

# Simple Simultaneous Equations in Two Variables

## Exercise-12.1

### Mathematics (Class – 10), Girls

#### Creative Multiplication Choice Questions

1. Which one of the following is correct for the system of equations  $6x - 8y = 10$  and  $12x - 16y = 18$ ? [Ctg.B.- 19]
  - a) The system of equations is consistent and independent
  - b) The system of equations has only one (unique) solution
  - c) The system of equations is consistent and dependent
  - d) The system of equations is inconsistent and independent
2. Comparing the equation  $3x - 7y - 4 = 0$  and  $ax + by + c = 0$  then what is the value of  $c$ ? [S.B.- 19]
  - a) 3
  - b) -7
  - c) -4
  - d) 4
3.  $x + 2y = 10$  and  $2x + 4y = 18$ , the system of equations are – [B.B.- 19]
  - a) Consistent
  - b) Solution has infinite numbers
  - c) Solutions has only one
  - d) Independent
4. The equations  $2x - y = 13$  and  $5x + 6y = 7$  ----- [Dj.B.- 19]
  - i. Are consistent
  - ii. Have only one solution
  - iii. Are mutually dependent

Which one of the following is correct?

  - a) i and ii
  - b) i and iii
  - c) ii and iii
  - d) i, ii and iii
5.  $a_1x + b_1y = c_1$  and  $a_2x + b_2y = c_2$  are two equations. Impose a condition to make them dependent— [J.B.- 16, Dj.B.- 16]
  - a)  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
  - b)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
  - c)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
  - d)  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

6. Which one of the following system of equations are consistent, independent to each other and have unique solution? [B.B.- 16]
  - a)  $x - \frac{1}{2}y = 5$   
 $-2x + y = -10$
  - b)  $\frac{1}{2}x - y = 2$   
 $x - 2y = 4$
  - c)  $x - \frac{1}{2}y = 5$   
 $2x + y = -10$
  - d)  $x - 2y = 6$   
 $\frac{1}{2}x - y = 6$
7. In which condition,  $a_1x + b_1y = c_1$  and  $a_2x + b_2y = c_2$  system of conditions are consistent and mutually independent? [C.B.- 15]
  - a)  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$
  - b)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
  - c)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
  - d)  $\frac{a_1}{a_2} = \frac{b_1}{b_2}$
8.  $3x - 5y = 7$   
 $6x - 10y = 15$   
Solve of the system of the equation— [S.B.- 15]
  - e) Numerous
  - f) Unique
  - g) Two
  - h) No solve
9. If  $a_1x + b_1y + c_1 = 0$   
 $a_2x + b_2y + c_2 = 0$   
Which one is the solution of the system?
  - a)  $\frac{b_2c_1 - b_2c_1}{a_1b_2 - a_2b_1}$
  - b)  $\frac{b_1c_2 - b_1c_2}{a_1b_2 - a_2b_1}$
  - c)  $\frac{b_1c_2 - b_2c_1}{a_1b_2 - a_1b_1}$
  - d)  $\frac{b_1c_2 - b_2c_1}{a_1b_2 - a_2b_1}$
10.  $3x - 5y = 7$ ,  $6x - 10y = 15$  In these pair of equations- [All B.- 18]
  - i. Inconsistent
  - ii. Have only one solution
  - iii. Mutually independent

Which one of the following is correct?

  - a) i and ii
  - b) i and iii
  - c) ii and iii
  - d) i, ii and iii
11.  $x + 3y = 1$   
 $5x + 15y = 5$   
The pair of equations are —[D.B.- 17]
  - i. Consistent
  - ii. Mutually dependent
  - iii. Have only one solution

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

12.  $5x + 3y = 4$   
 $2x + 7y = 9$

**The pair of equations are— [S.B.-17]**

- i. Consistent
- ii. Have many solutions
- iii. Mutually independent

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

13.  $3x + y = 18$   
 $x - y = 2$

**The system of equations are- [J.B.- 17]**

- i. Consistent
- ii. Mutually dependent
- iii. It has only one solution

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

14. **The system of equations,  $x + 3y = 1$  and  $2x + 6y = 2$  are— [B.B.- I7]**

- i. Dependent
- ii. Consistent
- iii. Has many solution

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

15.  **$5x + 2y = 7$  and  $10x + 4y = 14$  are two system of equations. [Ch.B.- 16]**

- i. Equations are consistent
- ii. The system of equations has only one solution
- iii. Mutually dependent

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

16.  **$-\frac{1}{3}x - y = \theta$  and  $x - 3y = 0$  the system of equation is— [R.B.- 15]**

- i. Consistent
- ii. Independent
- iii. No solve

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

17. **The system of equations  $2x + y = 12$  and  $x - y = 3$  are — [Ch.B.- 15]**

- i. Consistent
- ii. Independent
- iii. Dependent

**Which one of the following is correct?**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

18. **A pair of linear equations have one or more solutions if the equations are—**

- i. Consistent and Independent
- ii. Consistent and Dependent
- iii. Inconsistent and Independent

**Identify the correct option on the basis of the above information.**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

19.  **$a_1x + b_1y = c_1$  and  $a_2x + b_2y = c_2$  are two simultaneous equations and**

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

- i. Inconsistent
- ii. Mutually dependent
- iii. Infinite numbers solution

**Which one of the following is correct?**

- a) I
- b) Ii
- c) Iii
- d) i, ii and iii

20. **A pair of linear equations have one or more solutions if the equations are—**

- i. Consistent and independent
- ii. Consistent and dependent
- iii. Inconsistent and independent

**Identify the correct option on the basis of the above information.**

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

21.  **$x - 2y + 5 = 0$  and  $2x - 4y + 10 = 0$  the system of equations —**

- i. Consistent
- ii. Inconsistent
- iii. Infinitely many solutions

**Which one is correct?**

- a) i and ii
- b) ii and iii
- c) i and iii
- d) i, ii and iii

22.  **$x + 3y = 1$  and  $2x + 6y = 2$  are two equations—**

- i. Consistent

- ii. Independent
- iii. One solution

Which one is correct?

- a) i and ii
- b) i
- c) ii and iii
- d) i, ii and iii

$a_1x + b_1y = c_1$  and  $a_2x + b_2y = c_2$   
are a system of equations.

