Work Sheet- 4 for class- Nine
Chapter- Five
Exercise- 5.4
Equation

Creative Multiplication Choice Questions

1. If $x^2 = 9x + 8y$ and $y^2 = 8x + 9y$ then what is the value of $2x + 2y$?
   a) 0
   b) 1
   c) 2
   d) 3

2. Which one of the following is a solution of the system of equation: $x^2 + y^2 = 61$ and $xy = -30$?
   a) $(-5, -6)$
   b) $(5, -5)$
   c) $(5, -6)$
   d) $(5, 6)$

3. If $x + y = 8$ and $x - y = 4$ then find the value of $2x + y$?
   a) 10
   b) 12
   c) 14
   d) 20

4. Which are the correct solutions of the equation $2x + y = 3$?
   a) $(1, -1), (2, -1)$
   b) $(1, 1), (2, -1)$
   c) $(1, 1), (-2, 1)$
   d) $(-1, 1), (2, -1)$

5. If $x^2 + y^2 = 100$ then find the value of xy [by the help of Pythagoras Theorem].
   a) 12
   b) 14
   c) 20
   d) 48

6. If $x = -2$ then for what value of y equation $2y^2 + 7x = 2$ will be true?
   a) $2\sqrt{3}$
   b) $2\sqrt{2}$
   c) $3\sqrt{3}$
   d) $2\sqrt{5}$

If $x^2 - y^2 = 8$ and $xy = -3$ then answer to the questions No. (7 - 10):

7. What is the value of x?
   a) ± 1
   b) ± 2
   c) ± 3
   d) ± 9

8. What is the value of y?
   a) ± 1
   b) ± 2
   c) ± 6
   d) ± 9

9. What will be the sign of y if $x > 0$?
   a) $y > 0$
   b) $y < 0$
   c) $y \geq 0$
   d) $y \leq 0$

10. What is the value of $x^2 + y^2$?
    a) 4
    b) 8
    c) 10
    d) 12

11. If $(x - 1, y + 1) = (0, 0)$ find $(x, y) =$ What?
    a) $(0, 0)$
    b) $(-1, -1)$
    c) $(-1, 1)$
    d) $(1, -1)$

12. If $x^2 + y^2 = 25$ then (x, y) is -
    a) $(2, 4)$
    b) $(2, 5)$
    c) $(3, 4)$
    d) $(3, 5)$

13. For which value of x in the equation $x + y = 2$ and $y = 0$?
    a) 0
    b) 2
    c) -2
    d) 4

14. If $x + \frac{4}{y} = 1$ and $y + \frac{4}{x} = 25$ then which of the following is correct relation?
    a) $x = 25y$
    b) $y = 25x$
    c) $x = y$
    d) $x = 2y$

15. For which value of x if $x + y = -2$ gives $y = 0$?
    a) 2
    b) 0
    c) 4
    d) -2

16. Which of the following is a solution of the system of equation $x + \frac{1}{y} = \frac{3}{2}$ and $y + \frac{1}{x} = 3$?
    a) $(0, 0)$
    b) $(1, 2)$
    c) $(2, 1)$
    d) $(2, 3)$

17. Which is the solution of the equation $x^2 - 2xy + y^2 = 49$ and $x + y = 3$?
    a) $(-2, -5)$
    b) $(2, 5)$
    c) $(5, -2)$
    d) $(5, 2)$

18. Which is the solution of the equation $x^2 + y^2 = 25$ and $x - 2y = 0$?
    a) $(\pm 2\sqrt{5}, \pm\sqrt{5})$
    b) $(2\sqrt{5}, \pm\sqrt{5})$
    c) $(\pm\sqrt{5}, \pm\sqrt{5})$
    d) $(\pm\sqrt{5}, \pm 2\sqrt{5})$

19. If $x^2 = 7x + 6y$ and $y^2 = 7y + 6x$ then what is the value of $(x + y)$?
    a) -1
    b) 1
    c) 2
    d) 3

20. If the y solutions of the system of equations $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 5$ and $x + y =$

10 are 2, 8 then which are the x solutions?

a) $8, 2$ b) $4, 2$

c) $2, 2$ d) $1, 1$

21. Which is the solution of the system of equation $\left.\begin{array}{l}3x + 9y = 18 \\ 3x - y = 8\end{array}\right\}$?

