

EduSahara™ Learning Center Assignment

Grade : Class X, ICSE

Chapter : Distance and Section Formulae

Name : Geometric Figure Properties and Collinearity

Find the area of the triangle formed by the points

1. $((-1), (-7)), ((-2), 7)$ and $(8, (-8))$
- (i) $\frac{125}{2}$ (ii) 63 (iii) $\frac{127}{2}$ (iv) $\frac{249}{4}$ (v) $\frac{123}{2}$

Find the perimeter of the triangle formed by the points

2. $((-6), 1), (3, (-7))$ and $((-6), (-8))$
- (i) $(\sqrt{145} + \sqrt{82} + 8)$ (ii) $(\sqrt{145} + \sqrt{79} + 9)$
- (iii) $(\sqrt{145} + \sqrt{82} + 10)$ (iv) $(\sqrt{145} + \sqrt{85} + 9)$
- (v) $(\sqrt{145} + \sqrt{82} + 9)$

Find the lengths of the sides of the triangle formed by the points

3. $(3, (-2)), (1, (-2))$ and $(1, (-6))$
- (i) 2, 4, $2\sqrt{7}$
- (ii) 2, 4, $2\sqrt{5}$
- (iii) 3, 4, $2\sqrt{5}$
- (iv) 2, 3, $2\sqrt{5}$

4. The points $(0, 3), (2, (-7))$ and $((1 + 5\sqrt{3}), (-2 + \sqrt{3}))$ represent

- (i) equilateral triangle (ii) right angled triangle
- (iii) scalene triangle (iv) isosceles triangle

5. The points $(-1, 5)$, $(-4, -4)$ and $(-13, 4)$ represent

- (i) collinear points
 - (ii) scalene triangle
 - (iii) isosceles triangle
 - (iv) right angle triangle
 - (v) equilateral triangle
-

6. The points $(-3, -4)$, $(0, 0)$, $(4, -3)$ and $(1, -7)$ represent

- (i) rhombus
 - (ii) trapezium
 - (iii) square
 - (iv) rectangle
 - (v) parallelogram
-

7. The points $(-3, -2)$, $(4, -2)$, $(7, 1)$ and $(0, 1)$ represent

- (i) trapezium
 - (ii) parallelogram
 - (iii) rectangle
 - (iv) rhombus
 - (v) square
-

8. The points $(-2, -2)$, $(6, -2)$, $(6, 3)$ and $(-2, 3)$ represents

- (i) trapezium
 - (ii) rhombus
 - (iii) rectangle
 - (iv) square
 - (v) parallelogram
-

9. The points $(1, -8)$, $(-5, 8)$ and $(6, -8)$ represent

- (i) right angle triangle
 - (ii) collinear points
 - (iii) scalene triangle
 - (iv) equilateral triangle
 - (v) isosceles triangle
-

10. The points $(-3, -5)$, $(0, -2)$ and $(3, -5)$ represent

- (i) right angle triangle
 - (ii) collinear points
 - (iii) scalene triangle
 - (iv) isosceles right angled triangle
 - (v) equilateral triangle
-

11. The points $(-1, -6)$, $(6, -6)$ and $(6, -1)$ represent

- (i) isosceles right angled triangle
 - (ii) collinear points
 - (iii) equilateral triangle
 - (iv) scalene triangle
 - (v) right angle triangle
-

12. The points $(-1, -2)$, $(4, -5)$, $(9, -2)$ and $(4, 1)$ represent

- (i) rhombus
 - (ii) trapezium
 - (iii) parallelogram
 - (iv) rectangle
 - (v) square
-

13. The points $(- ,)$, $(, -)$ and $(- \frac{20}{11}, \frac{20}{11})$ represents

- (i) equilateral triangle (ii) isosceles triangle
(iii) right angle triangle (iv) collinear points