Answer to the question No. 23 and 24:

23. Which is the condition for consistent independent and unique solution?

- a)  $\frac{a_1}{a_2} \neq \frac{b}{b_2}$
- b)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
- c)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
- d)  $\frac{a_1}{a_2} \neq \frac{c_1}{c_2}$

24. What is the condition for inconsistent, no solution of the system of equation?

- a)  $\frac{a_1}{a_2} \neq \frac{b}{b_2}$
- b)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
- c)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
- d)  $\frac{a_1}{a_2} \neq \frac{c_1}{c_2}$

Ans: c

Using the system of equation answer the questions (25 — 26):

25. The system of equation—

- i. Has same ratio of coefficient
- ii. Is inconsistent
- iii. Defines parallel lines

Which one is correct?

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

26. -----

- a) The equations have no solution
- b) The equations are consistent
- c) The equations consist many solutions
- d) The equations have unique solution

27. How many solutions are there in the equations  $3x + 2y = 2$  and  $6x + 4y = 4$ ?

- a) One
- b) Two
- c) Infinite
- d) Four

28. How many simple equations are there in the system of simple equations with two variables?

- a) One
- b) Two
- c) Infinite
- d) None

29. How many solutions are there in the equation  $x + 3y = 6$ ?

- a) One
- b) Two
- c) Three
- d) Infinite

30. How many solutions of the equations are  $3x - 5y = 7$  and  $6x - 10y = 15$ ?

- a) No Solution
- b) One Solution
- c) Two Solutions
- d) Infinite number of Solutions

31. Which of the following is the solution of the system of equations  $ax = 0$  and  $a^2x + b^2y = b^3$ ?

- a)  $(a^2, b^2)$
- b)  $(a^3, b^3)$
- c)  $(0, b^3)$
- d)  $(0, b)$

32. What is the power of two expressions in the simple system of equations?

- a) One
- b) Two
- c) Three
- d) Four

33. Two equations  $x + 2y = 6$  and  $x - y = 0$

i. Are said to system of equations together.

- ii. Have a common solution
- iii. Have infinite common solutions

Which of the following is correct?

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

34. The solution of equation  $2x + y = 12$  is-

- i.  $(-2, 16)$
- ii.  $(0, 12)$
- iii.  $(6, 0)$

Which one is correct?

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

35. The point  $(3, 0)$  is —

- i. The solution of equation  $x - y = 3$ .
- ii. The solution of equation  $2x + y = 12$ .
- iii. The solution of equation  $4x + y = 12$ .

Which of the following is correct?

- a) i and ii
- b) i and iii
- c) ii and iii
- d) i, ii and iii

36. The equation  $2x + y = 12$  and  $x - y = 3$  are-

- i. Consistent
- ii. Independent
- iii. Dependent

Which one of the following is correct?

- a) i and ii
- b) ii and iii
- c) i and iii
- d) i, ii and iii

Answer to the questions (37 - 39) using the following information :

System of equations :

$$2x + y = 12 \dots\dots\dots (i)$$

$$x - y = 3 \dots\dots\dots(ii)$$

37. Which of the following two points satisfy the equation (i)?

- a) (0, 12) and (5, 2)
- b) (5, 2) and (0, 0)
- c) (3, 2) and (2, 1)
- d) (1, 1) and (2, 2)

38. Which of the following point satisfy the equation (ii)?

- a) (5, 2)
- b) (6, 2)
- c) (7, 3)
- d) (8, 3)

39. What is the solution of the given system of equations?

- a) (7, 3)
- b) (6, 2)
- c) (5, 2)
- d) (5, 1)

40. For what value of  $c_1$  and  $c_2$  the system of the equations  $x + y = c_2$  and  $2x + 2y = c_1$  will be inconsistent?

- a)  $c_1 = c_2 = 0$
- b)  $c_1 = c_2 \neq 1$
- c)  $c_1 = c_2 = 2$
- d)  $c_1 \neq c_2$

41. What type of solution of the system of equations is?

- a) Unique solution
- b) No solution
- c) Infinite number of solutions
- d) x and y each have two solutions

42. Which of the following is correct for the system of equations  $3x - 4y = 10$  and  $6x + 5y = 46$ ?

- a) Has unique solution
- b) No solution
- c) Has infinite solutions
- d) Inconsistent

43. What is the type of the system of equations?

- a) Consistent
- b) Inconsistent
- c) Dependent
- d) consistent and independent

44. Which one of the following is not a simple equation?

- a)  $9x - 15 = 17$
- b)  $5x - 15y = 25$
- c)  $2x^2 + 5 = 7$
- d)  $x - 1 = 11x$

45. Which of the following is correct for the system of equations  $3x - 4y = 10$  and  $6x - 8y = 18$ ?

- a) It is consistent
- b) It has unique solution
- c) It has infinite solution
- d) It is inconsistent

46. Which of the following equation is dependent on the equation  $2x + 4y = 8$ ?

- a)  $x + 2y = 4$
- b)  $3x + 2y = 4$
- c)  $x + 3y = 6$
- d)  $x + y = 4$

47. For which one of the following the system of equations  $\left. \begin{matrix} 2x + y = c_1 \\ 4x + 2y = c_2 \end{matrix} \right\}$  will be consistent?

- a)  $c_1 \neq c_2$
- b)  $c_1 = 0$
- c)  $c_2 = 0$
- d)  $c_1 = c_2 = 0$

48. For what value of  $c_1$  and  $c_2$  the system of equations  $\left. \begin{matrix} 4x + 3y = c_1 \\ 8x - 6y = c_2 \end{matrix} \right\}$  will be consistent?

- a)  $c_1 = c_2 = 0$
- b)  $c_1 \neq c_2$
- c)  $c_1 = c_2 = 2$
- d)  $c_1 = c_2 = 1$

49. For which of the following conditions are the system of equations  $ax + by + c = 0$  and  $px + qy + r = 0$  consistent and mutually independent?

- a)  $\frac{a}{p} \neq \frac{b}{q}$
- b)  $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$
- c)  $\frac{a}{p} = \frac{b}{q} \neq \frac{c}{r}$
- d)  $\frac{a}{p} = \frac{b}{q}$

50. How many solutions are there in the system of equations  $\left. \begin{matrix} 3x - 5y = 7 \\ 6x - 10y = 15 \end{matrix} \right\}$ ?

- a) One
- b) Two
- c) Three
- d) None

51. When the system of equations are inconsistent, mutually independent and have no solution?

- a)  $\frac{4}{a} = \frac{-5}{b}$
- b)  $\frac{4}{a} \neq \frac{-5}{b}$

c)  $\frac{4}{a} = \frac{-5}{b} = \frac{-6}{c}$       d)  $\frac{4}{a} = \frac{-5}{b} \neq \frac{-6}{c}$

52. What is the value of  $\frac{a_1}{a_2}$  in case of the system of equation  $-\frac{1}{2}x + y = -1$  and  $x + y = 5$ ?

