WORKSHEET DAY 8 – STRAIGHT LINE

LEVEL 1

Distance Formula and its Applications

Q.1 The distance of the point (3, 4) from origin is -
(A) 4 (B) 3 (C) 5 (D) 7

Q.2 The coordinates of a point are (0, 1) and the ordinate of another point is –3. If the distance between the two points is 5 then the abscissa of another point is -
(A) –3 (B) 3 (C) ± 3
(D) 1

Q.3 The points (0, –1); (2, 1); (0, 3) and (–2, 1) are vertices of a -
(A) Rectangle
(B) Square
(C) Rhombus
(D) Parallelogram

Q.4 The triangle with vertices (1, 5); (– 3, 1) and (3, – 5) is -
(A) isosceles (B) equilateral
(C) right angled (D) None of these

Q.5 The quadrilateral formed by the points (a,–b), (0,0), (–a, b) and (ab, – b^2) is -
(A) rectangle (B) parallelogram
(C) square (D) None of these

Q.6 If the points (1, 1) (–1, –1) and (– $\sqrt{3}$, k) are vertices of an equilateral triangle then the value of k will be -
(A) –1 (B) 1 (C) $\sqrt{3}$ (D) – $\sqrt{3}$

Q.7 If vertices of a triangle are (0, 4), (4, 1) and (7, 5), then its perimeter is -
(A) 5($\sqrt{2}$ + $\sqrt{5}$) (B) 2 $\sqrt{2}$
(C) 5(2 + $\sqrt{2}$) (D) 2 $\sqrt{5}$

Q.8 If the points (4, –4), (–4, 4) and (x, y) form an equilateral triangle, then -
(A) x = –4 $\sqrt{3}$, y = 4 $\sqrt{3}$
(B) x = 4 $\sqrt{3}$, y = –4 $\sqrt{3}$
(C) x = 4 $\sqrt{3}$, y = 4 $\sqrt{3}$
(D) None of these

Q.9 If P, Q, R are collinear points such that P(7, 7), Q(3, 4) and PR = 10, then R is -
(A) (1, 1) (B) (1, –1)
(C) (–1, 1) (D) (–1, –1)

Section Formula

Q.10 If (3, – 4) and (– 6, 5) are the extremities of the diagonal of a parallelogram and (– 2, 1) is its third vertex, then its fourth vertex is -
(A) (– 1, 0) (B) (– 1, 1)
(C) (0, – 1) (D) None of these

Q.11 The coordinates of the point which divides the line segment joining (–3, –4) and (–8, 7) externally in the ratio 7:5 are -
(A) (41/2, 69/2) (B) (–41/2, –69/2)
(C) (–41/2, 69/2) (D) None of these

Q.12 The ratio in which the point (8, 4) divides the line segment joining the points (5, –2) and (9, 6) is -
(A) 2 : 1 (B) 3 : 1 (C) 2 : 3 (D) 1 : 2

Q.13 If x-axis divides the line joining (3, 4) and (5, 6) in the ratio λ : 1 then λ is -
(A) – $\frac{3}{2}$ (B) – $\frac{2}{3}$ (C) $\frac{3}{4}$ (D) $\frac{1}{3}$

Q.14 If the point dividing internally the line segment joining the points (a, b) and (5, 7) in the ratio 2 : 1 be (4, 6), then -
(A) a = 2, b = – 4 (B) a = 1, b = 2
(C) a = 2, b = 4 (D) a = –2, b = 4

Q.15 Coordinates of trisection of line joining points (–3, –3) and (6,6) is -
(A) (0, 0), (3, –3) (B) (0, 0), (3, 3)
(C) (1, 1), (3, 3) (D) (1, 1), (–3, 3)

Q.16 The ratio in which x-axis divides the join of the points (2, –3) and (5, 6) is -
(A) 2 : – 1 (B) 1 : 2
(C) 2 : 1 (D) None of these

Q.17 The line segment joining the points (3, 4) and (7, 8) is divided by the line 2x + 3y + 7 = 0 in the ratio -
(A) 1/5 : 9 externally (B) 5 : 9 internally
(C) 5 : 1/9 externally (D) 5 : 9 externally