Find the value of k such that the points

14. $((-6), 8), ((-4), 8)$ and $(k, 8)$ are collinear

- (i) 0 (ii) 3 (iii) 1 (iv) 2 (v) -2

Find the value of k such that the points

15. $((-6), (-3)), ((-\frac{50}{9}), 1)$ and $(-5, k)$ are collinear

- (i) 5 (ii) 6 (iii) 7 (iv) 3 (v) 9

Two vertices of a triangle are $(8, (-1)), (5, 7)$ and its centroid is

16. $(\frac{13}{3}, 2)$. Find the coordinates of the third vertex of the triangle

- (i) (0,0)

The points B $(0, 6)$ and D $((-9), 5)$ are the opposite vertices

17. of a square ABCD. Find the other two vertices

- (i) $((-3), 0), ((-5), 10)$ (ii) $((-6), (-1)), ((-5), 10)$
(iii) $((-4), 1), ((-5), 10)$ (iv) $((-4), 1), ((-6), 11)$
(v) $((-2), 3), ((-5), 10)$

Find the coordinates of the midpoints of the sides of the quadrilateral

18. formed by $((-5), (-3)), ((-1), 2), ((-6), 3)$ and $((-7), 1)$

- (i) $((-3), (-\frac{1}{2})), ((-\frac{7}{2}), \frac{5}{2}), ((-\frac{13}{2}), 2), ((-7), 0)$
(ii) $((-1), \frac{3}{2}), ((-\frac{7}{2}), \frac{5}{2}), ((-\frac{13}{2}), 2), ((-6), (-1))$
(iii) $((-3), (-\frac{1}{2})), ((-\frac{7}{2}), \frac{5}{2}), ((-\frac{17}{2}), 0), ((-6), (-1))$
(iv) $((-3), (-\frac{1}{2})), ((-\frac{7}{2}), \frac{5}{2}), ((-\frac{13}{2}), 2), ((-6), (-1))$
(v) $((-3), (-\frac{1}{2})), ((-\frac{7}{2}), \frac{5}{2}), ((-\frac{11}{2}), 1), ((-6), (-1))$

Find the lengths of the medians of a triangle whose vertices are

19. $((-3), (-2)), (1, 3)$ and $(0, (-1))$

- (i) $\frac{1}{2}\sqrt{41}, \frac{1}{2}\sqrt{17}, \frac{1}{2}\sqrt{17}$

(ii) $\frac{1}{2} \sqrt{85}$, $\frac{1}{2} \sqrt{106}$, $\frac{1}{2} \sqrt{13}$

(iii) $\frac{1}{2} \sqrt{17}$, $\frac{1}{2} \sqrt{10}$, $\frac{1}{2} \sqrt{41}$

Find the area of the quadrilateral formed by

20. $((-5), (-3))$, $(1, 1)$, $((-3), 4)$ and $((-6), 1)$

(i) $\frac{51}{2}$ (ii) $\frac{49}{2}$ (iii) $\frac{47}{2}$ (iv) 49 (v) $\frac{49}{4}$

Three vertices of a parallelogram are $((-6), (-1))$, $(2, (-1))$ and $(5, 2)$.

21. Find the fourth vertex

(i) $((-5), 0)$ (ii) $((-1), 4)$ (iii) $((-3), 2)$ (iv) $((-4), 3)$ (v) $((-2), 1)$

Find the coordinates of the orthocentre of the triangle

22. whose vertices are $(0, 5)$, $((-7), 1)$ and $((-3), (-7))$

(i) $((-\frac{20}{3}), \frac{1}{6})$ (ii) $((-\frac{17}{3}), \frac{19}{6})$ (iii) $((-\frac{26}{3}), \frac{13}{6})$
 (iv) $((-\frac{29}{3}), (-\frac{5}{6}))$ (v) $((-\frac{23}{3}), \frac{7}{6})$