- a)  $-2$                                       b)  $-\frac{1}{2}$   
 c)  $\frac{1}{2}$     d)  $2$

53. Ratio of the co-efficients of variables  $x, y$  and constant terms in any system of equations are  $\frac{4}{8} = \frac{-2}{-4} = \frac{6}{12}$  the system of equations --

- i. Is consistent  
 ii. Is dependent  
 iii. With unique solution

Which one of the following is correct?

- a) i and ii                                      b) i and iii  
 c) ii and iii                                    d) i, ii and iii

54.  $-\frac{1}{3}x - y = 0$  and  $x - 3y = 0$  are two equations they are --

- i. Consistent  
 ii. Independent  
 iii. No solution

Which one of the following is correct?

- a) i and ii                                      b) ii and iii  
 c) i and iii                                    d) i, ii and iii

55. The system of equations  $\left. \begin{matrix} 2x - y = 6 \\ 4x - 2y = 12 \end{matrix} \right\}$  --

- i. Is mutually dependent  
 ii. Is inconsistent.  
 iii. Has infinite number of solutions.

Which one of the following is correct?

- a) i and ii                                      b) i and iii  
 c) ii and iii                                    d) i, ii and iii

56. Observe the following equations :--

- i.  $3x + 4 = 12$   
 ii.  $\frac{x}{3} - 2 = -1$   
 iii.  $3x + 1 = 10$

Which one of the following is correct?

- a) i and ii                                      b) ii and iii  
 c) i and iii                                    d) i, ii and iii

Comparing the equation  $4x^2 - 5x - 6 = 0$  with  $ax^2 + bx + c = 0$ .

Answer the question (57 – 58) :

57. What is the value of  $b$ ?

- a)  $4$     b)  $5$   
 c)  $6$     d)  $-5$

58. When the system of equations are consistent, mutually independent and have unique solution?

- a)  $\frac{4}{a} = \frac{-5}{b}$                                       b)  $\frac{4}{a} \neq \frac{-5}{b}$   
 c)  $\frac{4}{a} = \frac{-5}{b} = \frac{-6}{c}$                               d)  $\frac{4}{a} = \frac{-5}{b} \neq \frac{-6}{c}$

Answer to the questions (59 and 60) using the following information :

$x + 3y = 1$

$2x + 6y = 2$

59. What is the ratio of the constant terms in the given system of equations?

- a)  $\frac{1}{2}$     b)  $\frac{2}{3}$   
 c)  $\frac{1}{3}$     d)  $\frac{1}{6}$

60. How many solutions are there in the system of equations?

- a) Unique                                      b) Infinite  
 c) No solution                                      d) Two

**Creative Questions:**

1.  $x - 2y + 1 = 0$  and  $2x + y - 3 = 0$  is a system of equations.

a) Comparing the given system of equations with the system of equations  $\left. \begin{matrix} a_1x + b_1y + c_1 = 0 \\ a_2x + b_2y + c_2 = 0 \end{matrix} \right\}$ , find the value of  $a_1, a_2, b_1$  and  $b_2$ .

b) Justify whether the system of equations is consistent or inconsistent. Justifying the mutual dependence find the number of solutions of the system of equations.

c) Solve the system of equations.

**Exercise-12.2**

**Creative Multiplication Choice Questions**

1. If  $6x - y = 5$  and  $5x - 2y = 2$ , then  $x + y =$  what? [R.B.- 19]

- a)  $2$     b)  $3$   
 c)  $4$     d)  $5$

2. If  $4x - 3y = 10$  and  $x - y = 1$ , what is the value of  $x$ ? [C.B.- 19]

- a)  $6$     b)  $7$



c) (3, 3) d)  $(\frac{1}{2}, \frac{1}{2})$   
**23. If  $2x + y = 8$  and  $x + y = 5$  then What is the value of (x, y)?**

- a) (1, 5) b) (2, 3)  
 c) (3, 2) d) (0, 8)

**24. If  $ax - cy = 0$ ,  $ay - cx = a^2 - c^2$  and  $y = a$  then find the value of (x, y) = What?**

- a) (c, a) b) (a, c)  
 c) (-c, -a) d) (-c, a)

**25. In the system of equations  $\left. \begin{matrix} x + y = 6 \\ x - y = -3 \end{matrix} \right\}$  then find the value of (x, y) = What?**

- a)  $(\frac{3}{2}, \frac{9}{2})$  b) (3, 9)  
 c) (2, 2) d)  $(\frac{-3}{2}, \frac{-9}{2})$

**26. What is the solution of the system of equations  $\left. \begin{matrix} x + y = 2 \\ x - y = 2 \end{matrix} \right\}$ ?**

- a) (2, 0) b) (2, 2)  
 c) (2, 3) d) (0, 2)

**27. Which of the following will be correct if the formulae of cross multiplication is applied in the system of equations  $\left. \begin{matrix} 3x - 5y + 9 = 0 \\ 5x - 3y - 1 = 0 \end{matrix} \right\}$ ?**

- a)  $\frac{x}{22} = \frac{y}{44} = \frac{1}{16}$  b)  $\frac{x}{32} = \frac{y}{48} = \frac{1}{16}$   
 c)  $\frac{x}{48} = \frac{y}{32} = \frac{1}{16}$  d)  $\frac{x}{16} = \frac{y}{48} = \frac{1}{32}$

**28. If  $\frac{x}{-17} = \frac{y}{8}$  ? and  $y = 4$  then what is the value of x?**

- a)  $-8\frac{1}{2}$  b)  $8\frac{1}{2}$   
 c)  $\frac{17}{4}$  d)  $\frac{-17}{4}$

**29. For which one of the following equation is the adjoining chart correct?**

<b>x</b>	<b>-1</b>	<b>0</b>	<b>3</b>
<b>y</b>	<b>5</b>	<b>3</b>	<b>-3</b>

- a)  $2x - y = 3$  b)  $2x + y = 3$   
 c)  $4x - 3y = 6$  d)  $4x + 3y = 6$

**30. Which of following is the solution of the system of equations  $\frac{x}{a} + \frac{y}{b} = 2$  and  $ax + by = a^2 + b^2$ ?**

- a) (x, y) = (-a, -b)

b) (x, y) = (a, b)

c) (x, y) = (a, -b)

d) (x, y) = (-a, b)

**31. If  $\frac{x}{2} + \frac{y}{3} = 1$  and  $\frac{x}{3} + \frac{y}{2} = 1$  which of the following is the relation between x and y?**

