# Practice Exercise

## Level - I

1. If distance between the point $(x, 2)$ and $(3, 4)$ is 2, then the value of $x =$
   - (a) 0
   - (b) 2
   - (c) 3
   - (d) 4

2. Find the mid-point of the line-segment joining two points $(3, 4)$ and $(5, 12)$.
   - (a) $(-4, 8)$
   - (b) $(0, 8)$
   - (c) $(4, 8)$
   - (d) $(4, 0)$

3. The mid-point of the line segment joining the points $(-2, 4)$ and $(6, 10)$ is
   - (a) $(2, 5)$
   - (b) $(2, 7)$
   - (c) $(3, 7)$
   - (d) $(3, 8)$

4. The points $A(-4, -1)$, $B(-2, -4)$, $C(4, 0)$ and $D(2, 3)$ are the vertices of a
   - (a) Parallelogram
   - (b) Rectangle
   - (c) Rhombus
   - (d) Square

5. The line $x + y = 4$ divides the line joining the points $(-1, 1)$ and $(5, 7)$ in the ratio
   - (a) $2 : 1$
   - (b) $1 : 2$
   - (c) $1 : 2$ externally
   - (d) None of these

6. If $A(3, 5)$, $B(-3, -4)$, $C(7, 10)$ are the vertices of a parallelogram taken in the order, then the co-ordinates of the fourth vertex are
   - (a) $(10, 19)$
   - (b) $(15, 10)$
   - (c) $(19, 10)$
   - (d) $(15, 19)$

7. The centroid of a triangle, whose vertices are $(2, 1)$, $(5, 2)$ and $(3, 4)$ is
   - (a) $\left(\dfrac{8}{3}, \dfrac{7}{3}\right)$
   - (b) $\left(\dfrac{10}{3}, \dfrac{7}{3}\right)$
   - (c) $\left(-\dfrac{10}{3}, \dfrac{7}{3}\right)$
   - (d) $\left(\dfrac{10}{3}, -\dfrac{7}{3}\right)$

8. The incentre of the triangle with vertices $(1, \sqrt{3})$, $(0, 0)$ and $(2, 0)$ is
   - (a) $\left(1, \dfrac{\sqrt{3}}{2}\right)$
   - (b) $\left(\dfrac{2}{3}, \dfrac{1}{\sqrt{3}}\right)$
   - (c) $\left(\dfrac{2}{3}, \dfrac{\sqrt{3}}{2}\right)$
   - (d) $\left(1, \dfrac{1}{\sqrt{3}}\right)$

9. The centroid of the triangle whose vertices are $(3, 10)$, $(7, 7)$, $(-2, 1)$ is
   - (a) $(8/3, 6)$
   - (b) $(6, 8/3)$
   - (c) $(-4, -7/3)$
   - (d) None of these

10. The coordinates of the centroid G of a triangle with vertices at $(3, 7)$, $(5, 5)$ and $(-3, 2)$ is
    - (a) $(10/3, 14/3)$
    - (b) $(10/3, 10/3)$
    - (c) $(5/3 \ 14/3)$
    - (d) $(11/3, 10/3)$

11. The coordinates of a point which divides the join of $(5, -5)$ and $(2, -3)$ in the ratio $4 : 3$, externally, are:
    - (a) $(3, 4)$
    - (b) $(-7, 3)$
    - (c) $(-7, 9)$
    - (d) $(8, 3)$

12. Distance between $P(x, y)$ and $Q(3, -6)$ is 10 units and $x$ is positive integer, then $x =$
    - (a) 3
    - (b) 9
    - (c) 7
    - (d) 11

13. The vertices of a parallelogram in order are $A(1, 2)$, $B(4, y)$, $C(x, 6)$, $D(3, 6)$, then $(x, y) =$
    - (a) $(6, 3)$
    - (b) $(3, 6)$
    - (c) $(5, 6)$
    - (d) $(1, 4)$

14. The point which divides the line segment joining the points $(7, -6)$ and $(3, 4)$ in ratio $1 : 2$ internally lies in the
    - (a) I quadrant
    - (b) II quadrant
    - (c) III quadrant
    - (d) IV quadrant

15. How many squares are possible if two of the vertices of a quadrilateral are $(1, 0)$ and $(2, 0)$?
    - (a) 1
    - (b) 2
    - (c) 3
    - (d) 4

16. In what ratio is the line segment made by the points $(7, 3)$ and $(-4, 5)$ divided by the $y$-axis?
    - (a) $2 : 3$
    - (b) $4 : 7$
    - (c) $3 : 5$
    - (d) $7 : 4$

17. If the coordinates of the mid-point of the line segment joining the points $(2, 1)$ and $(1, -3)$ is $(x, y)$, then the relation between $x$ and $y$ can be best described by
    - (a) $3x + 2y = 5$
    - (b) $6x + y = 8$
    - (c) $5x - 2y = 4$
    - (d) $2x - 5y = 4$

