

PAWAN WAGHACADEMY

MAKING MATHEMATICS SIMPLE & INTERESTING

- 1) Find the value of k for which the given simultaneous equations have infinitely many solutions.
1) $4y = kx - 10$; $3x = 2y + 5$ 2) $kx - y + 3 - k = 0$; $4x - ky + k = 0$
- 2) Find the value of p for which the given simultaneous equations have unique solutions.
 $8x - py + 7 = 0$; $4x - 2y + 3 = 0$
- 3) Solve the following simultaneous equations :
- 1) $\frac{1}{3x} + \frac{1}{5y} = \frac{1}{15}$; $\frac{1}{2x} + \frac{1}{3y} = \frac{1}{12}$ 2) $\frac{27}{x-2} + \frac{31}{y+3} = 85$; $\frac{31}{x-2} + \frac{27}{y+3} = 89$
- 4) Segment AB is the diameter of a circle. C is the point on the circumference such that in $\triangle ABC$, $\angle B$ is less by 10° than $\angle A$. Find the measure of all the angles of $\triangle ABC$.
- 5) The perimeter of an isosceles triangle is 40cm . If three times the base is equal to four times the congruent sides, find the length of each side of the triangle.
- 6) Sagar and Akash ran a 2km race twice. Akash completed the first round 2 minutes earlier than Sagar. In the second round Sagar increased his speed by 2km/hr and Akash reduced his speed by 2km/hr . Sagar finished 2 minutes earlier than Akash. Find their speeds of running in the first round.
- 7) Two Taps A and B together fill a swimming pool in 15 hours. Tap A and B are kept open for 12 hours and then Tap B is closed. It takes another 8 hours for the swimming pool to be filled. How many hours does each Tap require to fill the swimming pool?
- 8) Solve :
If $12x + 13y = 29$ and $13x + 12y = 91$ find then $x + y$ and $x - y$.
- 9) If the point $(3, 2)$ lies on the graph of the equation $5x + ay = 19$, then find a .
- 10) If $(a, 3)$ is the point lying on the graph of the equation $5x + 2y = -4$ then find a .
- 11) If the value of the determinant $\begin{vmatrix} m & 2 \\ -5 & 7 \end{vmatrix}$ is 31 find m .
- 12) Without drawing the graph show that the following equations are of concurrent lines :
 $2x + y = 6$; $x + 2y = 6$; $7x - 4y = 6$.
- 13) If $(3, 1)$ is the point of intersection of the lines $ax + by = 7$ and $bx + ay = 5$ find the value of a and b .
- 14) Points $(3, -1)$ and $(6, 1)$ lie on the line represented by the equation $px + qy = 9$ find the value of p and q .
- 15) On the first day of the sale of tickets of a drama, 35 tickets in all were sold. If the rates of the tickets were Rs. 20 and Rs. 40 per ticket and the total collection was Rs. 900. Find the number of tickets sold of each rate.
- 16) Students of a school were made to stand in rows for drill. If 3 students less were standing in each row, 10 more rows were required and if 5 students more were standing in each row then the number of rows was reduced by 10. Find the number of students participating in the drill.
- 17) Some part of a journey of 555km was completed by a car with speed 60km/hr . Then the speed is increased by 15km/hr and the journey is completed. If it takes 8 hours to reach, find the time taken and the distance covered at the speed of 60 km/hr .

- 18) A bus covers a certain distance with uniform speed. If the speed of the bus would have been increased by 15km/hr, it would have taken two hours less to cover the same distance. If the speed of the bus would have been decreased by 5km/hr, it would have taken one hour more to cover the same distance. Find the distance covered by the bus.
- 19) Solve the following simultaneous equations :
 $ax + by = a - b$; $bx = ay + a + b$ where a and b are constants and $a \neq 0, b \neq 0$.
- 20) Solve the following simultaneous equations :
 $m(x + y) + n(x - y) - (m^2 + mn + n^2) = 0$;
 $n(x + y) + m(x - y) - (m^2 - mn + n^2) = 0$
- 21) Draw the graphs representing the equations $2x = y + 2$ and $4x + 3y = 24$ on the same graph paper. Find the area of the triangle formed by these lines and the X - axis. (4 M)
- 22) When the son will be as old as his father today, the sum of their ages then will be 126. When the father was as old as his son is today, the sum of their ages then was 38. Find their present ages.
- 23) Sharad bought a table and fan together of Rs. 5000. After some times he sold the table at the gain of 25% and the fan at a gain of 20%. Thus he gained 23% on the whole. Find the cost of the fan. For more papers please visit www.pawanwaghacademy
- 24) The weight of a bucket is 15kg, when it is filled with water up to $\frac{3}{5}$ of its capacity and the weight is 19kg, if it is filled with water up to $\frac{4}{5}$ of its capacity. Find the weight of bucket, if its is completely filled with water.
- 25) A person deposited Rs. x in savings bank account at the rate of 5% per annum and Rs. y in fixed deposit at 10% per annum. At the end of first year he gets Rs. 400 as total interest. If he had deposited Rs. y in savings bank account and Rs. x in fixed deposit he would have got Rs. 350 as total interest. Find the total amount he deposited.
- 26) 8 men and 12 women can do a piece of work in 10 days while 6 men and 8 women can do the same work in 14 days. Find time taken by a single man and a single woman to do the same work.
- 27) I have a certain amount of money with me. If I give Rs. 3 to each student in the class, Rs. 30 is left with me and if I decide to give Rs. 4 to each student, then I need Rs. 10 more. Find the amount and the number of students in the class.
- 28) Construct a word problem on simultaneous linear equation in two variables so that the value of one of the variables will be 10 (persons, rupees, metres, years etc.) and solve it.
- 29) Draw the graph of $x + y = 6$ which intersects the X-axis and the Y - axis at A and B respectively. Find the length of seg. AB. Also, find the area of ΔAOB where point O is the origin.
- 30) The following determinants are obtained from the simultaneous equations in variable x and y .
 If $D_x = \begin{vmatrix} 24 & a \\ 16 & -1 \end{vmatrix}$, $D_y = \begin{vmatrix} 5 & 24 \\ b & 16 \end{vmatrix}$, $D = \begin{vmatrix} 5 & 1 \\ 1 & -1 \end{vmatrix}$
 the solutions for this equations are $x = 5$ and $y = -1$ then find the value of 'a' and 'b'. Also form the original simultaneous equations having this solution.