Q.18 If the middle point of the line segment joining the points (5, a) and (b, 7) be (3, 5), then (a, b) is -
(A) (3, 1) (B) (–2, –2)
(C) (1, 3) (D) (–3, –1)

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Q.19 The point (5, –1) divides the line segment joining points A and B in the ratio 2 : 3. If A is (11, –3), then B will be -
(A) (4, –2) (B) (4, 2)

(C) (–4, 2) (D) (–4, –2)

Q.20 The line segment joining the points (–3, –4) and (1, 2) is divided by y-axis in the ratio -
(A) 2 : 3 (B) 1 : 3 (C) 3 : 1 (D) 3 : 2

> **Question based on** **Centres of the Triangle**

Q.21 If two vertices joining the hypotenuse of a right angled triangle are (0, 0) and (3, 4), then the length of the median through the vertex having right angle is -
(A) 3 (B) 2 (C) 5/2 (D) 7/2

Q.22 The centroid of a triangle with vertices (2, 1); (5, 2) and (3, 4) is -
(A) (8/3, 7/3) (B) (10/3, 7/3)
(C) (–10/3, 7/3) (D) (10/3, –7/3)

Q.23 If the vertices of a triangle be (a, b–c), (b, c–a) and (c, a–b), then the centroid of the triangle lies -
(A) On y-axis (B) On x-axis
(C) At origin (D) None of these

Q.24 If (–4, 6) ,(2, 3) and (–2, –5) are vertices of a triangle, then its incentre is -
(A) (–1, 2) (B) (2, –1)
(C) (1, 2) (D) (2, 1)

Q.25 Circumcentre of a triangle whose vertex are (0,0), (4,0) and (0,6) is -
(A) $\left(\frac{4}{3}, 2\right)$ (B) (0, 0)

(C) (2, 3) (D) (4, 6)

Q.26 Orthocentre of a triangle whose vertex are (8,–2), (2,–2) and (8,,6) is -
(A) (8, –2) (B) (8, 6)
(C) $\left(\frac{18}{3}, \frac{2}{3}\right)$ (D) (0, 0)

Q.27 The distance of orthocentre of the triangle (2, 3), (4, 5) and (–1, 10) from (2, 3) is -
(A) $2\sqrt{2}$ (B) $\sqrt{2}$ (C) 4 (D) 2

Q.28 A triangle whose vertex are (2, 3), (4, 5) and (–2, 11), distance between circumcentre and vertex (4, 5) is -
(A) 2 (B) $4\sqrt{5}$ (C) $2\sqrt{5}$ (D) 4

Q.29 If A (4, –3); B (3, –2) and C(2, 8) are vertices of a triangle, then the distance of its centroid from y- axis is -
(A) 9/2 (B) 1
(C) 3 (D) 1/2

Q.30 If the vertices of a triangle be (0, 0), (6, 0) and (6, 8), then its incentre will be -
(A) (1, 2) (B) (2, 1)
(C) (4, 2) (D) (2, 4)

Q.31 The circumcentre of the triangle with vertices (0, 0); (3, 0) and (0, 4) is -
(A) (1, 1) (B) (2, 3/2)
(C) (3/2, 1) (D) None of these

Q.32 The distance of the centroid from the origin of the triangle formed by the points (1, 1), (0, –7) and (–4, 0) is -
(A) $\sqrt{2}$ (B) $\sqrt{4}$
(C) $\sqrt{3}$ (D) $\sqrt{5}$

> **Question based on** **Area and Collinear Points**

Q.33 Area of the triangle with vertices (4, 4); (3, –2) and (3, –16) is -
(A) 7 (B) 18 (C) 15
(D) 27

Q.34 The Area of the triangle with vertices (1, π/8); (1, 5π/8) and ($\sqrt{2}$, 3π/8) is -
(A) 2 (B) 1/2 (C) 1
(D) 3/2

Q.35 If (5, –4) and (–3, 2) are two opposite vertices of a square then its area is -
(A) 50 (B) 75 (C) 25 (D) 100

