# PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

## DPP-1

1. The system $kx - y = 2$ and $6x - 2y = 3$ has a unique solution only when
   (A) $k = 0$
   (B) $k \neq 0$
   (C) $k = 3$
   (D) $k \neq 3$

2. The system $x - 2y = 3$ and $3x + ky = 1$ has a unique solution only when
   (A) $k = -6$
   (B) $k \neq -6$
   (C) $k = 0$
   (D) $k \neq 0$

3. The system $x + 2y = 3$ and $5x + ky + 7 = 0$ has no solution, when
   (A) $k = 10$
   (B) $k \neq 10$
   (C) $k = \dfrac{-7}{3}$
   (D) $k = -21$

4. If the lines given by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel then the value of $k$ is
   (A) $\dfrac{-5}{4}$
   (B) $\dfrac{2}{5}$
   (C) $\dfrac{3}{2}$
   (D) $\dfrac{15}{4}$

5. For what value of $k$ do the equations $kx - 2y = 3$ and $3x + y = 5$ represent two lines intersecting at a unique point?
   (A) $k = 3$
   (B) $k = -3$
   (C) $k = 6$
   (D) All real values except $-6$

6. The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ has
   (A) A unique solution
   (B) Exactly two solutions
   (C) Infinitely many solutions
   (D) No solution

7. The pair of equations $2x + 3y = 5$ and $4x + 6y = 15$ has
   (A) A unique solution
   (B) Exactly two solutions
   (C) Infinitely many solutions
   (D) No solution

8. If a pair of linear equations is consistent then their graph lines will be
   (A) Parallel
   (B) Always coincident
   (C) Always intersecting
   (D) Intersecting or coincident

9. If a pair of linear equations is inconsistent then their graph lines will be
   (A) Parallel
   (B) Always coincident
   (C) Always intersecting
   (D) Intersecting or coincident

10. The graphs of the equations $6x - 2y + 9 = 0$ and $3x - y + 12 = 0$ are two lines which are
    (A) Coincident
    (B) Parallel
    (C) Intersecting exactly at one point
    (D) Perpendicular to each other

# DPP-2

1. The graphs of the equations $5x - 15y = 8$ and $3x - 9y = \dfrac{24}{5}$ are two lines which are
   (A) Coincident
   (B) Parallel
   (C) intersecting exactly at one-point
   (D) Perpendicular to each other

2. **Assertion:** Homogeneous system of linear equations is always consistent.
   **Reason:** $x = 0$, $y = 0$ is always a solution of the homogeneous system of equations with unknowns x and y, then which of the following statement is true?
   (A) A is true and R is the correct explanation of A
   (B) A is false and R is not a correct explanation of A
   (C) A is true and R is false
   (D) A is false and R is true

3. The pair of linear equations $7x - 3y = 4$, $3x + \dfrac{k}{7}y = 4$ is consistent only when:
   (A) $k = 9$
   (B) $k = -9$
   (C) $k \neq -9$
   (D) $k \neq 7$

4. The pair of linear equations $13x + ky = k$, $39x + 6y = k + 4$ has infinitely many solutions if -
   (A) $k = 1$
   (B) $k = 2$
   (C) $k = 4$
   (D) $k = 6$

5. The pair of linear equations, $x + 2y = 5$, $3x + 12y = 10$ has-
   (A) Unique solution
   (B) No solution
   (C) More than two solutions
   (D) Infinitely many solutions

6. The pair of equations $x = a$ and $y = b$ graphically represents lines which are
   (A) Parallel
   (B) Intersecting at (b, a)
   (C) Coincident
   (D) Intersecting at (a, b)

7. A pair of linear equations which has a unique solutions $x = 2$, $y = -3$ is
   (A) $x + y = -1$, $2x - 3y = -5$
   (B) $2x + 5y = -11$, $4x + 10y = -22$
   (C) $2x - y = 1$, $3x + 2y = 0$
   (D) $x - 4y - 14 = 0$, $5x - y - 13 = 0$

8. If $2x - 3y = 7$ and $(a + b)x - (a + b - 3)y = 4a + b$ have infinite solutions $(a, b) =$
   (A) $(-5, -1)$
   (B) $(-5, 1)$
   (C) $(5, 1)$
   (D) $(5, -1)$

9. The pair of equations $3x + 5y = 3$ and $6x + ky = 8$ have no solution if $k =$
   (A) $10$
   (B) $5$
   (C) $-5$
   (D) $0$

