

JEE MAIN STRAIGHT LINES — COORDINATE GEOMETRY BASICS: SECTION FORMULA, AREA, CENTRES OF A TRIANGLE — PYQS

Max. Marks: 32
Questions: 8

Section A (MCQ) — 7 questions

- Q.1** In an equilateral triangle PQR, let the vertex P be at (3, 5) and the side QR be along the line $x + y = 4$. If the orthocentre of the triangle PQR is (α, β) , then $9(\alpha + \beta)$ is equal to:

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) 16 (2) 27 (3) 36 (4) 48

 Scan or tap for the full solution 

- Q.2** Let the vertex A of a triangle ABC be (1, 2), and the mid-point of the side AB be (5, -1). If the centroid of this triangle is (3, 4) and its circumcenter is (α, β) , then $21(\alpha + \beta)$ is equal to :

[JEE Main 2026 (Online) 4th April Morning Shift]

- (1) 309 (2) 403 (3) 497 (4) 524

 Scan or tap for the full solution 

- Q.3** Let the mid points of the sides of a triangle ABC be $\left(\frac{5}{2}, 7\right)$, $\left(\frac{5}{2}, 3\right)$ and (4, 5). If its incentre is (h, k), then $3h + k$ is equal to :

[JEE Main 2026 (Online) 2nd April Morning Shift]

- (1) 11 (2) 12 (3) 13 (4) 14

 Scan or tap for the full solution 

- Q.4** Let ABC be an equilateral triangle with orthocenter at the origin and the side BC on the line $x + 2\sqrt{2}y = 4$. If the co-ordinates of the vertex A are (α, β) , then the greatest integer less than or equal to $|\alpha + \sqrt{2}\beta|$ is

[JEE Main 2026 (Online) 28th January Morning Shift]

- (1) 5 (2) 4 (3) 2 (4) 3

 Scan or tap for the full solution 

- Q.5** Let ABC be the triangle such that the equations of lines AB and AC be $3y - x = 2$ and $x + y = 2$, respectively, and the points B and C lie on x-axis. If P is the orthocentre of the triangle ABC, then the area of the triangle PBC is equal to

[JEE Main 2025 (Online) 7th April Morning Shift]

- (1) 8 (2) 4 (3) 10 (4) 6

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- Q.6** If the orthocenter of the triangle formed by the lines $y = x + 1$, $y = 4x - 8$ and $y = mx + c$ is at (3, -1), then $m - c$ is :

[JEE Main 2025 (Online) 7th April Evening Shift]

- (1) 0 (2) 2 (3) -2 (4) 4

 Scan or tap for the full solution 

- Q.7** Let the three sides of a triangle lie on the lines $4x - 7y + 10 = 0$, $x + y = 5$ and $7x + 4y = 15$. Then the distance of its orthocentre from the orthocentre of the triangle formed by the lines $x = 0$, $y = 0$ and $x + y = 1$ is

[JEE Main 2025 (Online) 4th April Morning Shift]

- (1) $\sqrt{20}$ (2) 20 (3) $\sqrt{5}$ (4) 5

 Scan or tap for the full solution 

Section B (Numerical) — 1 question

- Q.8** Let A(4, -2), B(1, 1) and C(9, -3) be the vertices of a triangle ABC. Then the maximum area of the parallelogram AFDE, formed with vertices D, E and F on the sides BC, CA and AB of the triangle ABC respectively, is _____.

[JEE Main 2025 (Online) 2nd April Evening Shift]

 Scan or tap for the full solution 

ANSWER KEY

Section A (MCQ) — 7 questions

Ques.	1	2	3	4	5	6	7			
Ans.	4	3	3	2	4	1	3			

Section B (Numerical) — 1 question

Ques.	8									
Ans.	3									