y}{b^2}=2$ 

14. Solve 
$$\displaystyle rac{4}{x} + 5y = 7$$
 and  $\displaystyle rac{3}{x} + 4y = 5$ 

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15. Solve the following system of equations in  $xandy \ ax + by = 1$ 

$$bx + ay = rac{\left(a + b
ight)^2}{a^2 + b^2} - 1 \, ext{ or } \, , bx + ay = rac{2ab}{a^2 + b^2}$$

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16. Solve: 
$$x+y=a+b$$
 ;  $ax-by=a^2-b^2$ 

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17. 
$$rac{xy}{x+y} = rac{6}{5}; rac{xy}{y-x} = 6$$

18. Solve: 
$$3x - rac{y+7}{11} + 2 = 10$$
 and  $2y + rac{x+11}{7} = 10$ 

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**19.** Solve 
$$x - y + z = 4$$
,  $x + y + z = 2$ ,  $2x + y - 3z = 0$ 

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**20.** 
$$\frac{44}{x+y} + \frac{30}{x-y} = 10 \frac{55}{x+y} + \frac{40}{x-y} = 13$$

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**21.** Solve: x + 2y + z = 7, x + 3z = 11, 2x - 3y = 1

22. 
$$rac{6}{x+y}=rac{7}{x-y}+3$$
,  $rac{1}{2(x+y)}=rac{1}{3(x-y)}$ 

23. Determine graphically the vertices of a trapezium, the equations of

whose sides are x=0, y=0, y=4 and 2x+y=6 . Also, determine

its area.

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24. Determine, graphically whether the system of equations x - 2y = 2, 4x - 2y = 5 is consistent or in-consistent.

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25. Solve the following system of equations by using the method of elimination by equating the coefficients:  $\frac{x}{10} + \frac{y}{5} + 1 = 15$  and  $\frac{x}{8} + \frac{y}{6} = 15$ 

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**26.** Solve the following system of equations:  $\frac{1}{2x} - \frac{1}{y} = -1$  and  $\frac{1}{x} + \frac{1}{2y} = 9$ , where  $x \neq 0, y \neq 0$ .

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27. Solve: 
$$4x + rac{6}{y} = 15\ 6x - rac{8}{y} = 14$$
 and hence find p if  $y = px - 2$ 

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28. Solve : 3(2u+v)=7uv, 3(u+3v)=11uv

29. 
$$Solve: \frac{1}{2(2x+3y)} + \frac{12}{7(3x-2y)} = \frac{1}{2}$$
  
 $\frac{7}{2x+3y} + \frac{4}{3x-2y} = 2$  where  $2x + 3y \neq 0$  and  $3x - 2y \neq 0$ .

**30.** Solve:  $217x + 131y = 913 \ 131x + 217y = 827$ 



**31.** The area of the triangle formed by the lines 2x + 3y = 12, x - y - 1 = 0 and x = 0 (as shown in Figure), is 7sq. units (b) 7.5 sq. units (c) 6.5 sq. units (d) 6 sq. units

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**32.** 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 number of students in the class.



**33.** A wizard having powers of mystic incantations and magical medicines seeing a cock fight going on, spoke privately to both the owners of cocks. To one he said: 'if your bird wins, than you give me your stake-money, but if you do not win, I shall given you two third of that'. Going to the other, he promised in the same way to three fourths. From both of them his gain would be only 12 gold coins. Find the stake of money each of the cock-owners have.

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**34.** A railway half ticket costs half the full fare and the reservation charge is the same on the half ticket as on full ticket. One reserved first class ticket from Mumbai to Ahmedabad costs rs216 and one full and one half reserved first class tickets cost rs 327 What is the basic first class full fare and what is the reservation charge?

**35.** There are two examination rooms A and B. If 10 candidates are sent from A to B, the number of students in each room is same. If 20 candidates are sent from B to A, the number of students in A is double the number of students in B. Find the number of students in each room.

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**36.** In a rectangle, if the length is increased by 3 metres and breadth is decreased by 4 meters, the area of the rectangle is reduced by 67 square meters. If length is reduced by 1 metre and breadth is increased by 4 metres, the area is increased by 89 sq. metres. Find the dimensions of the rectangle.



**37.** On selling a tea-set 5% loss and a lemon-set at 15% gain, a crockery seller gains Rs. 7. If he sells the tea-set at 5% gain and the lemon-set at 10% gain, he gains Rs. 13. Find the actual price of the tea-set and the lemon-set.

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**38.** Draw the graphs of 2x + y = 6 and x - y + 2 = 0. Shade the

region boun-ded by these lines and x=axis. Find the area of the shaded region.

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**39.** Solve the following system of linear equations graphically.

$$2x - y - 4 = 0, x + y + 1 = 0$$

**40.** Solve the following system of equations graphically x + 3y = 6

2x-3y=12 and hence find the value of  $a, ext{ if } 4x+3y=a$ 



9x - 3y = 6 has infinitely many solutions.

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42. Show graphically that the system of equations

2x + 4y = 10 and 3x + 6y = 12 has no solution.



**43.** Solve graphically the system of equations: x + y = 3 3x - 2y = 4

**44.** Ten students of class X took part in Mathematics quiz. If the number of girls is 4 more than the number of boys. Represent this situation algebraically.

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45. Draw the graphs of the following equations: 2x - y - 2 = 0,

4x + 3y - 24 = 0 and y + 4 = 0 Obtain the vertices of the triangle

so obtained. Also, determine its area.

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**46.** Solve the following system of linear equations graphically:  $x - y = 1 \ 2x + y = 8$ 

**47.** After covering a distance of 30km with a uniform speed there is some defect in a train engine and therefore, its speed is reduced to 4/5 of its original speed. Consequently, the train reaches its destination late by 45 minutes. Had it happened after covering 18 kilometres more, the train would have reached 9 minutes earlier. Find the speed of the train and the distance of journey.

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**48.** A man travels 600 km partly by train and partly by car. If he covers 400 km by train and the rest by car, it takes him 6 hours and 30 minutes. But, if he travels 200 km by train and the rest by car, he takes half an hour longer. Find the speed of the train and that of the car.



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



**50.** X takes 3 hours more than Y to walk 30km. But, if X double his pace, he is ahead of Y by  $1\frac{1}{2}hours$ . Find their speed of walking.

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**51.** The total expenditure per month of a household consists of a fixed rent of the house and mess charges depending upon the number of people sharing the house. The total monthly expenditure is Rs. 3900 for 2 people and Rs. 7500 for 5 people. Find the rent of the house and the mess charges per head per month.

**52.** A man starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was Rs. 1500 after 4 year of service and Rs. 1800 after 10 years of service, what was his starting salary and what is the annual increment?