10. The graphs of the equations $2x + 3y - 2 = 0$ and $x - 2y - 8 = 0$ are two lines which are
    (A) Coincident
    (B) Parallel
    (C) Intersecting exactly at one-point
    (D) Perpendicular to each other

# DPP-3

**1.** If $2x + 3y = 12$ and $3x - 2y = 5$ then
(A) $x = 2, y = 3$
(B) $x = 2, y = -3$
(C) $x = 3, y = 2$
(D) $x = 3, y = -2$

**2.** If $x - y = 2$ and $\dfrac{2}{x+y} = \dfrac{1}{5}$ then
(A) $x = 4, y = 2$
(B) $x = 5, y = 3$
(C) $x = 6, y = 4$
(D) $x = 7, y = 5$

**3.** If $\dfrac{2x}{3} - \dfrac{y}{2} + \dfrac{1}{6} = 0$ and $\dfrac{x}{2} + \dfrac{2y}{3} = 3$ then
(A) $x = 2, y = 3$
(B) $x = -2, y = 3$
(C) $x = 2, y = -3$
(D) $x = -2, y = -3$

**4.** If $\dfrac{1}{x} + \dfrac{2}{y} = 4$ and $\dfrac{3}{y} - \dfrac{1}{x} = 11$ then
(A) $x = 2, y = 3$
(B) $x = -2, y = 3$
(C) $x = \dfrac{-1}{2}, y = 3$
(D) $x = \dfrac{-1}{2}, y = \dfrac{1}{3}$

**5.** If $\dfrac{2x + y + 2}{5} = \dfrac{3x - y + 1}{3} = \dfrac{3x + 2y + 1}{6}$ then
(A) $x = 1, y = 1$
(B) $x = -1, y = -1$
(C) $x = 1, y = 2$
(D) $x = 2, y = 1$

**6.** The pair of linear equations $2x + ky - 3 = 0$, $6x + \dfrac{2}{3}y + 7 = 0$ has a unique solution if -
(A) $k = \dfrac{2}{3}$   (B) $k \ne \dfrac{2}{3}$
(C) $k = \dfrac{2}{9}$   (D) $k \ne \dfrac{2}{9}$

**7.** The pair of linear equations $3x + 7y = k$, $12x + 2ky = 4k + 1$ do not have any solution if-
(A) $k = 7$
(B) $k = 14$
(C) $k = 21$
(D) $k = 28$

**8.** For what value of k, do the equations $3(k - 1)x + 4y = 24$ and $15x + 20y = 8(k + 13)$ have infinite solutions ?
(A) 1   (B) 4
(C) 3   (D) 2

**9.** In the system of equations $4x + py = 21$ and $px - 2y = 15$ has unique solution, then which of the following could be the value of p?
(a) 103   (b) 105
(c) 192   (d) 197
(A) Both (a) and (b)
(B) Both (c) and (d)
(C) (a), (b) and (d)
(D) All of (a), (b), (c) and (d)

**10.** If the system of equations $2x - 3y = 3$ and $-4x + qy = \dfrac{p}{2}$ is inconsistent, which of the following cannot be the value of p ?
(A) $-24$
(B) $-18$
(C) $-12$
(D) $-36$

# DPP-4

**1.** In a ΔABC, ∠C = 3 ∠B = 2(∠A + ∠B), then ∠B =?

(A) 20°  (B) 40°

(C) 60°  (D) 80°

**2.** In a cyclic quadrilateral ABCD, it is being given that ∠A = (x + y + 10)°, ∠B = (y + 20)°, ∠C = (x + y – 30)° and ∠D = (x + y)°. Then, ∠B = ?