- a)  $x < y$  b)  $x > y$   
 c)  $x \neq y$  d)  $x = y$

**32. Which of the following is equal to the system of equations  $a(x + y) = b(x - y) = 2ab$ ?**

- a)  $x + y = 2a$  and  $x - y = 2a$   
 b)  $x + y = 2a$  and  $x - y = 2b$   
 c)  $x + y = 2b$  and  $x - y = 2a$   
 d)  $x + y = 2ab$  and  $x - y = 2ab$

**33. What is the solution of the equations  $2x - y = 0$  and  $-y + 3x = 19$ ?**

- a) (15, 25) b) (19, 38)  
 c) (16, 26) d) (0, 0)

**34. If  $x = 1$  or  $x = \frac{1}{3}$  and  $y = 2 - x$  then find the value of (x, y) = What?**

- a) (1, 1),  $(\frac{1}{3}, \frac{3}{5})$   
 b) (1, 1),  $(3, \frac{5}{3})$   
 c) (1, 1),  $(3, \frac{3}{5})$   
 d) (1, 1),  $(\frac{1}{3}, \frac{5}{3})$

**35. Observe the following equations:--**

- i.  $2x + 3 = 9$   
 ii.  $\frac{x}{2} - 2 = -1$   
 iii.  $2x + 1 = 5$

**Which one of the following is correct?**

- a) i and ii b) ii and iii  
 c) i and iii d) i, ii and iii

**36.**

- i. The equations  $2x - y = 0$  and  $x - 2y = 0$  are mutually independent.  
 ii. Graph of the equation  $x - 2y = 0$  passes through the point (-3, 1).  
 iii. Graph of the equation  $3x + 4y = 1$  is a straight line.

**Which one of the following is correct?**

- a) i and ii b) i and iii  
 c) ii and iii d) i, ii and iii

**37.**

-2	3	-7
1	-1	3

Observe the following equations :-

- i. The equation  $2x - 5y = 3$  and  $x + 3y = 1$  are mutually independent.
- ii. Graph of the equation  $\frac{x}{3} + \frac{y}{4} = 1$  passes through the point  $(3, 0)$ .
- iii. Graph of the equation  $3x - y = 3$  is a straight line.

Which one of the following is correct?

- a) i and ii
- b) ii and iii
- c) i and iii
- d) i, ii and iii

Answer to the questions (38 - 41) using the following information

$\left. \begin{matrix} 2x + 3y = 9 \\ 5x + 4y = 15 \end{matrix} \right\}$  is a system of equations.

38. What is the required value of  $y$  from the first equation?

- a) Consistent and unique solution
- b) Consistent and infinite solutions
- c) Inconsistent and unique solution
- d) Inconsistent and no solution

39. What is the required value of  $y$  from the first equation?

- a)  $y = \frac{8 + 2x}{3}$
- b)  $y = \frac{2x - 8}{3}$
- c)  $y = \frac{8 - 2x}{3}$
- d)  $y = \frac{3}{8 - 2x}$

40. Which of the following is the value of  $x$ ?

- a) -1
- b) 1
- c) 3
- d) 2

41. The solution of the system of equations. Find the value of  $(x, y) =$  What?

- a)  $(-2, 1)$
- b)  $(-1, 3)$
- c)  $(2, 1)$
- d)  $(1, 2)$

Answer to the questions (41 - 43) using the following information

$\left. \begin{matrix} x + 2y = 3 \\ 2x + my = 6 \end{matrix} \right\}$  is a system of equations.

42. For what value of  $m$ , there exists infinite solutions of the given system of equations?

- a) 1
- b) 2
- c) 3
- d) 4

43. If  $m = 1$ , how many solutions are there in the given system of equations?

- a) 0
- b) 1
- c) 2
- d) Infinite

44. A common point of the given system of equations lies on the  $x$ -axis, what is that point?

- a)  $(0, 0)$
- b)  $(0, \frac{3}{2})$
- c)  $(3, 0)$
- d)  $(-3, 0)$

Answer to the questions (45 - 47) using the following information

$$\frac{x}{a} + \frac{y}{b} = 2 \dots \dots \dots (i)$$

$$ax + by = a^2 + b^2 \dots \dots \dots (ii)$$

45. Which of the following is the simplified form of equation (i)?

- a)  $bx + ay = 2ab$
- b)  $ax + by = 2ab$
- c)  $bx + ay = a^2 + b^2$
- d)  $bx + ay - 2ab = 0$

46. Which of the following will be obtained after adding the simplified value with the equation (ii)?

- a)  $x + y = a + b$
- b)  $x - y = a + b$
- c)  $x + y = a^2 + b^2$
- d)  $x + y = a^2 - b^2$

47. Which of the following is the solution of the given system of equations?

- a)  $(a, b)$
- b)  $(-a, -b)$
- c)  $(b, a)$
- d)  $(-b, -a)$

Answer to the questions (48 - 49) using the following information:

$$\frac{x}{2} + \frac{y}{3} = 1 \text{ and } \frac{x}{3} + \frac{y}{2} = 1$$

48. What is the value of  $x$  in the above system of equations?

- a)  $\frac{5}{6}$
- b)  $\frac{6}{5}$
- c) 1
- d) 6

49. What is the value of  $y$ ?

- a) 1
- b) 12
- c)  $\frac{5}{6}$
- d)  $\frac{6}{5}$

**Creative Questions:**

1. A system of simple equation are :

$$7x + 2y = 20$$

$$3x - 4y = -6$$



- a) Justify whether the system of equations are consistent and mutually dependent.
- b) Solve the system of equation by the method of cross- multiplication.
- c) Solve the system of equation with the help of graph and verify the correctness of the obtained value from (b).

2. (i)  $bx + ay = a^2 + b^2$   
 $2ax - by = ab$

(ii)  $12x + 5y = 70$   
 $7x - 12y = 11$

- a) State whether the system of equation is consistent or not  
 $x + 6y = 13.$   
 $3x + 18y = 27$
- b) Determine (x, y) from (i), using the method of substitution.
- c) Solve the system of equation using the method of cross multiplication in (ii).

3. **Difference of the two digits of a number consisting of two digits is 4. If the places of the digits are interchanged, sum of the numbers so found and the original number will be 110.**

- a) Form a system of equation, where digit of the units place be x and digit of the tens place be y. ( $x > y$ ) 2.
- b) Find (x, y) by solving the system of equations by the method of cross multiplication. What is the number?
- c) Find the solution of the system of equation by graph.

4.  **$a(x + y) = b(x - y) = 2ab$  is a system of equations with two variables.**

- a) From the given system of equations form two different equations.
- b) Solve the system of equations by the method of substitution.

- c) Solving the system of equations by the method of cross-multiplication and justify the correctness of the previous solution.