**53.** places A and B are 80 km apart from each other on a highway. A car starts from A and other from B at the same time. If they move in the same direction, they meet in 8 hours and if they move in opposite directions, they meet in 1 hour and 20 minutes. Find the speed of the cars.



**54.** Abdul traveled 300km by train and 200km by taxi, it took him 5 hours 30minutes. But if he travel 260 km by train and 240 km by taxi he takes 6 minutes longer. Find the speed of the train and of the taxi.



**55.** A person invested some amount at the rate of 12% simple interest and a certain amount at the rate of 10% simple interest. He received yearly interest of Rs 130. But if he had interchanged the amounts invested, he would have received Rs 4 more as interest. How much did he invest at 12% simple interest? (a) Rs 400 (b) Rs 500 (c) Rs 700 (d) Rs 800

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**56.** Students of a class are made to stand in rows. If one student is extra in a raw, there would be 2 rows less. If one student is less in a

row there would be 3 rows more. Find the number of students in the class.



**57.** If the numerator of a fraction is multiplied by 2 and the denominator is reduced by 5 the fraction becomes 6/5. And, if the denominator is doubled and the numerator is increased by 8, the fraction becomes 2/5. Find the fraction.



**58.** The denominator of a fraction is 4 more than twice the numerator. When both the numerator and denominator are decreased by 6, then the denominator becomes 12 times the numerator. Determine the fraction. **59.** I am three times as old as my son. Five years later, I shall be two and a half times as old as my son. How old am I and how old is my son?



**60.** If twice the son's age in years is added to the father's age, the sum is 70. But if twice the father's age is added to the son's age, the sum is 95. Find the ages of father and son.

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**61.** Ten years ago, a father was twelve times as old as his son and ten years hence, he will be twice as old as his son will be then. Find their present ages.



**62.** A and B are friends and their ages differ by 2 years. A's father D is twice as old as A and B is twice as old as his sister C. The age of D and C differ by 40 years. Find the ages of A and B.



**63.** Two years ago, a father was five times as old as his son. Two years later, his age will be 8 more than three times the age of the son. Find the present ages of father and son.

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64. Father's age is three times the sum of ages of his two children.

After 5 years his age will be twice the sum of ages of two children. Find

the age of father.



**65.** A man travels 370 km partly by train and partly by car. If he covers 250 km by train and the rest by car, it takes him 4 hours. But, if he travels 130 km by train and the rest by car, he takes 18 minutes longer. Find the speed of the train and that of the car.

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**66.** Point A and B are 90 km apart from each other on a highway. A car starts from A and another from B at the same time. If they go in the same direction they meet in 9 hours and if they go in opposite directions they meet in 9/7 hours. Find their speeds.

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**67.** A fraction becomes 4/5, if 1 is added to both numerator and denominator. If, however, 5 is subtracted from both numerator and denominator, the fraction becomes  $\frac{1}{2}$ . What is the fraction.

**68.** A fraction is such that if the numerator is multiplied by 3 and the denominator is reduced by 3, we get 18/11, but if the numerator is increased by 8 and the denominator is doubled, we get 2/5. Find the fraction.

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**69.** The sum of two numbers is 1000 and the difference between their squares is 256000. Find the numbers.



70. A two-digit number is 3 more than 4 times the sum of its digits. If

18 is added to the number, the digits are reversed. Find the number.

**71.** A two-digit number is such that the product of its digits is 20. If 9 is added to the number the digits interchange their places. Find the number.

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72. Seven times a two-digit number is equal to four times the number obtained by reversing the digits. If the difference between the digits is3. Find the number.

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**73.** The sum of a two digit number and the number formed by interchanging its digits is 110. If 10 is subtracted from the first number, the new number is 4 more than 5 times the sum of the digits in the first number. Find the first number.

**74.** The sum of a two digit number and the number formed by interchanging the digit is 132. If 12 is added to the number, the new number becomes 5 times the sum of the digits. Find the number.



**75.** A two digit number is obtained by either multiplying sum of digits by 8 and adding 1 or by multiplying the difference of the digits by 13 and adding 2. Find the number.



**76.** If three times the larger of the two numbers is divided by the smaller one, we get 4 as quotient and 3 as the remainder. Also, if seven



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**77.** The sum of a two digit number and the number obtained by reversing the order of its digits is 121, and the two digits differ by 3. Find the number.

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**78.** In a two digit number, the ten's digit is three times the unit's digit. When the number is decreased by 54, the digits are reversed. Find the number.

**79.** 4 tables and 3 chairs, together, cost Rs. 2,250 and 3 tables and 4 chairs cost Rs. 1950. Find the cost of 2 chairs and 1 table.



**80.** Reena has pens and pencils which together are 40 in number. If she has 5 more pencils and 5 less pens, then number of pencils would become 4 times the number of pens. Find the original number of pens and pencils.



**81.** 7 audio cassettes and 3 video cassettes cost Rs. 1110, while 5 audio cassettes and 4 video cassettes cost Rs. 1350. Find the cost of an audio cassette and a video cassette.



**82.** A man has only 20 paise coins and 25 paisa coins in his purse. If he has 50 coins in all totalling Rs. 11.25, how many coins of each kind does he have?

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**83.** In a two digit number, the unit's digit is twice the ten's digit. If 27 is added to the number, the digits interchange their places. Find the number.

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**84.** Sum of two numbers is 35 and their difference is 13. Find the numbers.

**85.** On selling a T.V. at 5% gain and a fridge at 10% gain, a shopkeeper gains Rs. 2000. But if he sells the T.V. at 10% gain and the fridge at 5% loss. he gains Rs. 1500 on the transaction. Find the actual prices of T.V. and fridge.

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**86.** A and B each have a certain number of mangoes. A says to B, "if you give 30 of your mangoes, I will have twice as many as left with you." B replies, "if you give me 10, I will have thrice as many as left with you." How many mangoes does each have?

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87. Show that x=2, y=1 is a solution of the system of

simultaneous linear equations:  $3x-2y=4; \ \ 2x+y=5$  .

**88.** Show that x = 2, y = 1 is not a solution of the system of simultaneous linear equations: 2x + 7y = 11; x - 3y = 5

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89. Show that  $x=2, \ y=1$  and  $x=4, \ y=4$  are solutions of the

system of equations: 3x - 2y = 4; 6x - 4y = 8.

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**90.** The coach of a cricket team buys 3 bats and 6 balls for Rs 3900. Later, he buys another bat and 3 more balls of the same kind for Rs

1300. Represent this situation algebraically and geometrically.

**91.** Romila went to a stationery shop and purchased 2 pencils and 3 erasers for Rs 9. Her friend Sonali saw the new variety of pencils and erasers with Romila, and she also bought 4 pencils and 6 erasers of the same land for Rs 18. Represent this situation algebraically and graphically.