Q.36 The area of a triangle with vertices (3, 8); (–4, 2) and (5,–1) is -
(A) 40.5 (B) 36.5 (C) 3.75 (D) 37.5

Q.37 For what value of k the points (k, 2 – 2k), (1 – k, 2k) and (– 4 – k, 6 – 2k) are collinear ?
(A) 1,–1/2 (B) 1,1/2
(C) –1,1/2 (D) –1,–1/2

Q.38 The condition that three points (a, 0), (0, b) and (1, 1) are collinear is -
(A) $\frac{1}{a} + \frac{1}{b} = 2$ (B) $\frac{1}{a} + \frac{1}{b} = 1$

(C) $\frac{1}{a} + \frac{1}{b} = 0$ (D) $\frac{1}{a} = \frac{1}{b}$

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Q.39 Opposite vertex of a square are (3, –4) and (–5, 2) then area of square is -
(A) 25   (B) 50
(C) 75   (D) 100

Q.40 The area of the triangle formed by the points (a, b + c), (b, c + a), (c, a + b) is -
(A) $a^2 + b^2 + c^2$ (B) abc
(C) ab + bc + ca   (D) 0

Q.41 If D,E,F are mid points of the sides AB, BC and CA of a triangle formed by the points A(5, –1) B(–7, 6) and C (1, 3) , then area of Δ DEF is -
(A) 2/5   (B) 5/2
(C) 5   (D) 10

Q.42 The area of a quadrilateral constructed by lines |x| + |y| = 1 is -
(A) 4   (B) 3   (C) 2   (D) 1

LEVEL- 1

Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	C	C	B	C	D	C	C	C	C	A	C	B	B	C	B	B	D	A	C	C
Q.No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	C	B	B	A	C	A	A	C	C	C	D	D	A	B	A	D	C	B	B	D
Q.No.	41	42																		
Ans.	B	C																		

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LEVEL 2

Question based on | **Slope of a Line & Different forms of Equation of Straight Line**

Q.1 The angle made by the line joining the points (1, 0) and (–2, $\sqrt{3}$) with x axis is -
(A) 120º   (B) 60º   (C) 150º   (D) 135º

Q.2 If A(2,3), B(3,1) and C(5,3) are three points, then the slope of the line passing through A and bisecting BC is -
(A) 1/2   (B) –2   (C) –1/2   (D) 2

Q.3 If the vertices of a triangle have integral coordinates, then the triangle is -
(A) Isosceles   (B) Never equilateral
(C) Equilateral   (D) None of these

Q.4 The equation of a line passing through the point (–3, 2) and parallel to x-axis is -
(A) x – 3 = 0   (B) x + 3 = 0
(C) y – 2 = 0   (D) y + 2 = 0

Q.5 If the slope of a line is 2 and it cuts an intercept – 4 on y-axis, then its equation will be -
(A) y – 2x = 4   (B) x = 2y – 4
(C) y = 2x – 4   (D) None of these

Q.6 The equation of the line cutting of an intercept –3 from the y-axis and inclined at an angle $\tan^{-1} 3/5$ to the x axis is -
(A) 5y – 3x + 15 = 0   (B) 5y – 3x = 15
(C) 3y – 5x + 15 = 0   (D) None of these

Q.7 If the line y = mx + c passes through the points (2, 4) and (3, –5), then -
(A) m = –9, c = –22   (B) m = 9, c = 22
(C) m = –9, c = 22   (D) m = 9, c = –22

Q.8 The equation of the line inclined at an angle of 60º with x-axis and cutting y-axis at the point (0, –2) is -
(A) $\sqrt{3}$ y = x – 2 $\sqrt{3}$ (B) y = $\sqrt{3}$ x – 2
(C) $\sqrt{3}$ y = x + 2 $\sqrt{3}$ (D) y = $\sqrt{3}$ x + 2

Q.9 The equation of a line passing through the origin and the point (a cosθ, a sin θ) is -
(A) y = x sin θ   (B) y = x tan θ
(C) y = x cos θ   (D) y = x cot θ