(A) 70°  (B) 80°

(C) 100°  (D) 110°

**3.** The sum of the digits of a two-digit number is 15. The number obtained by interchanging the digits exceeds the given number by 9. The number is

(A) 96

(B) 69

(C) 87

(D) 78

**4.** In a given fraction, if 1 is subtracted from the numerator and 2 is added to the denominator, it becomes $\frac{1}{2}$. If 7 is subtracted from the numerator and 2 is subtracted from the denominator, it becomes $\frac{1}{3}$. The fraction is

(A) $\frac{13}{24}$  (B) $\frac{15}{26}$

(C) $\frac{16}{27}$  (D) $\frac{16}{21}$

**5.** 5 years hence, the age of a man shall be 3 times the age of his son while 5 years earlier the age of the man was 7 times the age of his son. The present age of the man is

(A) 45 years  (B) 50 years

(C) 47 years  (D) 40 years

**6.** If $\frac{3}{x+y} + \frac{2}{x-y} = 2$ and $\frac{9}{x+y} - \frac{4}{x-y} = 1$ then

(A) $x = \frac{1}{2}, y = \frac{3}{2}$

(B) $x = \frac{5}{2}, y = \frac{1}{2}$

(C) $x = \frac{3}{2}, y = \frac{1}{2}$

(D) $x = \frac{1}{2}, y = \frac{5}{2}$

**7.** If 4x + 6y = 3xy and 8x + 9y = 5xy then

(A) x = 2, y = 3

(B) x = 1, y = 2

(C) x = 3, y = 4

(D) x = 1, y = –1

**8.** If 29x + 37y = 103 and 37x + 29y = 95 then

(A) x = 1, y = 2

(B) x = 2, y = 1

(C) x = 3, y = 2

(D) x = 2, y = 3

**9.** If 2x+y = 2x–y = $\sqrt{8}$ then the value of y is

(A) $\frac{1}{2}$  (B) $\frac{3}{2}$

(C) 0  (D) None of these

**10.** If $\frac{2}{x} + \frac{3}{y} = 6$ and $\frac{1}{x} + \frac{1}{2y} = 2$ then

(A) x = 1, y = $\frac{2}{3}$  (B) x = $\frac{2}{3}$, y = 1

(C) x = 1, y = $\frac{3}{2}$  (D) x = $\frac{3}{2}$, y = 1

# DPP-5

**1.** The sum of the present ages of Ram and his mother is 89 years. After 11 years, mother's age will be twice Ram's age, then present age of Ram is (in years):

(A) 23      (B) 24

(C) 25      (D) 26

**2.** The perimeter of a rectangle is 44 cm. Its length exceeds twice its breadth by 4 cm, then area of the rectangle is:

(A) 80 cm$^2$

(B) 96 cm$^2$

(C) 117 cm$^2$

(D) 102 cm$^2$

**3.** 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

**4.** If $bx + ay = a^2 + b^2$ and $ax - by = 0$, then the value of $(x - y)$ is

(A) $a - b$      (B) $b - a$

(C) $a^2 - b^2$      (D) $b^2 + a^2$

**5.** If $2x + 3y = 0$ and $4x - 3y = 0$, then $x + y$ equals

(A) 0      (B) $-1$

(C) 1      (D) 2

**6.** If $173x + 197y = 149$ and $197x + 173y = 221$, then find $(x, y)$.

(A) $(3, -2)$      (B) $(2, 1)$

(C) $(1, -2)$      (D) $(2, -1)$

**7.** If an ordered pair satisfying the equations $2x - 3y = 18$ and $4x - y = 16$ also satisfies the equation $5x - py - 23 = 0$, then find the value of p.

(A) 1      (B) 2

(C) $-1$      (D) $-2$

**8.** A mother said to her son, "the sum of our present ages is twice my age 12 years ago and nine years hence, the sum of our ages will be thrice my age 14 years ago". What is her son's present age? (in years)

(A) 8      (B) 12

(C) 15      (D) 10

**9.** If the system of equations $4x - 5y = 6$ and $-12x + ay = b$ is inconsistent, which of the following cannot be the value of b?

(A) $-16$      (B) $-18$

(C) $-20$      (D) $-22$

**10.** Swathi starts her job with certain monthly salary and earns a fixed increment every year. If her salary was Rs 22500 per month after 6 years of service and Rs 30000 per month after 11 years of service. Find her salary after 8 years of service (in Rs).

(A) 24000      (B) 25500

(C) 26000      (D) 24500

**11.** Mukesh has some goats and hens in his shed. Upon counting, Mukesh found that the total number of legs is 112 and the total number of heads in 40. Find the number of hens in his shed.

(A) 18      (B) 20

(C) 22      (D) 24

**12.** A teacher wanted to distribute 900 chocolates among the students of a class. Each boy received 12 chocolates and each girl received 6 chocolates. If each girl had been given 10 chocolates, then each boy would have received 5 chocolates. Find the number of students of the class.

(A) 80

(B) 90

(C) 100

(D) 110