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92. The path of a train A is given by the equation x + 2y - 4 = 0 and the path of another train B is given by the equation 2x + 4y - 12 = 0. Represent this situation graphically.

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**93.** Akhila went to a fair in her village. She wanted to enjoy rides on the Giant Wheel and play Hoopla (a game in which you throw a ring on the items kept in the stall, and if the ring covers any object completely you

get it). The number of times she played Hoopla is half the number of rides she had on the Giant Wheel. Each rides costs Rs 3, and a game of Hoopla costs Rs 4. If she spent Rs 20 in the fair, represent this situation algebraically and graphically.

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**94.** Aftab tells his daughter, "Seven years ago, I was seven times as old as you were then. Also, three years from now, I shall be three times as old as you will be." Is not this interesting? Represent this situation algebraically and graphically.

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**95.** The path of a train A is given by the equation 3x + 4y - 12 = 0and the path of another train B is given by the equation 6x + 8y - 48 = 0. Represent this situation graphically. **96.** Gloria is walking along the path joining (-2, 3) and (2, -2) while Suresh is walking along the path joining (0, 5) and (4, 0). Represent this situation graphically.

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**97.** On comparing the ratios  $\frac{a_1}{a_2}$ ,  $\frac{b_1}{b_2}$  and  $\frac{c_1}{c_2}$ , and without drawing them, find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincide: (i) 5x - 4y + 8 = 0; 7x + 6y - 9 = 0 (ii) 9x + 3y + 12 = 0; 18x + 6y + 24 = 0 (iii)

 $6x - 3y + 10 = 0; \quad 2x - y + 9 = 0$ 

**98.** 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: (i) intersecting lines (ii) parallel lines (iii) coincident lines

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**99.** The cost of 2kg 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 and geometrically.

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**100.** Use a single graph paper and draw the graph of the following equations: 2y - x = 8; 5y - x = 14, y - 2x = 1. Obtain the vertices of the triangle so obtained.

**101.** Draw the graphs of the following equations on the same graph paper: 2x + y = 2; 2x + y = 6. Find the coordinates of the vertices of the trapezium formed by these lines. Also, find the area of the trapezium so formed.


104. Solve the following system of equations graphically:  $3x + y + 1 = 0; \quad 2x - 3y + 8 = 0$ 



**105.** Solve the following system of equations graphically:  $2x + y - 3 = 0; \quad 2x - 3y - 7 = 0$ 

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106. Solve the following system of equations graphically:  $x+y=6; \ x-y=2$ 



110. Solve the following system of equations :  $2x - 3y + 13 = 0; \quad 3x - 2y + 12 = 0$ Watch Video Solution

**111.** Solve the following system of equations graphically:

 $2x + 3y + 5 = 0; \quad 3x - 2y - 12 = 0$ 

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112. Show graphically that following system of equations has infinitely

many solutions: 2x + 3y = 6; 4x + 6y = 12



113. Show graphically that following system of equations has infinitely

many solutions: x - 2y = 5; 3x - 6y = 15



114. Show graphically that following system of equations has infinitely

many solutions: 3x + y = 8; 6x + 2y = 16

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115. Show graphically that following system of equations has infinitely

many solutions: x - 2y + 11 = 0; 3x - 6y + 33 = 0



**116.** Show graphically that following system of equations is inconsistent (i.e. has no solution): 3x - 5y = 20; 6x - 10y = -40



**117.** Show graphically that following system of equations is inconsistent (i.e. has no solution): x - 2y = 6; 3x - 6y = 0

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**118.** Show graphically that following system of equations is in-

consistent (i.e. has no solution):  $2y - x = 9; \quad 6y - 3x = 21$ 



119. Show graphically that following system of equations is in-

consistent (i.e. has no solution): $3x-4y-1=0; \ 2x-rac{8}{3}y+5=0$ 

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120. Determine graphically the vertices of the triangle, the equations of whose sides are given below: (i) 2y - x = 8, 5y - x = 14 and y - 2x = 1 (ii) y = x, y = 0 and 3x + 3y = 10

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121. Determine, by drawing graphs, whether the following system of

linear equations has a unique solution or not: 2x - 3y = 6, x + y = 1 122. Determine, by drawing graphs, whether the following system of linear equations has a unique solution or not: 2y = 4x - 6, 2x = y + 3



123. Solve graphically following system of linear equations. Also find the coordinates of the points where the lines meet axis of y . 2x - 5y + 4 = 0, 2x + y - 8 = 0



124. Solve graphically following system of linear equations. Also find the coordinates of the points where the lines meet axis of y. 3x + 2y = 12, 5x - 2y = 4 125. Solve graphically following system of linear equations. Also find the coordinates of the points where the lines meet axis of y . 2x + y - 11 = 0, x - y - 1 = 0



126. Solve graphically following system of linear equations. Also find the coordinates of the points where the lines meet axis of y . x + 2y - 7 = 0, 2x - y - 4 = 0

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127. Solve following system of linear equations. Also find the coordinates of the points where the lines meet axis of y. 3x + y - 5 = 0, 2x - y - 5 = 0 128. Solve following system of linear equations. Also find the coordinates of the points where the lines meet axis of y. 2x - y - 5 = 0, x - y - 3 = 0



129. Determine graphically the coordinates of the vertices of a triangle,

the equations of whose sides are: (i) y = x, y = 2x and y + x = 6

(ii) 
$$y=x, \ 3y=x$$
 and  $x+y=8$ 

130. Solve the following system of linear equation graphically and shade the region between the two lines and x-axis. 2x + 3y = 12, x - y = 1

131. Solve the following system of linear equation graphically and shade the region between the two lines and x-axis. 3x + 2y - 4 = 0, 2x - 3y - 7 = 0



132. Solve the following system of linear equation graphically and shade the region between the two lines and x-axis. 3x + 2y - 11 = 0, 2x - 3y + 10 = 0



**133.** Draw the graphs of the following equations on the same graph paper: 2x + 3y = 12, x - y = 1. Find the coordinates of the vertices of the triangle formed by the two straight lines and the y-axis. **134.** Draw the graphs of x - y + 1 = 0 and 3x + 2y - 12 = 0. Determine the coordinates of the vertices of the triangle formed by these lines and x-axis and shade the triangular area. Calculate the area bounded by these lines and x-axis.



135. Solve graphically the system of linear equations: 4x - 3y + 4 = 0, 4x + 3y - 20 = 0 Find the area bounded by these lines and x-axis.

