Equation Of Lines ICSE

A. Multiple Choice Questions

Choose the correct option:

1. The slope of a line whose angle of inclination is 30° is:
   (a) $\sqrt{3}$
   (b) $\frac{1}{\sqrt{3}}$
   (c) $-\frac{1}{\sqrt{3}}$
   (d) $-\sqrt{3}$

2. The angle of inclination of a line having slope 1 is:
   (a) 30°
   (b) 45°
   (c) 60°
   (d) 90°

3. The slope of the line passing through the points $(0, 4)$ and $(6, 2)$ is:
   (a) 0
   (b) 1
   (c) -1
   (d) 6

4. The slope of the line passing through the points $(3, 2)$ and $(-7, -2)$ is:
   (a) 0
   (b) 1
   (c) -1
   (d) not defined

5. The slope of a line parallel to the y-axis is:
   (a) 0
   (b) 1
   (c) -1
   (d) not defined

6. The slope of a line parallel to the x-axis is:
   (a) 0
   (b) 1
   (c) -1
   (d) not defined

7. The slope of the line passing through the points $(3, 2)$ and $(3, 4)$ is:
   (a) -2
   (b) 0
   (c) 1
   (d) not defined

8. The angle of inclination of the line $y = \frac{1}{\sqrt{3}}x - 5$ is:
   (a) 0°
   (b) 30°
   (c) 45°
   (d) 60°

9. If the slope of the line passing through the points $(5, 2)$ and $(3, k)$ is 2, then the value of k is:
   (a) -1
   (b) -2
   (c) -3
   (d) -6

10. The slope of a line parallel to the line passing through the points $(6, 0)$ and $(-3, 7)$ is:
    (a) $\frac{7}{9}$
    (b) $-\frac{7}{9}$
    (c) $\frac{9}{7}$
    (d) $-\frac{9}{7}$

11. The slope of a line perpendicular to the line passing through the points $(2, 5)$ and $(-3, 6)$ is:
    (a) 5
    (b) -5
    (c) $\frac{1}{5}$
    (d) $-\frac{1}{5}$

12. The slope of a line parallel to the line $3x + 2y - 7 = 0$ is:
    (a) $-\frac{2}{3}$
    (b) $\frac{2}{3}$
    (c) $-\frac{3}{2}$
    (d) $\frac{3}{2}$

13. The slope of the line $x - 2y = 1$ is:
    (a) 0
    (b) 1

(c) $\frac{1}{2}$

(d) $-\frac{1}{2}$

14. The angle of inclination of the line $\sqrt{3}x - y = 1$ is:

    (a) $30°$

    (b) $45°$

    (c) $60°$

    (d) $90°$

15. The equation of the line whose inclination is $45°$ and which intersects the y-axis at the point $(0, -4)$ is:

    (a) $x - y = 4$

    (b) $x + y = 4$

    (c) $y - x = 4$

    (d) $x - y = -4$

16. If the point $(a, 2a)$ lies on the line $y = 3x-6$, then the value of a is:

    (a) 1

    (b) 3

    (c) 6

    (d) 4

Section B

1. What is the value of x so that the line through $(4, 1)$ and $(6, 2)$ is perpendicular to the line joining $(x, 2)$ and $(4, 6)$?

2. What is the value of a so that the line through $(a, 0)$ and $(3, 2)$ is perpendicular to the line joining $(1, 2)$ and $(-6, 1)$?

3. Without using Pythagoras theorem, show that the following points are the vertices of a right-angled triangle: $D(0, 4)$, $E(1, 2)$, $F(3, 3)$.

4. Find the equation of a line that is equidistant from the lines $x = 5$ and $x = 3$.

5. If $2x+3 = \frac{p}{2}x+3$ are parallel, find the value of p.

6. If $(2a + 1)x + 3 = 0$ and $8y - (2 - 1)x = 5$ are perpendicular to each other, find a.

7. Find the equation of a line that has y-intercept -4 and is parallel to the line joining $(2, -5)$ and $(1, 2)$.

8. Find the equation of a line that has y-intercept -6 and is perpendicular to the line joining $(-1, 6)$ and $(-2, 4)$.

9. Find the equations of the straight lines passing through the points $(2, 3)$ and $(4, 1)$.

10. In what ratio does the line joining the points $(2, 3)$ and $(4, -5)$ divide the line passing through the points $(6, 8)$ and $(1, -1)$?

11. Find the value of p, given that the line through the point $(-4, 4)$ and $\frac{y}{2} = x - p$ passes.

12. Find the value of m, given that the line $2mx - 5y + 13 = 0$ passes through the point $(-1, 2)$.

13. The graph of the equation $y = mx+c$ passes through the points $(1, 4)$ and $(-2, 5)$. Find m and c.

14. Points A and B have coordinates $(7, 3)$ and $(1, 9)$, respectively. Find:

    (a) The slope of AB.

    (b) The equation of the perpendicular bisector of the line segment AB.

    (c) The value of p if $(-2, p)$ lies on the bisector.

15. The side AB of a rectangle $ABCD$ is parallel to the y-axis. Calculate:

    (a) The slope of AD,

    (b) The slope of BD,

    (c) The slope of AC.

16. If $A(-3, -4)$, $B(2, 6)$, and $C(-6, 10)$ are the vertices of a triangle ABC, find the equation of the median through A.

17. Find the equations of the altitudes of the triangle whose vertices are given as $(10, 4)$, $(-4, 9)$, and $(-2, -1)$.

18. Find the equations of the sides of the triangle whose angular points are given as $(-1, 2)$, $(6, 0)$, and $(2, 5)$.

19. Find the equation of the straight line that passes through the point $(3, 4)$ and is perpendicular to the line $3x + 2y + 5 = 0$.

20. Write down the equation of the line AB, through $(3, 2)$ and perpendicular to the line $2y = 3x + 5$. If AB meets the x-axis at A and y-axis at B, write the coordinates of A and B. Calculate the area of triangle OAB, where O is the origin.

21. Find the equation of the line parallel to $3x - 4y + 6 = 0$ and passing through the midpoint of the segment joining $(2, 3)$ and $(4, -1)$.

22. Write down the equation of the line whose slope is -1 and which passes through P, where P divides the line segment joining $A(-1, 2)$ and $B(3, 6)$ in the ratio $1 : 3$.

23. The points $A(7, 3)$ and $C(0, -4)$ are two opposite vertices of a rhombus $ABCD$. Find the equation of the diagonal BD.

24. Find the equation of the line passing through the points $(-1, 2)$ and the point of intersection of the lines $6x - 5y + 2 = 0$ and $5x - 6y + 9 = 0$.

25. Find the equation of the line which makes equal intercepts on the axes and passes through the point $(2, 3)$.

26. $P(3, 4)$, $Q(7, -2)$, and $R(-2, -1)$ are the vertices of triangle PQR. Write down the equation of the median of the triangle through R.

27. A straight line passes through the points $P(-1, 4)$ and $Q(5, -2)$. It intersects the coordinate axes at points A and B. M is the midpoint of the segment AB.

    (i) Find the equation of the line.

    (ii) Find the coordinates of A and B.

    (iii) Find the coordinates of M.

28. Find the equation of the line which passes through the point $(2, 6)$ and is such that the intercept on the x-axis exceeds the intercept on the y-axis by 5.

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