# MATHS

# BOOKS - UNITED BOOK HOUSE

# CO-ORDINATE GEOMETRY

## Exercise

**1.** The points (1, 3).and (5,1) are two-opposite vertices of a rectangle. The other two vertices

lie on the line $y = 2x + c$. Find $c$ and the remaining vertices

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**2.** The end points P and Q of a rod PQ having length 8 unit slide along the lines $y = 2$ and $x = 4$ respectively. Find the equation of the locus of the mid point of the rod.

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**3.** A line 4x + y = 1 passes through the point A (2,-7) meets the line BC whose equation is 3x-4y + 1 =0,at the point B. If AB = AC, find the equation of AC.

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**4.** Find the locus of middle points of chords of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ which subtend right angles at its centre.

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**5.** A variable straight,line of slope of 4 intersects the hyperbola xy = 1 at two points. Find the locus of the point which divides the line segment between these two points in the ratio 1 : 2.

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**6.** An equilateral triangle is inscribed in the parabola $y^2 = 4ax$, where one vertex is at the

vertex of the parabola. Find the length of the side of the triangle.

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**7.** The co-ordinates of the points P,Q,R and S are (1, 1, 1),(-2,4, 1),(- 1, 5, 5) and (2, 2, 5). Prove that PQRS is a square.

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**8.** Show that the plane ax + by + cz + d = 0 divides, the line segment joining the points $(x_1, y_1, z_1)$ and $(x_2, y_2, z_2)$ in the- ratio $-\frac{ax_1 + by_1 + cz_1 + d}{ax_2 + by_2 + cz_2 + d}$.

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**9.** For all values of a and b, show that the circle (x - 2) (x - 2 + a) + (y + 3) (y +3 + b) = 36 bisectsthe circumference of the circle. $(x-2)^2 + (y+3)^2 = 36$.

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**10.** If the Verticesof a triangle are $P\left(at_1, \frac{a}{t_1}\right)$, $Q\left(at_2, \frac{a}{t_2}\right)$ and $R\left(at_3, \frac{a}{t_3}\right)$ Show that the orthocentre of the triagle lies on $xy = a^2$.

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