a) $(1, 3)$ b) $(3, 1)$

c) $(9, 1)$ d) $(10, 1)$

22. Which is the solution of the system of equation $\left.\begin{array}{l}3x - 4y = 0 \\ 2x - 4y = -1\end{array}\right\}$?

a) $(3, 4)$ b) $(4, 3)$

c) $\left(1, \frac{3}{4}\right)$ d) $(1, 3)$

23. For which value of x if $x + y = -2$ gives $y = -4$?

a) 2 b) 0

c) 4 d) -2

24. If $x^2 + y^2 = 25$ and $xy = 12$ is a system of equations then —

i. $x + y = \pm 7$

ii. $x - y = \pm 1$

iii. $(x, y) = (4, 3)$ is 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

25. If $x^2 + y^2 = 18$ and $xy = 9$ is a system of equations then —

i. $x^2 - y^2 = 0$

ii. $x + y = \pm 6$

iii. $x - y = 0$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

26. If $x^2 + xy + y^2 = 3$ and $x^2 - xy + y^2 = 7$ is a system of equations then -

i. $xy = -1$

ii. $x^2 + y^2 = 5$

iii. $(x, y) = (0, 0)$ is 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

Answer to the questions No. (27 - 28) on the basis of the information given below: $xy - x^2 = 1$ and $y^2 - xy = 2$ is a system of equations.

27. According to the system of equations then which of the following is the value of $x^2 - y^2$?

a) -3 b) 3

c) 4 d) 6

28. What is the value of $(x - y)^2$?

a) -1 b) 1

c) $\sqrt{3}$ d) 3

29. If $x = 0$ in the 2nd equation then what is the value of $y^2 + (-y)^2$?

a) -2 b) 0

c) 2 d) 4

Answer to the questions No. (30 - 33) on the basis of the information given below:
$\frac{x + y}{x - y} + \frac{x - y}{x + y} = \frac{5}{2}$ and $x^2 + y^2 = 90$.

30. What is the value of $x^2 - y^2$?

a) 72 b) 112.5

c) 27 d) 90

31. Which of the following is the value of x?

a) ± 3 b) ± 9

c) ± 27 d) ± 81

32. Which of the following is the value of y?

a) ± 3 b) ± 9

c) ± 27 d) ± 81

33. Which of the following is the value of $\frac{x + y}{x - y}$?

a) 2 b) 1

c) -1 d) -2

Creative Questions:

1. $F(x) = \dfrac{1}{1 + 2x}$ and $g(x) = \dfrac{x + y}{x - y}$

   a) Find the discriminant of equation $3x^2 - 2x + 1 = 0$.
   b) Find the domain and range of $F(x)$ and show that, $F(x)$ is one-one function.
   c) Solve: $g(x) + \dfrac{1}{g(x)} = \dfrac{5}{2}$ and $x^2 + y^2 = 90$.

2. $K = y^2 - y - 1$, $L = \dfrac{2m}{m - 1}$ and $M = (1 - \dfrac{x}{2})^n$ where n is positive integer.

   a) If $K = 0$ then find the discriminant of the equation.
   b) If in the expansion of M co-efficient of x^2 is $\dfrac{6}{8}$ then find the value of n.
   c) If $6\sqrt{L} + \dfrac{5}{\sqrt{L}} - 13 = 0$ then find the value of m.

3. $P = \dfrac{2x}{x - 1}, f(x, y) = 2x^2 + 3xy + y^2$ and $g(x, y) = 5x^2 + 4y^2$.

   a) Find the nature of the equation $x^2 - 2x - 2 = 0$.
   b) Find the value of x if $6\sqrt{P} + 5\sqrt{\dfrac{1}{P}} = 13$.
   c) Solve: $f(x, y) = 20$ and $g(x, y) = 41$

4. (i) $x + \dfrac{4}{y} = 1$

   (ii) $y + \dfrac{4}{x} = 25$

   (iii) $\sqrt{\dfrac{x - 1}{3x + 2}} + 2\sqrt{\dfrac{3x + 2}{x - 1}} = 3$

   a) If $\dfrac{x - 1}{3x + 2} = p^2$ than by using (iii) show that, $p^2 - 3p + 2 = 0$.
   b) By solving (iii) find the value of x.
   c) By using (i) and (ii) find the value of (x, y).