Q.10 Slope of a line which cuts intercepts of equal lengths on the axes is -
(A) –1   (B) 2   (C) 0   (D) $\sqrt{3}$

Q.11 The intercept made by line x cosα + y sinα = a on y axis is -
(A) a   (B) a cosecα
(C) a secα   (D) a sinα

Q.12 The equation of the straight line which passes through the point (1, –2) and cuts off equal intercepts from axes will be-
(A) x + y =1   (B) x – y = 1
(C) x + y + 1 = 0   (D) x – y – 2 = 0

Q.13 The intercept made by a line on y-axis is double to the intercept made by it on x-axis. If it passes through (1, 2) then its equation -
(A) 2x + y = 4   (B) 2x + y + 4 = 0
(C) 2x – y = 4   (D) 2x – y + 4 = 0

Q.14 If the point (5, 2) bisects the intercept of a line between the axes, then its equation is-
(A) 5x + 2y = 20   (B) 2x + 5y = 20
(C) 5x – 2y = 20   (D) 2x – 5y = 20

Q.15 If the point (3,–4) divides the line between the x-axis and y-axis in the ratio 2 : 3 then the equation of the line will be -
(A) 2x + y = 10   (B) 2x – y = 10
(C) x + 2y = 10   (D) x – 2y = 10

Q.16 The equation to a line passing through the point (2, –3) and sum of whose intercept on the axes is equal to –2 is -
(A) x + y + 2 = 0 or 3x + 3y = 7
(B) x + y + 1 = 0 or 3x – 2y = 12
(C) x + y + 3 = 0 or 3x – 3y = 5
(D) x – y + 2 = 0 or 3x + 2y = 12

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Q.17 The line bx + ay = 3ab cuts the coordinate axes at A and B, then centroid of ΔOAB is -
(A) (b, a)   (B) (a, b)
(C) (a/3, b/3)   (D) (3a, 3b)

Q.18 The area of the triangle formed by the lines x = 0, y = 0 and x/a + y/b = 1 is -
(A) ab   (B) ab/2
(C) 2ab   (D) ab/3

Q.19 The equations of the lines on which the perpendiculars from the origin make 30º angle with x-axis and which form a triangle of area $\dfrac{50}{\sqrt{3}}$ with axes, are -

(A) $x \pm \sqrt{3}\, y - 10 = 0$

(B) $\sqrt{3}\, x + y \pm 10 = 0$

(C) $x + \sqrt{3}\, y \pm 10 = 0$

(D) None of these

Q.20 If a perpendicular drawn from the origin on any line makes an angle 60º with x axis. If the line makes a triangle with axes whose area is $54\sqrt{3}$ square units, then its equation is -

(A) $x + \sqrt{3}\, y = 18$

(B) $\sqrt{3}\, x + y + 18 = 0$

(C) $\sqrt{3}\, x + y = 18$

(D) None of these

Q.21 For a variable line x/a + y/b = 1, a + b = 10, the locus of mid point of the intercept of this line between coordinate axes is -
(A) 10x+ 5y = 1   (B) x+ y = 10
(C) x + y = 5   (D) 5x + 10 y = 1

Q.22 If a line passes through the point P(1,2) makes an angle of 45º with the x-axis and meets the line x + 2y – 7 = 0 in Q, then PQ equals -

(A) $\dfrac{2\sqrt{2}}{3}$ (B) $\dfrac{3\sqrt{2}}{2}$

(C) $\sqrt{3}$ (D) $\sqrt{2}$

Q.23 A line passes through the point (1, 2) and makes 60º angle with x axis. A point on this line at a distance 3 from the point (1, 2) is -
(A) $(-5/2, 2 - 3\sqrt{3}/2)$ (B) $(3/2, 2+ 3\sqrt{3}/2)$
(C) $(5/2, 2 + 3\sqrt{3}/2)$ (D) None of these

Q.24 If the points (1, 3) and (5, 1) are two opposite vertices of a rectangle and the other two vertices lie on the line y = 2x + c, then the value of c is -
(A) 4   (B) – 4
(C) 2   (D) None of these