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**136.** Solve the following system of linear equations graphically: x + y - 11 = 0, x - y - 1 = 0. Shade the region bounded by these lines and y-axis. Also, find the area of the region bounded by these lines and y-axis. 137. Solve graphically following system of linear equations. Also, find the coordinates of the points where the lines meet the axis of x . 2x + y = 6, x - 2y = -2

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**138.** Solve the following system of linear equation graphically and shade the region between the two lines 2x-y=2, 4x-y=8 and x-axis.

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**139.** Solve the following system of linear equation graphically and shade the region between the two lines x+2y=5,2x-3y=-4 and x-axis.

140. Draw the graphs of the following equations: 2x - 3y + 6 = 0, 2x + 3y - 18 = 0, y - 2 = 0 Find the vertices of the triangle so obtained. Also, find the area of the triangle.

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141. Solve the following system of equations graphically: 2x - 3y + 6 = 0, 2x + 3y - 18 = 0 Also, find the area of the

region bounded by these two lines and y-axis.

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**142.** Solve the following system of linear equations graphically: 4x - 5y - 20 = 0, 3x + 5y - 15 = 0 Determine the vertices of the triangle formed by the lines representing the above equation and the y-axis. **143.** Draw the graphs of the equations 5x - y = 5 and 3x - y = 3. Determine the co-ordinates of the vertices of the triangle formed by these lines and y-axis. Calculate the area of the triangle so formed.

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**144.** Form the pair of linear equations in the following problem, and find the solution graphically: 10 students of class X took part in 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.



**145.** Form the pair of linear equations in the following problem, and find the solution graphically: 5 pencils and 7 pens together cost Rs 50,

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

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**146.** Form the pair of linear equations in the following problem, and find the solution graphically: Champa went to a 'sale' to purchase some pants and skirts. When her friends asked her how many of each she had bought, she answered, "The number of skirts is two less than twice the number of pants purchased. Also, the number of skirts is four less than four times the number of pants purchased." Help her friends to find how many pants and skirts Champa bought.

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147. Solve the following system of equations graphically: 3x - 4y = 7, 5x + 2y = 3. Shade the region between the lines and the y-axis **148.** Solve the following system of equations graphically: 4x - y = 4, 3x + 2y = 14. Shade the region between the lines and the y-axis.

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149. Represent the following pair of equations graphically and write the coordinates of points where the lines intersects y-axis. x + 3y = 6, 2x - 3y = 12



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



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152. Solve the following system of equations by using the method of

substitution:  $x+2y=-1, \quad 2x-3y=12$ 

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**153.** Solve the following system of equations by using the method of substitution: 2x + 3y = 9, 3x + 4y = 5

**154.** Solve the following system of equations by using the method of substitution:  $\frac{2x}{a} + \frac{y}{b} = 2$ ,  $\frac{x}{a} - \frac{y}{b} = 4$ Watch Video Solution

155. Solve the following system of equations by using the method of

elimination by equating the coefficients:  $3x + 2y = 11, \ 2x + 3y = 4$ 

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**156.** Solve the following system of equations by using the method of elimination by equating the coefficients: 8x + 5y = 9, 3x + 2y = 4



**157.** Solve:  $\frac{2}{x} + \frac{2}{3u} = \frac{1}{6}$  and  $\frac{3}{x} + \frac{2}{u} = 0$  and hence find 'a' for which y = ax - 4. Watch Video Solution Solve the following system of equations: 158.  $8v - 3u = 5uv, \quad 6v - 5u = -2uv$ Watch Video Solution 159. Solve:  $\frac{5}{x+y} - \frac{2}{x-y} = -1$ ,  $\frac{15}{x+y} + \frac{7}{x-y} = 10$ , where x+y
eq 0 and x-y
eq 0.Watch Video Solution

**160.** Solve: 37x + 41y = 70, 41x + 37y = 86











167. Solve the following system of equations:  

$$\frac{x}{6} + \frac{y}{3} = 5$$
,  $\frac{x}{2} - \frac{y}{9} = 6$   
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168. Solve the following system of equations:  
 $\frac{x}{3} + \frac{y}{4} = 11$ ,  $\frac{5x}{6} - \frac{y}{3} = -7$   
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169. Solve the following system of equations:  
 $\frac{4}{x} + 3y = 8$ ,  $\frac{6}{x} - 4y = -5$   
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170. Solve the following system of equations:  

$$x + \frac{y}{2} = 4$$
,  $\frac{x}{3} + 2y = 5$   
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171. Solve the following system of equations:  
 $x + 2y = \frac{3}{2}$ ,  $2x + y = \frac{3}{2}$   
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172. Solve the following system of equations:  
 $\sqrt{2}x - \sqrt{3}y = 0$ ,  $\sqrt{3}x - \sqrt{8}y = 0$   
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**176.** Solve the following system of equations:  

$$\frac{1}{2x} + \frac{1}{3y} = 2, \quad \frac{1}{3x} + \frac{1}{2y} = \frac{13}{6}$$
**Watch Video Solution 177.** Solve the following system of equations:  

$$\frac{x+y}{xy} = 2, \quad \frac{x-y}{xy} = 6$$
**Watch Video Solution 178.** Solve the following system of equations:  

$$\frac{15}{u} + \frac{2}{v} = 17, \quad \frac{1}{u} + \frac{1}{v} = \frac{36}{5}$$
**Watch Video Solution**

**179.** Solve the following system of equations:  

$$\frac{3}{x} - \frac{1}{y} = -9, \quad \frac{2}{x} + \frac{3}{y} = 5$$
  
**Watch Video Solution**  
**180.** Solve the following system of equations:  
 $\frac{2}{x} + \frac{5}{y} = 1, \quad \frac{60}{x} + \frac{40}{y} = 19, \quad x \neq 0, \quad y \neq 0$   
**Watch Video Solution**  
**181.** Solve the following system of equations:  
 $\frac{1}{5x} + \frac{1}{6y} = 12, \quad \frac{1}{3x} - \frac{3}{7y} = 8, \quad x \neq 0, \quad y \neq 0$   
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**185.** Solve the following system of equations:  

$$\frac{3}{x+y} + \frac{2}{x-y} = 2, \quad \frac{9}{x+y} - \frac{4}{x-y} = 1$$
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**186.** Solve the following system of equations:  

$$\frac{1}{2(x+2y)} + \frac{5}{3(3x-2y)} = \frac{-3}{2}, \quad \frac{5}{4(x+2y)} - \frac{3}{5(3x-2y)} = \frac{61}{60}$$

**187.** Solve the following system of equations:  

$$\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}, \quad \frac{10}{x+1} + \frac{2}{y-1} = \frac{5}{2}$$
, where  $x \neq -1$  and  $y \neq 1$ 





$$rac{2}{3x+2y}+rac{3}{3x-2y}=rac{17}{5},\ \ rac{5}{3x+2y}+rac{1}{3x-2y}=2$$







**198.** Solve the following system of equations:  

$$\frac{10}{x+y} + \frac{2}{x-y} = 4, \quad \frac{15}{x+y} - \frac{9}{x-y} = -2$$
**Watch Video Solution**
  