### Exercise-12.3

#### Creative Multiplication Choice Questions :-

1. **What is the distance of the point (- 5, - 3) from x- axis? [C.B.- 19]**  
 a) - 5 Unit                      b) - 3 Unit  
 c) 3 Unit                         d) 5 Unit
2. **If the digits of once place is x and that of tens place is y then what is the number? [D.B.- 17]**  
 a) Xy                                b) x + y  
 c) 10y + x                        d) 10x + y
3. **Which quadrant of this point (3, - 5)? [C.B.- 17]**  
 a) 1<sup>st</sup>                                b) 2<sup>nd</sup>  
 c) 3<sup>rd</sup>                                d) 4<sup>th</sup>
4. **On which graph of the following equations the point (2, 3) is? [C.B.- 17]**  
 a)  $x - y = 1$                         b)  $2x + y = 7$   
 c)  $x + 3y = 5$                         d)  $2x + y = 6$
5. **For which one below the adjoining chart is correct? [Ctg.B.- 17]**

<b>X</b>	<b>0</b>	<b>2</b>	<b>4</b>
<b>Y</b>	<b>-4</b>	<b>0</b>	<b>4</b>

- a)  $y = x - 4$                         b)  $y = 8 - x$   
 c)  $y = 4 - 2x$                         d)  $y = 2x - 4$
6. **If  $x = - 2$  in the equation  $2x + 3y = 2$  the getting point lies in which quadrant? [S.B.- 17]**  
 a) 1<sup>st</sup>                                b) 2<sup>nd</sup>  
 c) 3<sup>rd</sup>                                d) 4<sup>th</sup>
7. **For which one the following equations is the adjoining chart correct? [Dj.B.- 16]**

<b>X</b>	<b>-1</b>	<b>0</b>	<b>3</b>
<b>Y</b>	<b>5</b>	<b>3</b>	<b>-3</b>

- a)  $2x - y = 3$                         b)  $2x + y = 3$   
 c)  $4x - 3y = 6$                         d)  $4x + 3y = 6$
8. **If  $x = - 3$  put in the equation  $2x + 3y = 1$  in which quadrant the obtained**

**point of the equation is located?**

[Ctg.B.- 16]

- a) 1<sup>st</sup>                      b) 2<sup>nd</sup>  
c) 3<sup>rd</sup>                      d) 4<sup>th</sup>

**9. To definite a graph how many points are needed?** [J.B.- 16]

- a) One                      b) One and more  
c) Two and more      d) Uncountable

**10. On which graph of the following equations the point (2, 0), (4, 4) and (0, - 4) are?** [B.B.- 16]

- a)  $y = 4 - 2x$               b)  $y = 8 - x$   
c)  $y = x - 4$               d)  $y = 2x - 4$

**11. The graph of which equation passes through the origin?**

- a)  $x = 2y$                       b)  $x = 2$   
c)  $y = 2$                       d)  $x + y = 2$

**12. What is the perpendicular on the horizontal plane?**

- a) Vertical line              b) Below line  
c) Horizontal line          d) Streak line

**13. What is the angle between horizontal plane and the vertical plane?**

- a)  $0^0$                           b)  $360^0$   
c)  $180^0$                       d)  $90^0$

**14.  $y = 2x + 1$  is a function---** [J.B.- 19]

- i. (1, 3) is a point of the graph  
ii. The graph is a straight line  
iii. The graph is a circle

**Which one of the following is correct?**

- a) i and ii                      b) i and iii  
c) ii and iii                      d) i, ii and iii

**15. Observe the following information.**

- i.  $2x - 5y = 3$  and  $x + 3y = 1$  are mutually dependent.  
ii.  $\frac{x}{3} + \frac{y}{4} = 1$  passes through the point (0, 4)  
iii.  $3x - y = 3$  cuts the x and y axis at (1, 0) and (0, - 3) respectively.

**Which one of the following is correct?**

- a) i and ii                      b) i and iii  
c) ii and iii                      d) i, ii and iii

**16. Observe the following information :**

- i. The equations  $2x - 5y = 3$  and  $x + 3y = 1$  are mutually independent.

ii. The equation  $\frac{x}{3} + \frac{y}{4} = 1$  contains the point (3, 0).

iii. Graph of the equation  $3x - y = 3$  is a straight line.

**Which one of the following is correct?**

- a) i and ii                      b) i and iii  
c) ii and iii                      d) i, ii and iii

**Considering the following information answer to the question no. 17 and 18 :**

$\frac{x}{2} + \frac{y}{3} = 3$  and  $x + \frac{y}{6} = 3$ , the system of equation is consistent and mutually independent.

**17. Which one of the following point is satisfied 1<sup>st</sup> equation?**

- a) (3, 0)                      b) (3, 6)  
c) (1, 12)                      d) (4, 3)

**18. What is the point where 2<sup>nd</sup> equation intersects the x- axis?**

- a) (3, 0)                      b) (- 3, 0)  
c) (0, 3)                      d) (0, - 3)

**19.**  $\left. \begin{array}{l} 3x - 2y = 7 \\ 4x + y = 3 \end{array} \right\}$  How many solutions will be obtained from the graph of this system of equations?

- a) No solution              b) Infinite  
c) Two                          d) One

**20. If two straight lines are perpendicular to each other how many common points do they have?**

- a) One                          b) Three  
c) Two                          d) Four

**21. What is the co-ordinate of the intersecting point of two axis?**

- a) (1, 1)                      b) (0, 0)  
c) (0, 1)                      d) (1, 0)

**22. How many points are there in the graph of the simple equation  $x - y = 2$ ?**

- a) One                          b) Two  
c) Three                      d) Infinite

**23. Which one of the following points lies on the line  $2x + 3y = 5$ ?**

- a) (1, 1)                      b) (- 1, - 1)  
c) (- 1, 1)                      d) (1, - 1)

**24. Which point lies in the 4<sup>th</sup> quadrant?**

- a) (5, 2)                      b) (- 5, - 2)

