

# Coordinate Geometry: Lines

## Question Paper 2

Level	A Level
Subject	Maths
Exam Board	OCR
Topic	Coordinate Geometry & Graphs
Sub Topic	Coordinate Geometry: Lines
Booklet	Question Paper 2

**Time Allowed:** 55 minutes

**Score:** /46

**Percentage:** /100

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- 7 The points  $A$  and  $B$  have coordinates  $(4, -2)$  and  $(10, 6)$  respectively.  $C$  is the mid-point of  $AB$ . Find
- (i) the coordinates of  $C$ , [2]
  - (ii) the length of  $AC$ , [2]
  - (iii) the equation of the circle that has  $AB$  as a diameter, [3]
  - (iv) the equation of the tangent to the circle in part (iii) at the point  $A$ , giving your answer in the form  $ax + by = c$ . [5]

- 2 (i) Find the gradient of the line  $l_1$  which has equation  $4x - 3y + 5 = 0$ . [1]
- (ii) Find an equation of the line  $l_2$ , which passes through the point  $(1, 2)$  and which is perpendicular to the line  $l_1$ , giving your answer in the form  $ax + by + c = 0$ . [4]

The line  $l_1$  crosses the  $x$ -axis at  $P$  and the line  $l_2$  crosses the  $y$ -axis at  $Q$ .

- (iii) Find the coordinates of the mid-point of  $PQ$ . [3]
- (iv) Calculate the length of  $PQ$ , giving your answer in the form  $\frac{\sqrt{a}}{b}$ , where  $a$  and  $b$  are integers. [3]

- 3 (i) The line joining the points  $(-2, 7)$  and  $(-4, p)$  has gradient 4. Find the value of  $p$ . [3]
- (ii) The line segment joining the points  $(-2, 7)$  and  $(6, q)$  has mid-point  $(m, 5)$ . Find  $m$  and  $q$ . [3]
- (iii) The line segment joining the points  $(-2, 7)$  and  $(d, 3)$  has length  $2\sqrt{13}$ . Find the two possible values of  $d$ . [4]

- 4 The line  $l$  has gradient  $-2$  and passes through the point  $A(3, 5)$ .  $B$  is a point on the line such that the distance  $AB$  is  $6\sqrt{5}$ . Find the coordinates of each of the possible points  $B$ . [6]

- 5 The points  $A$  and  $B$  have coordinates  $(6, 1)$  and  $(-2, 7)$  respectively.
- (i) Find the length of  $AB$ . [2]
  - (ii) Find the gradient of the line  $AB$ . [2]
  - (iii) Determine whether the line  $4x - 3y - 10 = 0$  is perpendicular to  $AB$ . [3]