**199.** Solve the following system of equations:  

$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}, \quad \frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = -\frac{1}{8}$$
**Watch Video Solution**
  
**200.** Solve the following system of equations:  

$$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2, \quad \frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$$
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203. Solve the following system of equations by using the method of

cross-multiplication: x + y = 7, 5x + 12y = 7



**204.** Solve the following system of equations by using the method of cross-multiplication: 2x + 3y = 17, 3x - 2y = 6



**207.** Solve: 
$$ax + by = a - b$$
,  $bx - ay = a + b$ 

**208.** Solve the following system of equations by method of crossmultiplication:  $\frac{x}{a} + \frac{y}{b} = 2$ ,  $ax - by = a^2 - b^2$ Watch Video Solution

209. Solve the following system of equations in x and y $(a-b)x + (a+b)y = a^2 - 2ab - b^2$ ,  $(a+b)(x+y) = a^2 + b^2$ 

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210. Solve the following system of equations in x and y:  $\frac{a}{x} - \frac{b}{y} = 0, \quad \frac{ab^2}{x} + \frac{a^2b}{y} = a^2 + b^2$ , where  $x, y \neq 0$ .

**211.** Solve: ax + by = c, bx + ay = 1 + c



**213.** Solve the following system of equations by method of crossmultiplication: x + 2y + 1 = 0, 2x - 3y - 12 = 0

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**214.** Solve the following system of equations by method of substitution: 3x + 2y + 25 = 0, 2x + y + 10 = 0
215. Solve the following system of equations by method of crossmultiplication: 2x + y = 35, 3x + 4y = 65

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216. Solve the following system of equations by method of cross-

multiplication: 2x - y = 6, x - y = 2

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217. Solve the following system of equations by method of crossmultiplication:  $\frac{x+y}{xy} = 2$ ,  $\frac{x-y}{xy} = 6$ 

**218.** Solve the following system of equations by method of crossmultiplication: ax + by = a - b, bx - ay = a + b

**219.** Solve the following system of equations by method of cross-

multiplication: x + ay = b, ax - by = c

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220. Solve the following system of equations by method of cross-

multiplication:  $ax + by = a^2$ ,  $bx + ay = b^2$ 



**221.** Solve the following system of equations by method of crossmultiplication:  $\frac{x}{a} + \frac{y}{b} = 2$ ,  $ax - by = a^2 - b^2$ 

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**222.** Solve the following system of equations by method of crossmultiplication:  $\frac{x}{a} + \frac{y}{b} = a + b$ ,  $\frac{x}{a^2} + \frac{y}{b^2} = 2$ Watch Video Solution

223. Solve the following system of equations by method of cross-

multiplication:  $rac{x}{a}=rac{y}{b}, \quad ax+by=a^2+b^2$ 

**224.** Solve the following system of equations by method of crossmultiplication:  $\frac{5}{x+y} - \frac{2}{x-y} = -1$ ,  $\frac{15}{x+y} + \frac{7}{x-y} = 10$ , where  $x \neq 0$  and  $y \neq 0$ 

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225. Solve the following system of equations by method of cross-multiplication:  $\frac{2}{x} + \frac{3}{y} = 13$ ,  $\frac{5}{x} - \frac{4}{y} = -2$ , where  $x \neq 0$  and  $y \neq 0$ 

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226. Solve the following system of equations by method of cross-

multiplication: 
$$ax + by = rac{a+b}{2}, \quad 3x+5y=4$$

227. Solve the following system of equations by method of crossmultiplication: 2ax + 3by = a + 2b, 3ax + 2by = 2a + b

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228. Solve the following system of equations by method of cross-

multiplication: 5ax + 6by = 28, 3ax + 4by = 18

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**229.** Solve the following system of equations by method of crossmultiplication:

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

230. Solve the following system of equations by method of cross-

multiplication:

$$xigg(a-b+rac{ab}{a-b}igg)=yigg(a+b-rac{ab}{a+b}igg),~~x+y=2a^2$$

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231. Solve the following system of equations by method of cross-

multiplication: 
$$bx + cy = a + b$$
, and  $ax\left(\frac{1}{a-b} - \frac{1}{a+b}\right) + cy\left(\frac{1}{b-a} - \frac{1}{b+a}\right) = \frac{2a}{a+b}$ . Vatch Video Solution

**232.** Solve the following system of equations by method of crossmultiplication:

$$(a-b)x+(a+b)y=2a^2-2b^2, \quad (a+b)(x+y)=4ab$$

233. Solve the following system of equations by method of crossmultiplication:  $a^2x + b^2y = c^2$ ,  $b^2x + a^2y = d^2$ 

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**234.** Solve the following system of equations by method of crossmultiplication:  $\frac{57}{x+y} + \frac{6}{x-y} = 5$ ,  $\frac{38}{x+y} + \frac{21}{x-y} = 9$ Watch Video Solution

235. Solve the following system of equations by method of cross-

multiplication: 6(ax + by) = 3a + 2b, 6(bx - ay) = 3b - 2a

**236.** Solve the following system of equations by method of crossmultiplication:  $\frac{a^2}{x} - \frac{b^2}{y} = 0$ ,  $\frac{a^2b}{x} + \frac{b^2a}{y} = a + b$ ,  $x, y \neq 0$ Watch Video Solution

237. Solve the following system of equations by method of cross-

multiplication:  $mx - ny = m^2 + n^2$ , x + y = 2m

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238. Solve the following system of equations by method of cross-

multiplication:  $\frac{ax}{b} - \frac{by}{a} = a + b$ , ax - by = 2ab

**239.** Solve the following system of equations by method of crossmultiplication:  $\frac{b}{a}x + \frac{a}{b}y = a^2 + b^2$ , x + y = 2ab

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**240.** For the following system of equations determine the value of k for which the given system of equations has a unique solution: x - ky = 2, 3x + 2y = -5

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**241.** For the following system of equations determine the value of k for which the given system of equations has a unique solution: 2x - 3y = 1, kx + 5y = 7



**242.** For the following system of equations determine the value of k for which the given system of equations has a unique solution: 2x + 3y - 5 = 0, kx - 6y - 8 = 0

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**243.** For the following system of equations determine the value of k for which the given system of equations has a unique solution: 2x + ky = 1, 5x - 7y = 5

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**244.** For the following system of equations determine the value of k for which the given system has infinitely many solutions: 5x + 2y = k, 10x + 4y = 3

245. For the following system of equations determine the value of kfor which the given system has infinitely many solutions: (k-3)x + 3y = k, kx + ky = 12



