



IGCSE · Cambridge (CIE) · Further Maths

🕒 47 mins    ❓ 7 questions

Exam Questions

# Straight-Line Graphs

Linear Graphs / Parallel & Perpendicular Lines

Medium (2 questions)	/8
Hard (2 questions)	/15
Very Hard (3 questions)	/24
<b>Total Marks</b>	<b>/47</b>

# Medium Questions

- 1 Variables  $x$  and  $y$  are such that, when  $\sqrt[4]{y}$  is plotted against  $\frac{1}{x}$ , a straight line graph passing through the points  $(0.5, 9)$  and  $(3, 34)$  is obtained. Find  $y$  as a function of  $x$ .

(4 marks)

- 2 **Solutions to this question by accurate drawing will not be accepted.**

Find the equation of the perpendicular bisector of the line joining the points  $(4, -7)$  and  $(-8, 9)$ .

(4 marks)

# Hard Questions

- 1 (a) Solutions by accurate drawing will not be accepted.** The points  $A$  and  $B$  have coordinates  $(-2, 4)$  and  $(6, 10)$  respectively.

Find the equation of the perpendicular bisector of the line  $AB$ , giving your answer in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers.

**(4 marks)**

- (b)** The point  $C$  has coordinates  $(5, p)$  and lies on the perpendicular bisector of  $AB$ . Find the value of  $p$ .

**(1 mark)**

- (c)** It is given that the line  $AB$  bisects the line  $CD$ . Find the coordinates of  $D$ .

**(2 marks)**

- 2 (a)** Find the equation of the perpendicular bisector of the line joining the points (12, 1) and (4, 3), giving your answer in the form  $y = mx + c$ .

**(5 marks)**

- (b)** The perpendicular bisector cuts the axes at points  $A$  and  $B$ . Find the length of  $AB$ .

**(3 marks)**

# Very Hard Questions

- 1 (a) **Solutions to this question by accurate drawing will not be accepted.** The points  $A$  and  $B$  are  $(4, 3)$  and  $(12, -7)$  respectively.

Find the equation of the line  $L$ , the perpendicular bisector of the line  $AB$ .

(4 marks)

- (b) The line parallel to  $AB$  which passes through the point  $(5, 12)$  intersects  $L$  at the point  $C$ . Find the coordinates of  $C$ .

(4 marks)

- 2 The curves  $y = x^2$  and  $y^2 = 27x$  intersect at  $O(0, 0)$  and at the point  $A$ . Find the equation of the perpendicular bisector of the line  $OA$ .

**(8 marks)**

**3 (a)** The line  $y = 5x + 6$  meets the curve  $xy = 8$  at the points  $A$  and  $B$ .

Find the coordinates of  $A$  and of  $B$ .

**(3 marks)**

**(b)** Find the coordinates of the point where the perpendicular bisector of the line  $AB$  meets the line  $y = x$ .

**(5 marks)**