

**Chapter End Test**  
(2019-20)

Date : \_\_\_\_\_  
Duration : 45 Min.  
Max. Marks : 25

**Mathematics**  
Topic : Pair of Linear Equations in Two Variables

**Class**  
**X**

**Instructions:**

- ▶ All questions are compulsory.
- ▶ Section A is comprised of 15 multiple choice questions carrying 1 mark each.
- ▶ Section B is comprised of 3 questions carrying 3, 3 and 4 marks respectively.
- ▶ Use of calculator is not permitted.
- ▶ Objectives of test paper. (i) To assess the conceptual understanding of students. (ii) To make them attempt subjective questions as required in CBSE Board Exam.

**Section - A**

1. If  $x = a$ ,  $y = b$  is the solution of the pair of equations  $x - y = 2$  and  $x + y = 4$ , then what will be value of  $a$  and  $b$ ?  
(a) 2,1                      (b) 3,1                      (c) 4,6                      (d) 1,2
2. For what value of  $k$ , do the equations  $3x - y + 8 = 0$  and  $6x - ky + 16 = 0$  represent coincident lines?  
(a)  $\frac{1}{2}$                       (b)  $-\frac{1}{2}$                       (c) 2                      (d) -2
3. The value of  $c$  for which the pair of equations  $cx - y = 2$  and  $6x - 2y = 3$  will have infinitely many solutions is:  
(a) 3                      (b) -3                      (c) -12                      (d) no value
4. The solution of the equations  $0.4x + 0.3y = 1.7$  and  $0.7x - 0.2y = 0.8$  is:  
(a)  $x = 1, y = 2$                       (b)  $x = 2, y = 3$                       (c)  $x = 3, y = 4$                       (d)  $x = 5, y = 4$
5. The value of  $k$  for which the system of equations  $x + 2y = 3$  and  $5x + ky + 7 = 0$  has no solution is:  
(a)  $k = 10$                       (b)  $k = 6$                       (c)  $k = 3$                       (d)  $k = 1$
6. If a pair of linear equations in two variables is consistent, then the lines represented by two equations are:  
(a) Intersecting lines                      (b) Parallel lines  
(c) Coincident lines                      (d) Intersecting or coincident
7. Rashmi can row downstream 20 km in 2 hours, and upstream 4 km in 2 hours. What will be the speed of rowing in still water?  
(a) 6 km/hr                      (b) 4 km/hr                      (c) 3 km/hr                      (d) 7 km/hr
8. What will be the solution of the equations  $ax + by = a - b$  and  $bx - ay = a + b$ ?  
(a)  $x = 1, y = 2$                       (b)  $x = 2, y = -1$                       (c)  $x = -2, y = -2$                       (d)  $x = 1, y = -1$
9. The sum of the digits of a two digit number is 9. If 27 is added to it, the digits of the number get reversed. The number is:  
(a) 25                      (b) 72                      (c) 63                      (d) 36

10. The area of the triangle formed by the lines  $y = x$ ,  $x = 6$  and  $y = 0$  is:  
 (a) 36 sq. units      (b) 18 sq. units      (c) 9 sq. units      (d) 72 sq. units
11. Five years ago, A was thrice as old as B and ten years later, A shall be twice as old as B. What is the present age of A?  
 (a) 20 years      (b) 50 years      (c) 60 years      (d) 40 years
12. ₹4900 were divided among 150 children. If each girl gets ₹50 and a boy gets ₹25, then the number of boys is:  
 (a) 100      (b) 102      (c) 104      (d) 105
13. If  $31x + 43y = 117$  and  $43x + 31y = 105$ , then the value of  $x - y$  is:  
 (a) -1      (b) -3      (c) 3      (d) 5
14. A fraction becomes  $\frac{9}{11}$  when 2 is added to both the numerator and the denominator and it becomes  $\frac{5}{6}$  when 8 is added to both the numerator and the denominator. Find the fraction.  
 (a)  $\frac{7}{9}$       (b)  $\frac{5}{11}$       (c)  $\frac{5}{9}$       (d)  $\frac{11}{7}$
15. 8 girls and 12 boys can finish work in 10 days while 6 girls and 8 boys can finish it in 14 days. Find the time (in days) taken by one girl alone and by one boy alone to finish the work.  
 (a) 120, 130      (b) 140, 280      (c) 240, 280      (d) 100, 120