**246.** For the following system of equations determine the value of k for which the given system has infinitely many solutions: kx + 3y = k - 3, 12x + ky = k



**247.** Find the value of k for which the following system of equation has

no solution: 3x - 4y + 7 = 0, kx + 3y - 5 = 0

**248.** Find the value of k for which the following system of equation has

no solution: 2x - ky + 3 = 0, 3x + 2y - 1 = 0



**249.** For what value of k , will the following system of equations have

infinitely many solutions? 2x + 3y = 4, (k+2)x + 6y = 3k + 2

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**250.** For what value of k will the following system of linear equations

has no solution? 3x + y = 1, (2k - 1)x + (k - 1)y = 2k + 1

**251.** Find the value of k for which the following system of linear equations has infinite solutions: x + (k+1)y = 5, (k+1)x + 9y = 8k - 1**Watch Video Solution** 

**252.** Find the values of p and q for which the following system of equations has infinite number of solutions: 2x + 3y = 7, (p+q)x + (2p-q)y = 21

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**253.** For what value of k , will the system of equations x + 2y = 5, 3x + ky - 15 = 0 has (i) a unique solution? (ii) no solution

**254.** Find the values of  $\alpha$  and  $\beta$  for which the following system of linear equations has infinite number of solutions: 2x + 3y = 7,  $2\alpha x + (\alpha + \beta)y = 28$ 



**255.** Determine the value of k so that the following linear equations

have no solution: $(3k+1)x+3y-2=0, (k^2+1)x+(k-2)y-5=0$ 

**256.** In the following system of equations determine whether it has unique solution, no solution or infinitely many solutions. In case there is a unique solution, find it: x - 3y = 3, 3x - 9y = 2

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257. In the following system of equations determine whether it has unique solution, no solution or infinitely many solutions. In case there is a unique solution, find it: 2x + y = 5, 4x + 2y = 10



**258.** In the following system of equations determine whether it has unique solution, no solution or infinitely many solutions. In case there is a unique solution, find it: 3x - 5y = 20, 6x - 10y = 40

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**259.** In the following system of equations determine whether it has unique solution, no solution or infinitely many solutions. In case there is a unique solution, find it: x - 2y = 8, 5x - 10y = 10

**260.** Find the value of k for which the following system of equations has a unique solution: kx + 2y = 5, 3x + y = 1.



**261.** Find the value of k for which the following system of equations

has a unique solution: 4x + ky + 8 = 0, 2x + 2y + 2 = 0

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**262.** Find the value of k for which the following system of equations

has a unique solution: 4x - 5y = k, 2x - 3y = 12



**263.** Find the value of k for which the following system of equations has a unique solution: x + 2y = 3, 5x + ky + 7 = 0



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**265.** Find the value of k for which following system of equations have

infinitely many solution: 4x + 5y = 3, kx + 15y = 9



**266.** Find the value of k for which following system of equations have infinitely many solution: kx - 2y + 6 = 0, 4x - 3y + 9 = 0



**267.** Find the value of k for which following system of equations have

infinitely many solution: 8x + 5y = 9, kx + 10y = 18

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**268.** Find the value of k for which following system of equations have

infinitely

many

solution:

2x - 3y = 7, (k + 2)x - (2k + 1)y = 3(2k - 1)

**269.** Find the value of k for which following system of equations have

infinitely many solution:
$$2x+3y=2, \quad (k+2)x+(2k+1)y=2(k-1)$$



**270.** Find the value of k for which following system of equations have

infinitely many solution:
$$x+(k+1)y=4, \hspace{0.2cm} (k+1)x+9y=5k+2$$

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**271.** Find the value of k for which following system of equations have

infinitely many solution:  $kx + 3y = 2k + 1, \quad 2(k + 1)x + 9y = 7k + 1$ 

**272.** Find the value of k for which following system of equations have

infinitely many solution:
$$2x + (k-2)y = k, \quad 6x + (2k-1)y = 2k+5$$



**273.** Find the value of k for which following system of equations have

infinitely many solution:  
$$2 + 2 = 7 - (l + 1) + (2l - 1) + (l + 1)$$

$$2x+3y=7, \quad (k+1)x+(2k-1)y=4k+1$$

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**274.** Find the value of k for which following system of equations have

infinitely many solution: 2x + 3y = k, (k-1)x + (k+2)y = 3k

275. Find the value of k for which the following system of equation has no solution : kx - 5y = 2 , 6x + 2y = 7

A. -10

B. 10

C. -15

D. 15

#### Answer: C

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**276.** Find the value of k for which the following system of equation has

no solution: x + 2y = 0, 2x + ky = 5

**277.** Find the value of k for which the following system of equation has

no solution: 3x - 4y + 7 = 0, kx + 3y - 5 = 0



**278.** Find the value of k for which the following system of equation has

no solution: 2x - ky + 3 = 0, 3x + 2y - 1 = 0

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279. Find the value of k for which the following system of equation has

no solution: 2x + ky = 11, 5x - 7y = 5



**280.** Find the value of k for which the following system of equation has no solution: kx + 3y = 3, 12x + ky = 6



**281.** For what value of k of the following system of equations will be

inconsistent? 4x + 6y = 11, 2x + ky = 7

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**282.** For what value of k , the following system of equations will

represent the coincident lines?  $x+2y+7=0, \quad 2x+ky+14=0$ 



283. Obtain the condition for the following system of linear equations to have a unique solution: ax + by = c, lx + my = n

**284.** Determine the values of a and b so that the following system of linear equations have infinitely many solutions: (2a - 1)x + 3y - 5 = 0, 3x + (b - 1)y - 2 = 0

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**285.** 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

286. Find the values of p and q for which the following system of linear equations has infinite number of solutions: 2x + 3y = 9, (p+q)x + (2p-q)y = 3(p+q+1)

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**287.** Find the values of a and b for which the following system of equations has infinitely many solutions: (2a - 1)x - 3y = 5, 3x + (b - 2)y = 3

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**288.** Find the values of a and b for which the following system of equations has infinitely many solutions: 2x - (2a + 5)y = 5, (2b + 1)x - 9y = 15

**289.** Find the values of a and b for which the following system of equations has infinitely many solutions: (a-1)x + 3y = 2, 6x + (1-2b)y = 6

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**290.** Find the values of a and b for which the following system of

equations has infinitely many solutions: $3x+4y=12, \quad (a+b)x+2(a-b)y=5a-1$ 

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**291.** Find the values of a and b for which the following system of equations has infinitely many solutions: 2x + 3y = 7, (a - b)x + (a + b)y = 3a + b - 2

**292.** Find the values of a and b for which the following system of equations has infinitely many solutions: 2x + 3y - 7 = 0, (a - 1)x + (a + 1)y = (3a - 1)



**293.** Find the value of a for which the following system of equations

has infinitely many solutions: $2x+3y=7, \ (a-1)x+(a+2)y=3a$ 

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294. 4 chairs and 3 tables cost Rs 2100 and 5 chairs and 2 tables cost

Rs 1750. Find the cost of a chair and a table separately.