- c) (- 5, 2)                      d) (2, - 5)
25. What is the graph of the equation  $\frac{x}{2} + \frac{y}{3} = 3$ ?
- a) Straight line                      b) Circle  
c) Ellipse                              d) Hyperbola
26. Which point lies on the graph of  $\frac{x}{2} + \frac{y}{3} = 3$ ?
- a) (2, 3)                              b) (- 3, - 2)  
c) (0, 6)                              d) (6, 0)
27. Which one of the following points lies on the line  $2x + 4y = - 4$ ?
- a) (- 2, 0)                              b) (0, - 2)  
c) (0, - 4)                              d) (0, - 8)
28. Which point is not lie on the straight line  $3x - 2y = 5$ ?
- a) (3, 2)                              b) (1, - 1)  
c) (2, 3)                              d) (5, 5)
29. Which of the following pint lies on the x- axis?
- a) (1, 0)                              b) (2, 1)  
c) (0, 4)                              d) (0, - 4)
30. Which of the following point lies in the 2<sup>nd</sup> quadrant?
- a) (- 2, - 7)                              b) (2, 7)  
c) (- 2, 7)                              d) (2, - 7)
31. In which quadrant the point (- 2, - 6) is lied on?
- a) 1<sup>st</sup>                                      b) 2<sup>nd</sup>  
c) 3<sup>rd</sup>                                      d) 4<sup>th</sup>
32. What is the type of the graph of the equation  $\frac{x}{3} - \frac{y}{2} = 2$ ?
- a) Straight line                      b) Circle  
c) Parabola                              d) Hyperbola
33. Which of the following point lies on the graph of the equation  $\frac{x}{2} + \frac{y}{3} = 3$ ?
- a) (2, 3)                              b) (- 3, - 2)  
c) (0, 6)                              d) (6, 0)
34. Which of the following point lies on the y- axis?
- a) (0, 4)                              b) (4, 0)  
c) (8, 0)                              d) (4, 4)
35. On which of the following equation lies the point (2, 3)?
- a)  $x + y = 2$                               b)  $x + 3y = 5$   
c)  $2x + y = 7$                               d)  $2x + y = 6$
36. What is the co-ordinate of the point placed at the distance 3 and 4 unit from the axis x and y respectively?
- a) (3, 4)                              b) (- 3, - 4)  
c) (3, - 4)                              d) (- 4, 3)
37. Where are the situation of two points (- 3, 1) and (3, - 1) are in which quadrant of the graph paper?
- a) 2<sup>nd</sup> and 3<sup>rd</sup>                              b) 2<sup>nd</sup> and 4<sup>th</sup>  
c) 1<sup>st</sup> and 3<sup>rd</sup>                              d) 1<sup>st</sup> and 4<sup>th</sup>
38. In the solution of any system of equations, ordinate is the twice of the abscissa and the equations are coincide on the third quadrant, which of the following is the solution?
- a) (- 2, - 4)                              b) (- 4, 2)  
c) (2, 4)                                  d) (- 2, 4)
39. In which of the following quadrant the common point of the system of equations  $\left. \begin{matrix} x + y = 0 \\ x - y = 2 \end{matrix} \right\}$  is placed on?
- a) 1<sup>st</sup>                                      b) 2<sup>nd</sup>  
c) 3<sup>rd</sup>                                      d) 4<sup>th</sup>
40. How many squares are to considered as an unit to construct the point (3, 6) as the point (9, 18)?
- a) 1    b) 3  
c) 6    d) 9
41. What is the distance between the point (0, 4) and (0, - 4)?
- a) - 8                                      b) 0  
c) 4    d) 8
42. Which of the following equation goes through the points (0, 0) and (1, - 1)?
- a)  $x - 2y = 0$                               b)  $x + y = 0$   
c)  $x + 5y = 0$                               d)  $y + 5x = 0$
43. Which of the following equation will go through the origin?
- a)  $x - y = 0$                               b)  $x + 3y = 10$   
c)  $x + 2y = 5$                               d)  $x + 3y = 4$
44. In which of the following point of the graph of the system of equations  $\left. \begin{matrix} 2x + y = 3 \\ 4x + 2y = 12 \end{matrix} \right\}$  will coincide?
- a) (0, 0)                                      b) (10, 10)  
c) (20, 20)                                      d) None

45. Which of the following is the common point of the equations  $x + y = 2$  and  $x - y = 2$ ?

- a) (2, 0)                      b) (0, 2)  
c) (-2, -2)                  d) (2, 2)

46. Which of the following represents the equation of straight line?

- a)  $3x - 3y = 0$               b)  $x^2 + y^2 = 25$   
c)  $x = \frac{1}{y}$                       d)  $ax^2 + by^2 + c = 0$

47. The system of equations  $3x - 7 = 3 - 2x$  coalesces on the fourth quadrant. Which of the following is the solution?

- a) (2, 1)                      b) (2, -1)  
c) (-2, 1)                    d) (-2, -1)

48. Abscissa of a point is -2 and the summation of the abscissa and ordinate is 7, what is the co-ordinate of that point?

- a) (2, 7)                      b) (5, 2)  
c) (-2, 9)                    d) (-2, 5)

49.

X	0	-1	2
Y	-1	-3	3

Which table is correct?

- a)  $y = 5x - 1$               b)  $y = 4x - 1$   
c)  $y = 3x - 1$               d)  $y = 2x - 1$

50. Which one of the following passes through the origin?

- a)  $3x - 2y = 0$               b)  $x - y = 1$   
c)  $x = 5$                       d)  $x + y + 5 = 0$

51. Which of the following will be constructed after placing the points (0, 0), (3, 3) and (-3, -3) in the graph paper?

- a) Straight line              b) Curvilinear line  
c) Circle                      d) Hyperbola

52. What will be graph of the equation  $2x + y = 0$ ?

- a) Polynomial line        b) Straight line  
c) Hyperbola                d) Parabola

53. Graphical representation of the equation  $y = 2x$  is -

- i. It runs through origin  
ii. It intersects both the axes  
iii. It is a straight line

Which one of the following is correct?

- a) i and ii                      b) i and iii  
c) ii and iii                    d) i, ii and iii

Creative questions :

1. If 1 is subtracted from numerator and 2 is added to denominator of a fraction, the fraction will be  $\frac{1}{3}$ . Again, if 2 is subtracted from numerator and 3 is subtracted from denominator then the fraction will be equal to 1.

[S.B.- 17]

a) From a system of equation by the fraction  $\frac{x}{y}$ .

b) Find the fraction.

c) Find the solution of the system of equation by graph.

2. A system of simple equations are :

$$7x + 2y = 20$$

$$3x - 4y = -6.$$

[D.B.- 16]

a) Indicate the number of solutions.

b) Find (x, y) by solving the system of equations by the method of cross-multiplication.

c) Solve the given equations by graph.

3.  $3x - 4y = 0$

$$2x - 3y = -1$$

[C.B.- 16]

a) Justify whether the system of equations are consistent and mutually dependent.

b) Solve the system of equation by the method of substitution.

c) Solve the system of equations with the help of graph and show that the values of (x, y) is equal to the values of (x, y) obtained from (b).

