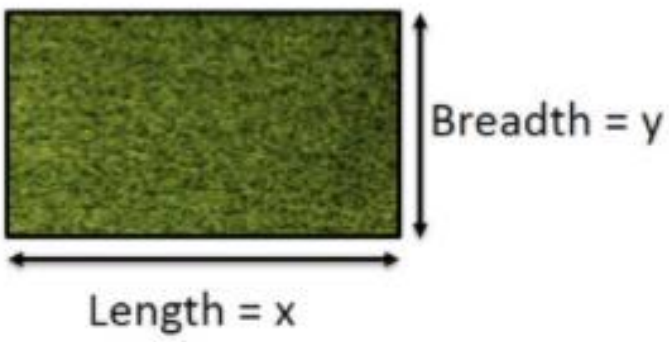
INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics

Worksheet-Pair of Linear Equations in Two Variables

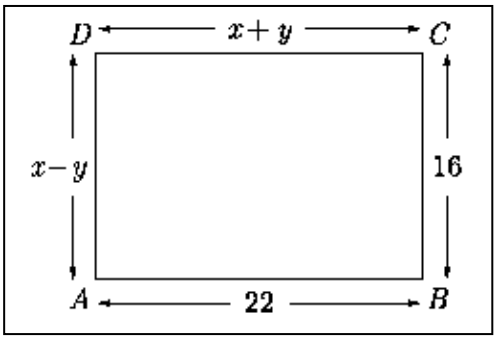
09-05-2021

Q. No.	PART A
	Section 1: Questions of 1 Mark each.
1.	Find the value(s) of k so that the pair of equations x + 2y = 5 and 3x + ky + 15 = 0 has a unique solution.
2.	The line represented by x = 5 is parallel to which axis?
3.	Find the value of k for which 3x – y + 8 = 0 and 6x + ky = -16 represent coincident lines.
4.	Find whether the following pair of linear equation is consistent or inconsistent: 3x + 2y = 8, 6x - 4y = 9
5.	Find the point of intersection of the lines represented by 3x - 2y = 6 and the y-axis.
6.	Find the value of a so that the point (3, a), lies on the line represented by 2x – 3y =5.
7.	Find the value of k for which the pair of equations 4x + 6y – 1= 0 and 2x + ky – 7 = 0 represents parallel lines.
8.	How many solutions will equations 2x – y = 0 and 2y – x = 0 have?
	Section-II
9.	**Case Study Based** Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. They are asked to find the dimensions of the rectangular plot. To help them find out the dimensions their Mathematics teacher provided them with the following hints.  The area of the rectangle gets reduced by 9 m^2, if its length is reduced by 5m and breadth is increased by 3m. If we increase the length by 3m and breadth by 2m, the area increases by 67 m^2.

a	The length of the rectangular garden is:							
	(i)	20 m	(ii)	19 m	(iii)	18 m	(iv)	17 m
b	The graphical representation of linear equations in two variables representing the situation is:							
	(i)	parallel lines			(ii)	intersecting lines		
	(iii)	coincident lines			(iv)	None of these		
c	Taking length as x m and breath as y m, the pair of linear equations representing the above situation is:							
	(i)	$3x - 5y = 6$ $2x + 3y = 61$			(ii)	$3x - 5y = -6$ $2x + 3y = 61$		
	(iii)	$3x - 5y = 6$ $2x + 3y = -61$			(iv)	$3x + 5y = 6$ $2x + 3y = 61$		
d	The breadth of the rectangular garden is:							
	(i)	7 m	(ii)	8 m	(iii)	9 m	(iv)	10 m
e	The area of the rectangular garden is:							
	(i)	153 m^2	(ii)	140 m^2	(iii)	170 m^2	(iv)	136 m^2

PART -B:

Very Short Answer Questions of 2 marks each

10.	Solve the following pair of equations using cross – multiplication method: $8x + 5y = 9$; $3x + 2y = 4$
11.	For what value of k , the system of equations $kx + 3y = 1$, $12x + ky = 2$ has no solution.
12.	The length and breadth of a rectangular plot are in the ratio 7:5. If the length is reduced by 5 metres and breadth is increased by 2 metres, then the area is reduced by 65 m^2.Find the length and breadth of the plot.
13.	In the figure given below, *ABCD* is a rectangle. Find the values of x and y. 

PART B: **Short Answer Questions of 3 marks each**	
14.	Solve the following pair of equations graphically. $x + 3y = 6$; $2x - 3y = 12$
15.	A part of monthly hostel charges in a college hostel are fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 25 days, he has to pay ₹4,500, whereas a student B who takes food for 30 days, has to pay ₹ 5,200. Find the fixed charges per month and the cost of food per day.
16.	For what value of k, will the following pair of equations have infinitely many solutions: $2x + 3y = 7$ and $(k + 2)x - 3(1 - k)y = 5k + 1$.
17.	A fraction becomes $\frac{1}{3}$ when 2 is subtracted from the numerator and it becomes $\frac{1}{2}$ when 1 is subtracted from the denominator. Find the fraction.
18.	Solve the following system of linear equations by substitution method: $2x - y = 2$ $x + 3y = 15$
19.	Solve for x and y: $\frac{ax}{b} - \frac{by}{a} = a + b$ $ax - by = 2ab$
PART B: **Long Answer Questions of 5 marks each**	
20.	Solve for *x* and y: $\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}$; $\frac{3}{x} + \frac{2}{y} = 0$, $x \neq 0$, $y \neq 0$ and hence find the value of 'a' for which y= ax- 4
21.	Draw the graphs of the pair of linear equations: $x + 2y = 5$ and $2x - 3y = -4$ Also find the points where the lines meet the *x* -axis.
22.	A motor boat can travel 30 km upstream and 28 km downstream in 7 hours. It can travel 21 km upstream and return in 5 hours. Find the speed of the boat in still water and the speed of the stream.

	Answers							
Answers	**1**	for all values of k except 6	**2**	Y axis	**3**	-2	**4**	consistent
	5	(0, -3)	**6**	1/3	**7**	3	**8**	unique
	9	a.(iv)17m, b.(ii)intersecting lines, c.(i)$3x - 5y = 6, 2x + 3y$ 61 d.(iii)9m; e.(i)153 m^2						
	10	-2,5	**11**	-6	**12**	35m, 25m	**13**	19, 3
	14	x=6,y=0	**15**	1000₹, 140₹	16	4	17	7/15
	18	3,4	**19**	b, -a	**20**	x= 6, y =-4, a = 0	**21**	(5,0) and (-2, 0)
	22	10 km/hr, 4 km/hr						