**295.** 2 tables and 3 chairs together cost Rs 2000 whereas 3 tables and 2 chairs together cost Rs 2500. Find the total cost of 1 table and 5 chairs

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296. 5 pens and 6 pencils together cost Rs 9 and 3 pens and 2 pencils

cost Rs 5. Find the cost of 1 pen and 1 pencil.



297. 3 bags and 4 pens together cost Rs 257 whereas 4 bags and 3

pens together cost Rs 324. Find the total cost of 1 bag and 10 pens.

**298.** 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.

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watch	video	Solution

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



**300.** 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?



**301.** 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.



**302.** 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.



**303.** The sum of a two-digit number and the number obtained by reversing the order of its digits is 165. If the digits differ by 3, find the number.

**304.** The sum of two numbers is 8. If their sum is four times their difference, find the numbers.

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**305.** The sum of digits of a two digit number is 13. If the number is subtracted from the one obtained by interchanging the digits, the result is 45. What is the number?



**306.** A number consists of two digits whose sum is five. When the digits are reversed, the number becomes greater by nine. Find the number.



**307.** The sum of digits of a two digit number is 15. The number obtained by reversing the order of digits of the given number exceeds the given number by 9. Find the given number.



**308.** The sum of a two-digit number and the number formed by reversing the order of digits is 66. If the two digits differ by 2, find the number. How many such numbers are there?



**309.** The sum of a two digit number and the number obtained by reversing the order of its digits is 99. If the digits differ by 3, find the number.

310. A two-digit number is 4 times the sum of its digits. If 18 is added

to the number, the digits are reversed. Find the number.

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**311.** A two-digit number is 4 more than 6 times the sum of its digits. If 18 is subtracted from the number, the digits are reversed. Find the number.

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**312.** A two-digit number is 4 times the sum of its digits and twice the

product of the digits. Find the number.



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



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



**315.** The numerator of a fraction is 4 less than the denominator. If the numerator is decreased by 2 and denominator is increased by 1, then the denominator is eight times the numerator. Find the fraction.



**316.** A fraction becomes 9/11 if 2 is added to both numerator and the denominator. If 3 is added to both the numerator and the denominator it becomes 5/6. Find the fraction.



**317.** A fraction becomes 1/3 if 1 is subtracted from both numerator and the denominator. If 1 is added to both the numerator and the denominator it becomes 1/2. Find the fraction.



**318.** If we add 1 to the numerator and subtract 1 from the denominator, a fraction becomes 1. It also becomes 1/2 if we only add 1 to the denominator. What is the fraction?

**319.** When 3 is added to the denominator and 2 is subtracted from the numerator a fraction becomes 1/4. And, when 6 is added to numerator and the denominator is multiplied by 3 it becomes 2/3. Find the fraction.

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**320.** If 2 is added to the numerator of a fraction, it reduces to 1/2 and if 1 is subtracted from the denominator, it reduces to 1/3. Find the fraction.

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**321.** The sum of the numerator and denominator of a fraction is 4 more than twice the numerator. If the numerator and denominator are increased by 3, they are in the ratio 2 : 3. Determine the fraction.
**322.** The sum of the numerator and denominator of a fraction is 3 less than twice the denominator. If the numerator and denominator are decreased by 1, the numerator becomes half the denominator. Determine the fraction.

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**323.** The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 3, the fraction becomes 1/2. Find the fraction.

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**324.** Five years hence, father's age will be three times the age of his son. Five years ago, father was seven times as old as his son. Find their present ages.

325. A father is three times as old as his son. After twelve years, his age

will be twice as that of his son then. Find their present ages.

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**326.** Ten years later, A will be twice as old as B and five years ago, A

was three times as old as B. What are the present ages of A and B?

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**327.** A is elder to B by 2 years. A's father F is twice as old as A and B is twice as old as his sister S . If the ages of the father and sister differ by 40 years, find the age of A .

**328.** Six years hence a man's age will be three times the age of his son and three years ago he was nine times as old as his son. Find their present ages.



**329.** The present age of a father is three years more than three times the age of the son. Three years hence father's age will be 10 years more than twice the age of the son. Determine their present ages.

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330. A father is three times as old as his son. In 12 years time, he will

be twice as old as his son. Find the present ages of father and the son.



**331.** 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?

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**332.** The ages of two friends Ani aid Biju differ by 3 years. Ani'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.



**333.** Ved travels 600 km to his home partly by train and partly by car. He takes 8 hours if he travels 120 km by train and the rest by car. He takes 20 minutes longer if he travels 200 km by train and the rest by car. Find the speed of the train and the car.

**334.** Points A and B are 70 km. apart on a highway. A car starts from A and another car starts from B simultaneously. If they travel in the same direction, they meet in 7 hours, but if they travel towards each other, they meet in one hour. Find the speed of the two cars.

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**335.** A sailor goes 8 km downstream in 40 minutes and returns in 1 hours. Determine the speed of the sailor in still water and the speed of the current.

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336. A boat goes 30 km upstream and 44 km downstream in 10 hours.In 13 hours, it can go 40 km upstream and 55 km downstream.Determine the speed of the stream and that of the boat in still water.

**337.** A boat goes 24 km upstream and 28 km downstream in 6 hrs. It goes 30 km upstream and 21 km downstream in  $6\frac{1}{2}$  hrs. Find the speed of the boat in still water and also speed of the stream.

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**338.** While covering a distance of 30 km. Ajeet takes 2 hours more than Amit. If Ajeet doubles his speed, he would take 1 hour less than Amit. Find their speeds of walking.

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**339.** A man walks a certain distance with certain speed. If he walks 1/2 km an hour faster, he takes 1 hour less. But, if he walks 1 km an hour slower, he takes 3 more hours. Find the distance covered by the man and his original rate of walking.

**340.** Ramesh travels 760 km to his home partly by train and partly by car. He takes 8 hours if he travels 160 km. by train and the rest by car. He takes 12 minutes more if he travels 240 km by train and the rest by car. Find the speed of the train and car respectively.

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**341.** A boat goes 12 km upstream and 40 km downstream in 8 hours. It can go 16 km upstream and 32 km downstream in the same time. Find the speed of the boat in still water and the speed of the stream



**342.** 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.



**343.** 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.

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**344.** A takes 3 hours more than B to walk a distance of 30 km. But, if A doubles his pace (speed) he is ahead of B by  $1\frac{1}{2}$  hours. Find the speeds of A and B.