Angle between two Straight Lines

Q.25 The angle between the lines y – x + 5 = 0 and $\sqrt{3}\, x - y + 7 = 0$ is -
(A) 15º   (B) 60º   (C) 45º   (D) 75º

Q.26 The angle between the lines 2x + 3y = 5 and 3x – 2y = 7 is -
(A) 45º   (B) 30º   (C) 60º

(D) 90º

Q.27 The angle between the lines 2x – y + 5 = 0 and 3x + y + 4 = 0 is-
(A) 30º   (B) 90º   (C) 45º   (D) 60º

Q.28 The obtuse angle between the line y = – 2 and y = x + 2 is -
(A) 120º   (B) 135º
(C) 150º   (D) 160º

Q.29 The acute angle between the lines y = 3 and $y = \sqrt{3}\, x + 9$ is -
(A) 30º   (B) 60º
(C) 45º   (D) 90º

Q.30 Orthocenter of the triangle whose sides are given by 4x – 7y + 10 = 0, x + y – 5 = 0 & 7x + 4y – 15 = 0 is -
(A) (–1, –2)   (B) (1, –2)
(C) (–1, 2)   (D) (1, 2)

Q.31 The angle between the lines x – $\sqrt{3}\, y$ + 5 = 0 and y-axis is -
(A) 90º   (B) 60º   (C) 30º   (D) 45º

Q.32 If the lines mx + 2y + 1 = 0 and 2x + 3y + 5 = 0 are perpendicular then the value of m is -
(A) 3   (B) –3   (C) –1/3   (D) 1/3

Q.33 If the line passing through the points (4, 3) and (2, λ) is perpendicular to the line y = 2x + 3, then λ is equal to -

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(A) 4   (B) –4

(C) 1   (D) –1

Q.34 The equation of line passing through (2, 3) and perpendicular to the line adjoining the points (–5, 6) and (–6, 5) is -

(A) $x + y + 5 = 0$ (B) $x – y + 5 = 0$

(C) $x – y – 5 = 0$ (D) $x + y – 5 = 0$

Q.35 The equation of perpendicular bisector of the line segment joining the points (1, 2) and (–2, 0) is -

(A) $5x + 2y = 1$ (B) $4x + 6y = 1$

(C) $6x + 4y = 1$ (D) None of these

Q.36 If the foot of the perpendicular from the origin to a straight line is at the point (3, –4). Then the equation of the line is -

(A) $3x – 4y = 25$ (B) $3x – 4y + 25 = 0$

(C) $4x + 3y – 25 = 0$ (D) $4x – 3y + 25 = 0$

<table>
<tr><td>**Question based on**</td><td>**Equation of Parallel and Perpendicular lines**</td></tr>
</table>

Q.37 Equation of the line passing through the point (1, –1) and perpendicular to the line $2x – 3y = 5$ is -

(A) $3x + 2y – 1 = 0$ (B) $2x + 3y + 1 = 0$

(C) $3x + 2y – 3 = 0$ (D) $3x + 2y + 5 = 0$

Q.38 The equation of the line passing through the point (c, d) and parallel to the line $ax + by + c = 0$ is -

(A) $a(x + c) + b(y + d) = 0$

(B) $a(x + c) – b(y + d) = 0$

(C) $a(x – c) + b(y – d) = 0$

(D) None of these

Q.39 The equation of a line passing through the point (a, b) and perpendicular to the line $ax + by + c = 0$ is -

(A) $bx – ay + (a^2 – b^2) = 0$

(B) $bx – ay – (a^2 – b^2) = 0$

(C) $bx – ay = 0$

(D) None of these

Q.40 The line passes through (1, –2) and perpendicular to y-axis is -

(A) $x + 1 = 0$ (B) $x – 1 = 0$

(C) $y – 2 = 0$ (D) $y + 2 = 0$

Q.41 The equation of a line passing through (a, b) and parallel to the line $x/a + y/b = 1$ is -