Find the coordinates of the circumcentre of the triangle

23. whose vertices are $(3, 6)$, $((-8), (-2))$ and $(3, 0)$

(i) $((-\frac{71}{22}), 3)$ (ii) $((-\frac{49}{22}), 2)$ (iii) $((-\frac{115}{22}), 1)$
 (iv) $((-\frac{93}{22}), 4)$ (v) $((-\frac{27}{22}), 5)$

Find the centre of the circle passing through

24. the points $(1, (-5))$, $((-6), (-7))$ and $(6, 4)$

(i) $((-\frac{11}{2}), \frac{9}{2})$ (ii) $((-\frac{7}{2}), \frac{13}{2})$ (iii) $((-\frac{13}{2}), \frac{11}{2})$
 (iv) $((-\frac{15}{2}), \frac{5}{2})$ (v) $((-\frac{9}{2}), \frac{7}{2})$

Find the circumradius of the triangle whose vertices are

25. $((-4), (-7))$, $(3, (-2))$ and $(7, 8)$

(i) $\frac{1}{25} \sqrt{185629}$ (ii) $\frac{185629}{25}$ (iii) $\frac{1}{25} \sqrt{185626}$

(iv) $\frac{1}{25} \sqrt{185629}$ (v) $\frac{1}{25} \sqrt{185631}$

Find the radius of the circle passing through the points

26. $((-3), 1), (1, 6)$ and $(7, 6)$

(i) $\frac{1}{2} \sqrt{205}$ (ii) $\frac{1}{2} \sqrt[4]{205}$ (iii) $\frac{205}{2}$

(iv) $\frac{1}{2} \sqrt{208}$ (v) $\frac{1}{2} \sqrt{203}$

Find the point which is equidistant from the points

27. $((-2), (-2)), (7, 8)$ and $((-6), 0)$

(i) $((-\frac{151}{58}), \frac{110}{29})$ (ii) $((-\frac{35}{58}), \frac{168}{29})$ (iii) $((-\frac{93}{58}), \frac{197}{29})$

(iv) $(\frac{23}{58}, \frac{139}{29})$ (v) $(\frac{81}{58}, \frac{226}{29})$

Find the relation between x and y if the points

28. $(x, y), ((-8), (-5))$ and $((-7), (-2))$ are collinear

(i) $(-x - 13y - 73) = 0$

(ii) $(9x - 13y + 37) = 0$

(iii) $(-4x - 12y - 52) = 0$

(iv) $(13x - y - 71) = 0$

(v) $(3x - y + 19) = 0$

29. Which of the following sets of points are collinear?

(i) $((-4), 7), ((-2), 8), (8, 2)$

(ii) $(7, (-6)), ((-8), 0), (5, (-4))$

(iii) $(4, (-6)), (5, 0), ((-3), (-6))$

(iv) $((-6), (-6)), ((-7), (-5)), (7, 4)$

(v) $(2, (-7)), ((-4), 7), ((-2), \frac{7}{3})$

Find the relation between x and y such that the point P (x, y)

30. is equidistant from points $((-4), 1)$ and $((-8), 2)$

(i) $(\quad) = 0$

$$-7x - 8y - 22 =$$

$$(ii) \quad (-8x + 2y - 51) = 0$$

$$(iii) \quad (-7x - 6y - 22) = 0$$

$$(iv) \quad (-9x + 2y - 51) = 0$$

$$(v) \quad (-8x + 5y - 51) = 0$$

Assignment Key

- 1) (i)
- 2) (v)
- 3) (ii)
- 4) (i)
- 5) (iii)
- 6) (iii)
- 7) (ii)
- 8) (iii)
- 9) (iii)
- 10) (iv)
- 11) (v)
- 12) (i)
- 13) (iv)
- 14) (iii)
- 15) (ii)
- 16) (i)
- 17) (iii)
- 18) (iv)
- 19) (ii)
- 20) (ii)
- 21) (iii)
- 22) (v)
- 23) (i)
- 24) (i)
- 25) (iv)
- 26) (i)
- 27) (ii)
- 28) (v)
- 29) (v)
- 30) (ii)