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

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**346.** Places A and B are 100 km apart on a highway. One car starts from A and another from b at the 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



**347.** 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?

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**348.** 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. If we increase the length by 3 units and breadth by 2 units, the area is increased by 67 square units. Find the length and breadth of the rectangle.



**349.** A man sold a chair and a table together for Rs. 1520 thereby making a profit of 25 % on the chair and 10 % on the table. By selling them together for Rs. 1535 he could have made a profit of 10 % on the chair and 25 % on the table. Find the cost price of each

**350.** 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.

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**351.** The ratio of incomes of two persons is 9:7 and the ratio of their expenditures is 4:3. If each of them saves Rs 200 per month, find their monthly incomes.

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

**353.** Find the four angles of a cyclic quadrilateral ABCD in which  $\angle A = (2x-1)^{\circ}$ ,  $\angle B = (y+5)^{\circ} \angle C = (2y+15)^{\circ}$  and  $\angle D = (4x-7)^{\circ}$ .

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**354.** If in a rectangle, the length is increased and breadth reduced each by 2 units, the area is reduced by 28 square units. If, however the length is reduced by 1 unit and the breadth increased by 2 units, the area increases by 33 square units. Find the area of the rectangle.

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**355.** The area of a rectangle remains the same if the length is increased by 7 metres and the breadth is decreased by 3 metres. The area remains unaffected if the length is decreased by 7 metres and

breadth is increased by 5 metres. Find the dimensions of the rectangle.

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**356.** The incomes of X and Y are in the ratio of 8:7 and their expenditures are in the ratio 19:16. If each saves Rs 1250, find their incomes.

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**357.** A and B each has some money. If A gives Rs 30 to B, then B will have twice the money left with A. But, if B gives Rs 10 to A, then A will have thrice as much as is left with B. How much money does each have?





**361.** In a  $\Delta ABC,\ igtriangle A=x^o,\ igtriangle B=3x^o$  and  $igtriangle C=y^o$  . If

3y - 5x = 30, prove that the triangle is right angled.

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**362.** The car hire charges in a city comprise of a fixed charges together with the charge for the distance covered. For a journey of 12 km, the charge paid is Rs 89 and for a journey of 20 km, the charge paid is Rs 145. What will a person have to pay for travelling a distance of 30 km?

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**363.** 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 1000 as hostel charges whereas a student who takes B food for 26 days, pays 1180 as hostel charges. Find the fixed charges and the cost of food per day.

364. Half the perimeter of a rectangular garden , whose length is 4 m

more than its width is 36m. Then find the dimensions of the garden.

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

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**366.** 2 women and 5 men can together finish an embroidery 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.

**367.** Meena went to a bank to withdraw Rs 2000. She asked the cashier to give her Rs 50 and Rs 100 notes only. Meena got 25 notes in all. Find how many notes Rs 50 and Rs 100 she received.

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**368.** 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?



**369.** ABCD is a cyclic quadrilateral such that  $\angle A=(4y+20)^\circ$ ,  $\angle B=(3y-5)^\circ$ 

)°,  $\angle C = (-4x)^\circ$  and  $\angle D = (-7x+5)^\circ$ . Find the four angles.



**371.** Write the value of k for which the system of equations 2x - y = 5, 6x + ky = 15 has infinitely many solutions.

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**372.** Write the value of k for which the system of equations 3x - 2y = 0 and kx + 5y = 0 has infinitely many solutions.



**373.** Write the values of k for which the system of equations x + ky = 0, 2x - y = 0 has unique solution.



**374.** Write the set of values of a and b for which the following system

of equations has infinitely many solutions.2x + 3y = 7, 2ax + (a + b)y = 28

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**375.** For what value of k, the following pair of linear equations has

infinitely many solutions?  $10x + 5y - (k-5) = 0, \quad 20x + 10y - k = 0$ 

**376.** Write the number of solutions of the following pair of linear equations: x + 2y - 8 = 0, 2x + 4y = 16



**377.** Write the number of solutions of the following pair of linear

equations: x + 3y - 4 = 0, 2x + 6y = 7

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**378.** The value of k for which the system of equations kx - y = 2 and

6x-2y=3 has a unique solution, is (a)k=3 (b)  $\mathsf{k}
eq3$  (c)  $\mathsf{k}
eq0$  (d)

 $\mathsf{k} = 0$ 

**379.** The value of k for which the system of equations 2x + 3y = 5, 4x + ky = 10 has infinite number of solutions, is (a) 1 (b) 3 (c) 6 (d) 0

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**380.** The value of k for which the system of equations x+2y-3=0

and 5x + ky + 7 = 0 has no solution, is (a) 10 (b) 6 (c) 3 (d) 1

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**381.** The value of k for which the system of equations 3x + 5y = 0 and

kx+10y=0 has a non-zero solution, is (a) 0 (b) 2 (c) 6 (d) 8

382. If the system of equations 2x + 3y = 7, (a + b)x + (2a - b)y = 21 has infinitely many solutions, then A. B.

С.

D.

### Answer: null

383. If the system of equations 
$$3x + y = 1$$
,  $(2k - 1)x + (k - 1)y = 2k + 1$  is inconsistent, then  $k =$ 

A. (a) 1

B. (b) O

 $\mathsf{C.}\left(\mathsf{c}\right)-1$ 

D. (d) 2

Answer: null

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**384.** If  $am \neq bl$ , then the system of equations ax + by = c, lx + my = n (a) has a unique solution (b) has no solution (c) has infinitely many solutions (d) may or may not have a solution

**385.** If the system of equations 2x + 3y = 7, 2ax + (a + b)y = 28has infinitely many solutions, then (a)a = 2b (b) b = 2a (c) a + 2b = 0(d) 2a + b = 0



**386.** The value of k for which the system of equations x + 2y = 5, 3x + ky + 15 = 0 has no solution is (a)6 (b) - 6 (c) 3/2

(d) None of these

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**387.** If 2x - 3y = 7 and (a + b)x - (a + b - 3)y = 4a + b represent coincident lines, then a and b satisfy the equation (a)a + 5b = 0 (b)

5a + b = 0 (c) a - 5b = 0 (d) 5a - b = 0



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**389.** If the system of equations 2x + 3y = 5, 4x + ky = 10 has

infinitely many solutions, then k=(a)1 (b) (c) 3 (d) 6

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**390.** If the system of equations kx - 5y = 2, 6x + 2y = 7 has no

solution, then  $k=(\mathsf{a})\!-\!10$  (b) -5 (c) -6 (d) -15

**391.** The area of the triangle formed by the line x = 3, y = 4 and x = y is  $(a)\frac{1}{2}sq$ . unit (b)1sq. unit (c)2sq. unit (d) None of these