(A) $x/a + y/b = 0$ (B) $x/a + y/b = 2$

(C) $x/a + y/b = 3$ (D) $x/a + y/b + 2 = 0$

Q.42 A line is perpendicular to $3x + y = 3$ and passes through a point (2, 2). Its y intercept is -

(A) 2/3   (B) 1/3   (C) 1   (D) 4/3

Q.43 The equation of a line parallel to $2x – 3y = 4$ which makes with the axes a triangle of area 12 units, is -

(A) $3x + 2y = 12$ (B) $2x – 3y = 12$

(C) $2x – 3y = 6$ (D) $3x + 2y = 6$

Q.44 The equation of a line parallel to $x + 2y = 1$ and passing through the point of intersection of the lines $x – y = 4$ and $3x + y = 7$ is -

(A) $x + 2y = 5$ (B) $4x + 8y – 1 = 0$

(C) $4x + 8y + 1 = 0$ (D) None of these

Q.45 The straight line L is perpendicular to the line $5x – y = 1$. The area of the triangle formed by the line L and coordinate axes is 5. Then the equation of the line will be -

(A) $x + 5y = 5\sqrt{2}$ or $x + 5y = – 5\sqrt{2}$

(B) $x – 5y = 5\sqrt{2}$ or $x – 5y = 5\sqrt{2}$

(C) $x + 4y = 5\sqrt{2}$ or $x – 2y = 5\sqrt{2}$

(D) $2x + 5y = 5\sqrt{2}$ or $x + 5y = 5\sqrt{2}$

Q.46 If (0, 0), (–2, 1) and (5, 2) are the vertices of a triangle, Then equation of line passing through its centroid and parallel to the line $x – 2y = 6$ is-

(A) $x – 2y = 1$

(B) $x + 2y + 1 = 0$

(C) $x – 2y = 0$

(D) $x – 2y + 1 = 0$

Q.47 The equation of the line which passes through ($a\cos^3\theta$, $a\sin^3\theta$) and perpendicular to the line $x\sec\theta + y\csc\theta = a$ is -

(A) $x\cos\theta + y\sin\theta = 2a\cos2\theta$

(B) $x\sin\theta – y\cos\theta = 2a\sin2\theta$

(C) $x\sin\theta + y\cos\theta = 2a\cos2\theta$

(D) $x\cos\theta – y\sin\theta = a\cos2\theta$

<table>
<tr><td>**Question based on**</td><td>**Equation of straight lines through (x_1, y_1) making an angle α with $y = mx + c$**</td></tr>
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Q.48 The equation of the lines which passes through the point (3,–2) and are inclined at 60º to the line $\sqrt{3}$ x + y = 1.

(A) y + 2 = 0, $\sqrt{3}$ x – y – 2 – 3 $\sqrt{3}$ = 0

(B) $\sqrt{3}$ x – y – 2 – 3 $\sqrt{3}$ = 0

(C) x – 2 = 0, $\sqrt{3}$ x – y + 2 + 3 $\sqrt{3}$ = 0

(D) None of these

Q.49 (1, 2) is vertex of a square whose one diagonal is along the x – axis. The equations of sides passing through the given vertex are -

(A) 2x – y = 0, x + 2y + 5 = 0
(B) x – 2y + 3 = 0, 2x + y – 4 = 0
(C) x – y + 1 = 0, x + y – 3 = 0
(D) None of these

Q.50 The equation of the lines which pass through the origin and are inclined at an angle $\tan^{-1}$ m to the line y = mx + c, are -
(A) y = 0, 2mx + (1 – m^2)y = 0
(B) y = 0, 2mx + (m^2 –1)y = 0
(C) x = 0, 2mx + (m^2 –1)y = 0
(D) None of these

LEVEL- 2

Qus.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	C	C	B	C	C	A	C	B	B	A	B	C	A	B	B	B	B	B	B	A
Qus.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	C	A	C	B	A	D	C	B	B	D	B	B	A	D	C	A	A	C	C	D
Qus.	41	42	43	44	45	46	47	48	49	50										
Ans.	B	D	B	B	A	D	D	A	C	B										