# Coordinate Geometry

## Question Paper 8

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|---|---|
| **Level** | International A Level |
| **Subject** | Maths |
| **Exam Board** | CIE |
| **Topic** | Coordinate Geometry |
| **Sub Topic** | |
| **Booklet** | Question Paper 8 |

**Time Allowed:** **70 minutes**

**Score:** **/58**

**Percentage:** **/100**

**Grade Boundaries:**

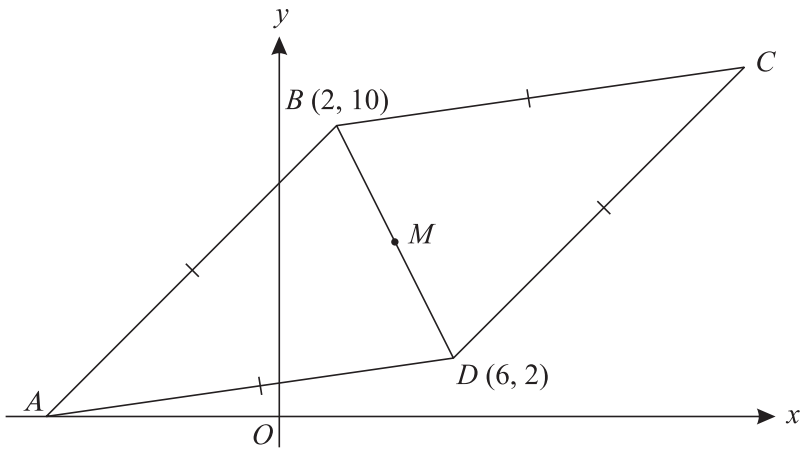
| A* | A | B | C | D | E | U |
|---|---|---|---|---|---|---|
| >85% | '77.5% | 70% | 62.5% | 57.5% | 45% | <45% |

**1** Three points have coordinates $A\,(2,\ 6)$, $B\,(8,\ 10)$ and $C\,(6,\ 0)$. The perpendicular bisector of $AB$ meets the line $BC$ at $D$. Find

**(i)** the equation of the perpendicular bisector of $AB$ in the form $ax + by = c$, [4]

**(ii)** the coordinates of $D$. [4]

**2**




The diagram shows a rhombus $ABCD$. The points $B$ and $D$ have coordinates (2, 10) and (6, 2) respectively, and $A$ lies on the $x$-axis. The mid-point of $BD$ is $M$. Find, by calculation, the coordinates of each of $M$, $A$ and $C$. [6]

**3** The equation of a curve is $y = x^2 - 4x + 7$ and the equation of a line is $y + 3x = 9$. The curve and the line intersect at the points $A$ and $B$.

**(i)** The mid-point of $AB$ is $M$. Show that the coordinates of $M$ are $\left(\frac{1}{2},\ 7\frac{1}{2}\right)$. [4]

**(ii)** Find the coordinates of the point $Q$ on the curve at which the tangent is parallel to the line $y + 3x = 9$. [3]

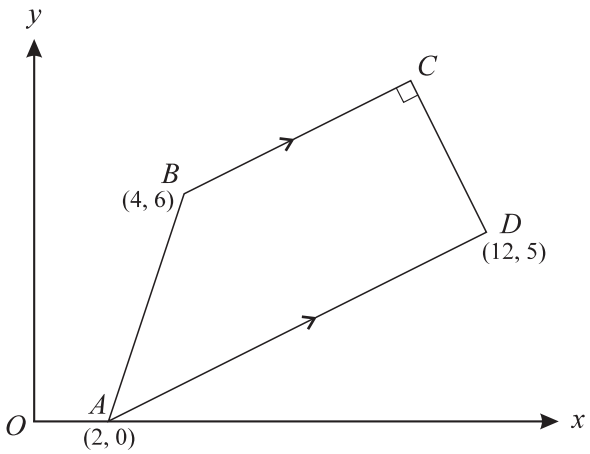
**(iii)** Find the distance $MQ$. [1]

**4** The curve $y = 9 - \frac{6}{x}$ and the line $y + x = 8$ intersect at two points. Find

**(i)** the coordinates of the two points, [4]

**(ii)** the equation of the perpendicular bisector of the line joining the two points. [4]

**5**




The diagram shows a trapezium $ABCD$ in which $BC$ is parallel to $AD$ and angle $BCD = 90°$. The coordinates of $A$, $B$ and $D$ are (2, 0), (4, 6) and (12, 5) respectively.

**(i)** Find the equations of $BC$ and $CD$. [5]

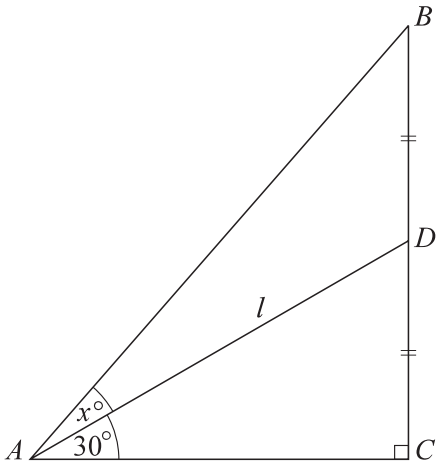
**(ii)** Calculate the coordinates of $C$. [2]

**6** The gradient at any point $(x, y)$ on a curve is $\sqrt{(1 + 2x)}$. The curve passes through the point (4, 11). Find

**(i)** the equation of the curve, [4]

**(ii)** the point at which the curve intersects the $y$-axis. [2]

**7**

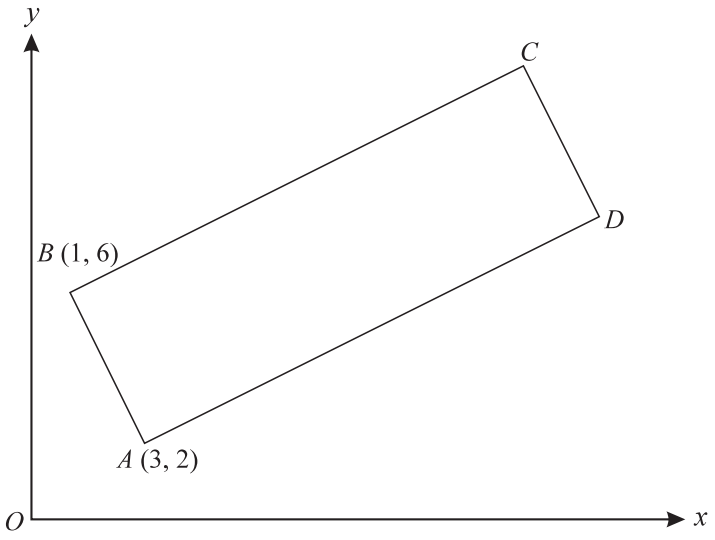



In the diagram, triangle $ABC$ is right-angled and $D$ is the mid-point of $BC$. Angle $DAC = 30^\circ$ and angle $BAD = x^\circ$. Denoting the length of $AD$ by $l$,

**(i)** express each of $AC$ and $BC$ exactly in terms of $l$, and show that $AB = \frac{1}{2}l\sqrt{7}$, [4]

**(ii)** show that $x = \tan^{-1}\left(\frac{2}{\sqrt{3}}\right) - 30$. [2]

**8**




The diagram shows a rectangle $ABCD$, where $A$ is (3, 2) and $B$ is (1, 6).

**(i)** Find the equation of $BC$. [4]

Given that the equation of $AC$ is $y = x - 1$, find

**(ii)** the coordinates of $C$, [2]

**(iii)** the perimeter of the rectangle $ABCD$. [3]