18. Points $(4, -1)$, $(6, 0)$, $(7, 2)$ and $(5, 1)$ are joined to be a vertex of a quadrilateral. What will be the structure?
    - (a) Rhombus
    - (b) Parallelogram
    - (c) Square
    - (d) Rectangle

19. Find the third vertex of the triangle whose two vertices are $(-3, 1)$ and $(0, -2)$ and the centroid is the origin.
    - (a) $(2, 3)$
    - (b) $\left(\dfrac{-4}{3}, \dfrac{14}{3}\right)$
    - (c) $(3, 1)$
    - (d) $(6, 4)$

20. If the origin gets shifted to $(2, 2)$, then what will be the new coordinates of the point $(4, -2)$?
    - (a) $(-2, 4)$
    - (b) $(2, 4)$
    - (c) $(4, 2)$
    - (d) $(2, -4)$

21. If the point $R(1, -2)$ divides externally the line segment joining $P(2, 5)$ and $Q$ in the ratio $3 : 4$, what will be the coordinates of $Q$ ?
    (a) $(-3, 6)$       (b) $(2, -4)$
    (c) $(3, 6)$        (d) $(1, 2)$

22. $C$ is the mid-point of $PQ$, if $P$ is $(4, x)$, $C$ is $(y, -1)$ and $Q$ is $(-2, 4)$, then $x$ and $y$ respectively are
    (a) $-6$ and $1$     (b) $-6$ and $2$
    (c) $6$ and $-1$     (d) $6$ and $-2$

23. A quadrilateral has the vertices at the points $(-4, 2)$, $(2, 6)$, $(8, 5)$ and $(9, -7)$. Show that the mid-points of the sides of this quadrilateral are the vertices of a parallelogram.
    (a) Rectangle        (b) Square
    (c) Parallelogram    (d) Rhombus

24. Find the ratio in which the point $(2, y)$ divides the join of $(-4, 3)$ and $(6, 3)$ and hence find the value of $y$
    (a) $2 : 3, y = 3$    (b) $3 : 2, y = 4$
    (c) $3 : 2, y = 3$    (d) $3 : 2, y = 2$

25. If $P\left(\dfrac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of $a$ is
    (a) $-4$      (b) $-12$
    (c) $12$      (d) $-6$

26. The ratio in which the line $2x + y - 4 = 0$ divides the line segment joining the points $A(2, -2)$ and $B(3, 7)$ is
    (a) $3 : 7$    (b) $4 : 7$
    (c) $2 : 9$    (d) $4 : 9$

27. Which of the following points is the nearest to the origin?
    (a) $(0, -6)$      (b) $(-8, 0)$
    (c) $(-3, -4)$     (d) $(7, 0)$

28. If the points $(1, 1)$, $(-1, -1)$ and $(-\sqrt{3}, k)$ are vertices of a equilateral triangle then the value of k will be :
    (a) $1$          (b) $-1$
    (c) $\sqrt{3}$   (d) $-\sqrt{3}$

29. The points $(3, 0)$, $(-3, 0)$, $(0, -3\sqrt{3})$ are the vertices of
    (a) equilateral triangle    (b) isosceles triangle
    (c) right triangle          (d) scalene triangle

30. Ratio in which the line $3x + 4y = 7$ divides the line segment joining the points $(1, 2)$ and $(-2, 1)$ is
    (a) $3 : 5$      (b) $4 : 6$
    (c) $4 : 9$      (d) None of these

31. If the area of a triangle with vertices $(-3, 0)$, $(3, 0)$ and $(0, k)$ is $9$ sq unit, then what is the value of $k$?
    (a) $3$      (b) $6$
    (c) $9$      (d) $12$

32. The line $y = 0$ divides the line joining the points $(3, -5)$ and $(-4, 7)$ in the ratio
    (a) $3 : 4$      (b) $4 : 5$
    (c) $5 : 7$      (d) $7 : 9$

33. The line passing through the points $(-2, 8)$ and $(5, 7)$
    [*SSC-Sub. Ins.-2012*]
    (a) does not cut any axes   (b) cuts x-axis only
    (c) cuts y-axis only        (d) cuts both the axes

# Level - II

1. The fourth vertex of a rectangle whose other vertices are $(4, 1)$ $(7, 4)$ and $(13, -2)$ is
   (a) $(10, -5)$    (b) $(10, 5)$
   (c) $(-10, 5)$    (d) $(-10, -5)$

2. The coordinates of vertices $A$ and $B$ of an equilateral triangle $ABC$ are $(-4, 0)$ and $(4, 0)$ respectively. Which of the following could be coordinates of C
   (a) $(0, 2\sqrt{3})$    (b) $(0, 4)$
   (c) $(0, 4\sqrt{3})$    (d) $(0, 3)$