4. If 7 is added to the numerator of a fraction, the fraction will be integer 2. Again, if 2 is subtracted from the

denominator of a fraction, the fraction will be integer 1.

- from a system of equations taking  $\frac{x}{y}$  as the fraction.
- Find  $(x, y)$  by solving the system of equations using cross-multiplication method. What is the fraction?
- Draw the graph of the equations and verify the solution.

### Exercise-12.4

#### Creative Multiplication Choice Questions

- For which of the following conditions is the system of equations  $ax + bx + c = 0$  and  $px + qy + r = 0$  consistent and mutually independent?
  - $\frac{a}{p} \neq \frac{b}{q}$
  - $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$
  - $\frac{a}{p} = \frac{b}{q} \neq \frac{c}{r}$
  - $\frac{a}{p} = \frac{b}{q}$
- If  $x + y = 4$  and  $x - y = 2$ , which one of the following is the value of  $(x, y)$ ?
  - (2, 4)
  - (4, 2)
  - (3, 1)
  - (1, 3)
- If  $x + y = 6$  and  $2x = 4$ , which is the value of  $y$ ?
  - 2
  - 4
  - 6
  - 8
- |          |           |          |          |
|----------|-----------|----------|----------|
| <b>X</b> | <b>0</b>  | <b>2</b> | <b>4</b> |
| <b>Y</b> | <b>-4</b> | <b>0</b> | <b>4</b> |

For which one of the following equation is the adjoining chart correct?

- $y = x - 4$
  - $y = 8 - x$
  - $y = 4 - 2x$
  - $y = 2x - 4$
- If  $2x - y = 8$  and  $x - 2y = 4$  then find the value of  $x + y =$  What?
    - 0
    - 4
    - 8
    - 12
  - The equations  $x - y - 4 = 0$  and  $3x - 3y - 10 = 0$ ----
    - Are mutually dependent
    - Are mutually consistent
    - Do not have any solution

Which one of the following is correct?

- ii
- iii
- i and iii
- ii and iii

On the basis of information given below answer questions no. (7 to 9) :

Length of the floor of a rectangular room is 2 metres more than its breadth and perimeter of the floor is 20 metres. For decorating the floor with mosaic it costs Tk. 900 per square metre.

- What is the length of the floor of the room in metre?
  - 10
  - 8
  - 6
  - 4
- What is the area of the floor of the room in square metre?
  - 24
  - 32
  - 48
  - 80
- How much taka will be the total cost for decorating the floor with mosaic?
  - 72000
  - 43200
  - 28800
  - 21600
- The breadth of a rectangular garden is 4 metres less than of its length. If the perimeter of it is 48 metres, what is its breadth? [Ctg.B.- 16]
  - 18 metre
  - 14 metre
  - 10 metre
  - 6 metre

Ans: c

- Which one of the following equation centre of mid-point? [Dj.B.- 15]
  - $2x = 3y + 2$
  - $x + 3y = 5$
  - $3x = 8y + 2$
  - $4x = 3y$
- In which quadrant the point  $(3, - 5)$  is situated? [J.B.- 15]
  - 1<sup>st</sup> Quadrant
  - 3<sup>rd</sup> Quadrant
  - 3<sup>rd</sup> Quadrant
  - 4<sup>th</sup> Quadrant
- What is the distance of the point  $(- 10, - 7)$  from  $y$ - axis?
  - 10
  - 7
  - 7
  - 10
- Sum of the numerator and denominator of a proper fraction is 5 and their difference is 1. What is the fraction?

- a)  $\frac{1}{5}$                       b)  $\frac{1}{4}$   
 c)  $\frac{2}{3}$                       d)  $\frac{3}{2}$

**15. Observe the following information.**

- The equations  $2x - y = 0$  and  $x - 2y = 0$  are mutually dependent.
- Graph of the equation  $x - 2y + 3 = 0$  passes through the point  $(-3, 0)$ .
- Graph of the equation  $3x + 4y = 1$  is a straight line.

**Which one of the following is correct?**

- a) i and ii                      b) *ii and iii*  
 c) i and iii                      d) i, ii and iii

**16. Observe the following information :**

- The graph of the equation  $2x - y - 4 = 0$  passes point  $(0, -4)$ .
- The graph of the equation  $4x - 5y - 17 = 0$  is straight line.
- Equation  $3x - 5y = 7$  and  $6x - 10y = 5$  are independent.

**Which one of the following is correct?**

- a) i and ii                      b) ii and iii  
 c) i and iii                      d) i, ii and iii

Ans: d

**The length of a rectangular garden is 15 metres more than its breadth and perimeter of the garden is 150 metre.**

**Answer to the questions No. (8 to 9) from the above information :-**

**17. What is the length of the garden in metre? [C.B.- 16]**

- a) 40                              b) 45  
 c) 50                              d) 55

**18. What is the area of the garden in square metre?**

- a) 1250                          b) 1300  
 c) 1350                          d) 1400

**Answer the questions No. (10 to 11) on the basis of the basis of the following information :**

**The length of a rectangular room is 2 metre more than its breadth and perimeter is 32 metre.**

**19. What is the length of the floor of the room in metre? [R.B.- 16]**

- a) 10                              b) 9  
 c) 8                                d) 7

**20. What is the area of the floor of the room in square metre? [R.B.- 16]**

- a) 31.5                          b) 36  
 c) 63                              d) 126

**21. The value of which fraction will become  $\frac{1}{2}$  if 5 is subtracted from both numerator and denominator?**

- a)  $\frac{7}{9}$                               b)  $\frac{9}{7}$   
 c)  $\frac{3}{5}$                               d)  $\frac{5}{3}$

**22. The value of which fraction will become  $\frac{1}{2}$  if 3 is subtracted from both numerator and denominator?**

- a)  $\frac{4}{5}$                               b)  $\frac{3}{2}$   
 c)  $\frac{5}{4}$                               d)  $\frac{2}{3}$

**23. If the length of a rectangular garden is 20 metre and width is 15 metre. What is its half-perimeter?**

- a) 25                              b) 30  
 c) 35                              d) 40

**24. The digit of the ones place of a number of 2 digits is 4 more than 2 times the digit of tens place. Which one of the following is the number?**

- a) 32                              b) 18  
 c) 26                              d) 28

**25. The value of which fraction will become  $\frac{5}{6}$  if 1 is added to numerator and denominator each?**

- a)  $\frac{4}{5}$                               b)  $\frac{5}{4}$   
 c)  $\frac{8}{9}$                               d)  $\frac{11}{13}$

**26. The sum of the digits of a number of 2 digits is 9 and the product is 20. What is the number?**

- a) 54                              b) 43  
 c) 32                              d) 25