### Section - B

1. Solve  $2x + 3y = 11$  and  $2x - 4y = -24$  and hence find the value of 'm' for which  $y = mx + 3$ .
2. Solve the following pair of equations by reducing them to a pair of linear equations in two variables:  

$$\frac{5}{x-1} + \frac{1}{y-2} = 2$$

$$\frac{6}{x-1} - \frac{3}{y-2} = 1$$
3. The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and breadth is increased by 3 units. If we increase the length by 3 units and the breadth by 2 units, the area increases by 67 square units. Find the dimensions of the rectangle.

OR

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?



## Hints/Solutions to Chapter End Test (2019-20)

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### Section - A

- |         |         |         |         |         |
|---------|---------|---------|---------|---------|
| 1. (b)  | 2. (c)  | 3. (d)  | 4. (b)  | 5. (a)  |
| 6. (d)  | 7. (a)  | 8. (d)  | 9. (d)  | 10. (b) |
| 11. (b) | 12. (c) | 13. (a) | 14. (a) | 15. (b) |

### Section - B

1.  $2x + 3y = 11$  .....(i)  
 $2x - 4y = -24$  .....(ii)

on subtracting (ii) from (i), we get

$$\begin{array}{r} 2x + 3y = 11 \\ 2x - 4y = -24 \\ \hline - + + \\ \quad 7y = 35 \\ \therefore y = 5 \end{array}$$

Substituting  $y = 5$  in eq. (i), we get  $x = -2$

$$\therefore x = -2 \text{ and } y = 5$$

Now,  $y = mx + 3$

$$5 = m(-2) + 3$$

$$\Rightarrow 2m = -2$$

$$\therefore m = -1$$

2.  $\frac{5}{x-1} + \frac{1}{y-2} = 2$

$$\frac{6}{x-1} - \frac{3}{y-2} = 1$$

$$\text{Put } \frac{1}{x-1} = m \text{ and } \frac{1}{y-2} = n$$

Now, we have

$$5m + n = 2 \quad \dots(i)$$

$$6m - 3n = 1 \quad \dots(ii)$$

On solving (i) and (ii), we get

$$m = \frac{1}{3} \text{ and } n = \frac{1}{3}$$

$$\text{Now, } \frac{1}{x-1} = m \text{ and } \frac{1}{y-2} = n$$

$$\Rightarrow x - 1 = 3 \text{ and } y - 2 = 3$$

$$\therefore x = 4 \text{ and } y = 5.$$

3. Let length be  $x$  units and breadth be  $y$  units.

$$\therefore \text{Area} = xy \text{ sq. units}$$

$$\text{Case 1 : } (x - 5)(y + 3) = xy - 9$$

$$\Rightarrow xy + 3x - 5y - 15 = xy - 9$$

$$\Rightarrow 3x - 5y = 6 \quad \dots(i)$$

**Case 2 :**  $(x + 3)(y + 2) = xy + 67$

$\Rightarrow xy + 2x + 3y + 6 = xy + 67$

$\Rightarrow 2x + 3y = 61 \quad \dots(\text{ii})$

On solving (i) and (ii), we get

$x = 17 \text{ and } y = 9$

Hence, the length and breadth of the rectangle are 17 units and 9 units respectively.

**OR**

Let number of correct answers be  $x$  and incorrect answers be  $y$ .

**Case 1 :**  $3x + (-1)y = 40 \Rightarrow 3x - y = 40 \quad \dots(\text{i})$

**Case 2 :**  $4x + (-2)y = 50 \Rightarrow 4x - 2y = 50 \Rightarrow 2x - y = 25 \quad \dots(\text{ii})$

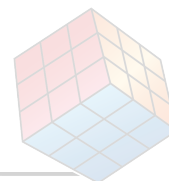
Solving (i) and (ii), we get

$x = 15 \text{ and } y = 5$

Hence, number of questions in the test =  $x + y = 20$ .



**STUDY**  
*mate*



helps excel in boards