3. The three vertices of a parallelogram are $A(3, -4)$, $B(-2, 1)$ and $C(-6, 5)$. Which of the following cannot be the fourth one
   (a) $(-1, 0)$    (b) $(7, -8)$
   (c) $(1, -5)$    (d) All of these

4. The mid-points of sides of a triangle are $(2, 1)$, $(-1, -3)$ and $(4, 5)$. Then the coordinates of its vertices are:
   (a) $(7, 9), (-3, -7), (1, 1)$   (b) $(-3, -7), (1, 1), (2, 3)$
   (c) $(1, 1), (2, 3), (-5, 8)$    (d) None of these

5. The point whose abscissa is equal to its ordinate and which is equidistant from the points $(1, 0)$ and $(0, 3)$ is
   (a) $(1, 1)$    (b) $2, 2)$
   (c) $(3, 3)$    (d) $(4, 4)$

6. 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) $a = 1, b = 2$      (b) $a = 2, b = -4$
   (c) $a = 2, b = 4$      (d) $a = -2, b = 4$

7. The distance of point of intersection of $2X - 3Y + 13 = 0$ and $3X + 7Y - 15 = 0$ from $(4, -5)$, will be
   (a) $10$ units    (b) $12$ units
   (c) $11$ units    (d) None of these

8. $A(-2, 4)$ and $B(-5, -3)$ are two points. The coordinates of a point $P$ on $Y$ axis such that $PA = PB$, are
   (a) $(3, 4)$    (b) $(0, 9)$
   (c) $(9, 0)$    (d) $(0, -1)$

9. The centroid of a triangle formed by $(7, p)$, $(q, -6)$, $(9, 10)$ is $(6, 3)$. Then $p + q$
   (a) $6$      (b) $5$
   (c) $7$      (d) $8$

10. If the three vertices of a rectangle taken in order are the points $(2, -2), (8, 4)$ and $(5, 7)$. The coordinates of the fourth vertex is
    (a) $(1, 1)$
    (b) $(1, -1)$
    (c) $(-1, 1)$
    (d) None of these

11. If $P(1, 2), Q(4, 6), R(5, 7)$ and $S(a, b)$ are the vertices of a parallelogram $PQRS$, then
    (a) $a = 2, b = 4$
    (b) $a = 3, b = 4$
    (c) $a = 2, b = 3$
    (d) $a = 3, b = 5$

12. Find the coordinates of the points that trisect the line segment joining $(1, -2)$ and $(-3, 4)$
    (a) $\left( \dfrac{-1}{3}, 0 \right)$
    (b) $\left( \dfrac{-5}{3}, 2 \right)$
    (c) Both (a) and (b)
    (d) None of these

13. If the mid-point of the line joining $(3, 4)$ and $(p, 7)$ is $(x, y)$ and $2x + 2y + 1 = 0$, then what will be the value of $p$?
    (a) $15$
    (b) $\dfrac{-17}{2}$
    (c) $-15$
    (d) $\dfrac{17}{2}$

14. Two vertices of a triangle are $(5, -1)$ and $(-2, 3)$. If the orthocentre of the triangle is the origin, what will be the coordinates of the third point?
    (a) $(4, 7)$
    (b) $(-4, 7)$
    (c) $(-4, -7)$
    (d) $(4, -7)$

15. A point $P$ is equidistant from $A(3, 1)$ and $B(5, 3)$ and its abscissa is twice its ordinate, then its co-ordinates are.
    (a) $(2, 1)$
    (b) $(1, 2)$
    (c) $(4, 2)$
    (d) $(2, 4)$

16. If $(-1, -1)$ and $(3, -1)$ are two opposite corners of a square, the other two corners are
    (a) $(2, 0), (-2, 2)$
    (b) $(2, -2), (0, 2)$
    (c) $(3, 0), (4, -2)$
    (d) None of these

17. What is the perimeter of the triangle with vertices $A(-4, 2), B(0, -1)$ and $C(3, 3)$?
    (a) $7 + 3\sqrt{2}$
    (b) $10 + 5\sqrt{2}$
    (c) $11 + 6\sqrt{2}$
    (d) $5 + \sqrt{2}$

18. The area (in sq. unit) of the triangle formed by the three graphs of the equations $x = 4$, $y = 3$, and $3x + 4y = 12$, is
    [*SSC CGL-2012*]
    (a) $12$
    (b) $10$
    (c) $6$
    (d) $8$

19. The radius of the circumcircle of the triangle made by $x$-axis, $y$-axis and $4x + 3y = 12$ is
    [*SSC CGL-2012*]
    (a) $2$ unit
    (b) $2.5$ unit
    (c) $3$ unit
    (d) $4$ unit

20. The total area (in sq. unit) of the triangles formed by the graph of $4x + 5y = 40$, x-axis, y-axis and $x = 5$ and $y = 4$ is
    [*SSC CGL-2014*]
    (a) $10$
    (b) $20$
    (c) $30$
    (d) $40$