**27. The difference between the digits of a number consisting of 2 digits is 3 and the product is 18. What is the number?**

- a) 48                              b) 36  
 c) 23                              d) 16

28. The length of a rectangular garden is 3 times the width and perimeter is 36 metre. What is the width (in metre)?  
 a) 5.7                                      b) 5.6  
 c) 4.5                                      d) 6.4
29. The sum of the square of two positive integers is 5 and product is 2. What is the difference of their squares?  
 a) 1    b) 2  
 c) 3    d) 5
30. The unit place and tens place digits of a two digit number are y and x respectively. What is the number?  
 a)  $10yx$                                       b)  $10x + y$   
 c)  $x + 10y$                                     d)  $10(x + y)$
31. The digit of the units place of a number consisting of two digits is 1 more than 8 times the digit of tens place. What is the number?  
 a) 29    b) 19  
 c) 18    d) 15
32. Difference of the digits of a number consisting of two digits is 7 and product is 12. What is the number?  
 a) 36    b) 42  
 c) 72    d) 97
33. Summation of the digits of a number consisting of two digits is 7 and product is 12. What is the number?  
 a) 34    b) 52  
 c) 61    d) 62
34. The quotient obtained by dividing the product of two digits of a number consisting of two digits is 2. Which of the following will be correct equation if the unit place digit and tens place digits are denoted by x and y respectively?  
 a)  $\frac{10y+x}{xy}$                                       b)  $\frac{10y-x}{xy}$   
 c)  $\frac{10x+y}{xy}$                                       d)  $\frac{10x-y}{xy}$
35. After adding 7 with the numerator of one of the following fraction becomes 2. What is the fraction?  
 a)  $\frac{1}{3}$     b)  $\frac{3}{5}$   
 c)  $\frac{3}{5}$     d)  $\frac{8}{9}$
36. Numerator and denominator of a proper fraction are consecutive numbers. What is the fraction?  
 a)  $\frac{5}{6}$     b)  $\frac{6}{5}$   
 c)  $\frac{5}{9}$     d)  $\frac{5}{7}$
37. Present age of mother is four times the sum of the ages of her two daughters. After 5 years, if the two daughters age will be x years. Then what is the present age of the mother?  
 a)  $\frac{1}{2}(x + 20)$                                     b)  $2(x - 20)$   
 c)  $\frac{1}{4}(x + 20)$                                     d)  $4(x - 10)$
38. If the length of a rectangle is twice of its breadth and the perimeter is 30. What is the breadth in metre?  
 a) 5    b) 10  
 c) 12.5    d) 15
39. If the length, breadth and diagonal of a rectangle are x, y and 15 respectively. Which of the following is correct?  
 a)  $2(x + y) = 15$                               b)  $\sqrt{x^2 + y^2} = 15$   
 c)  $x^2 + y^2 = 15$                               d)  $x^2 + y^2 = 30$
40. The diagonal of a rectangle is 5 metre less than its half perimeter. If the length is x breadth is y, which of the following is correct?  
 a)  $x^2 + y^2 - x - y = 0$                               b)  $x + y - \sqrt{x^2 + y^2} = 5$   
 c)  $x^2 + y^2 - x + y + 5 = 0$                               d)  $\sqrt{x^2 + y^2} - x + y = 5$
41. The length of a rectangular garden is 40 metre, breadth is 10 metre, what is the length of a side of the square with equal area to the rectangle?  
 a) 10    b) 15  
 c) 20    d) 30
42. If the perimeter of the floor of a house is 40 metre and length is 15 metre. What is the breadth in metre?  
 a) 2    b) 5  
 c) 10    d) 20

43. If the length of a rectangular garden is three times of its breadth and if the area is 48 square metre. What is the breadth in metre?

- a) 4                                      b) 8  
c) 12                                      d) 16

44. A boat, rowing against the current goes 5 km per hour. Speed of current is 5 km per hor. What is the velocity of the boat in favor of current?

- a) 5                                        b) 10  
c) 15                                      d) 20

45. Difference between the square of two consecutive positive number is 9. What is the numbers?

- a) 4 and 5                                b) 6 and 7  
c) 3 and 4                                d) 5 and 6

46. Difference between the squares of the positive integers is 3 and the product is 2. What is the sum of their squares?

- a) 1                                        b) 2  
c) 3                                        d) 5

47. The speed of a boat in favor of current and against of current are 15 and 5 km/hour respectively and speed of boat is x and speed of current is y---

- i.  $x + y = 41$   
ii.  $x - y = 5$   
iii.  $x = 10$  and  $y = 5$

Which one of the following is correct?

- a) i and ii                                b) ii and iii  
c) i and iii                                d) i, ii and iii

48. Initial salary of any labor is Tk. x and annual increment Tk. y---

- i. Salary after 4 years is  $(x + 4y)$ .  
ii. Salary after 8 years is  $(x + 8y)$ .  
iii. If  $y = 125$ , increment after 4 years is Tk. 500.

Which one of the following is correct?

- a) i and ii                                b) ii and iii  
c) i and iii                                d) i, ii and iii

49. If  $\frac{x}{y}$  is a proper fraction ---

- i. Then  $y > x$ .  
ii. Then  $\frac{x}{y} + 1$  is an improper fraction.  
iii. Then  $x > y$ .

Which one of the following is correct?

- a) i and ii                                b) ii and iii  
c) i and iii                                d) i, ii and iii

The digit in tenth place of a number consisting of two digits is thrice the digit in unit place be x. Using the information answer the questions 50 and 51.

50. Which one is the number?

- a)  $3x$                                       b)  $4x$   
c)  $13x$                                     d)  $31x$

51. If the place of the digits are interchanged, what will be the number?

- a)  $3x$                                       b)  $4x$   
c)  $13x$                                     d)  $33x$

### Creative Questions :

1. If 5 is added to the sum of digits of a two digits number then it is equals to 3 times of the digit of tens place. Again the number obtained by interchanging the places of the digits is less by 9 than the original number.

- a) From two equations according to the stem.  
b) Solve the two equations by the method of cross multiplication and determine the number.  
c) Solve the equations with the help of graph and verify the correctness of result obtained in "b".

2. The length and breadth of a rectangular room is x and y metre. The relation between the length and breadth of the floor of the room is shown by the equation :  $6x - y = 104$  and  $3x + 2y = 92$ .

- a) Find out whether the equations are consistent or not.  
b) Find out the length and breadth of the floor of the room.  
c) If the perimeter of the rectangular floor of the room is equal to the perimeter of a square floor, then find the cost for covering the square floor with carpet at 25.25 taka per square metre?