Chapter 7 Straight-line graph

Part 1

0606/22/F/M/19

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

   The points $A(3, 2)$, $B(7, -4)$, $C(2, -3)$ and $D(k, 3)$ are such that CD is perpendicular to AB. Find the equation of the perpendicular bisector of CD.

   [6]

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

The points A and B have coordinates $(p, 3)$ and $(1, 4)$ respectively and the line L has equation $3x + y = 2$.

(i) Given that the gradient of AB is $\frac{1}{3}$, find the value of p.

[2]

(ii) Show that L is the perpendicular bisector of AB.

[3]

(iii) Given that $C(q, -10)$ lies on L, find the value of q.

[1]

(iv) Find the area of triangle ABC.

[2]

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3. The points A, B and C have coordinates (4, 7), (-3, 9) and (6, 4) respectively.

   (i) Find the equation of the line, L, that is parallel to the line AB and passes through C. Give your answer in the form $ax + by = c$, where a, b and c are integers.

   [3]

   (ii) The line L meets the x-axis at the point D and the y-axis at the point E. Find the length of DE.

   [2]

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4. **Do not use a calculator in this question.**

   The curve $xy = 11x + 5$ cuts the line $y = x + 10$ at the points *A* and *B*. The midpoint of *AB* is the point *C*. Show that the point *C* lies on the line $x + y = 11$.

   [7]

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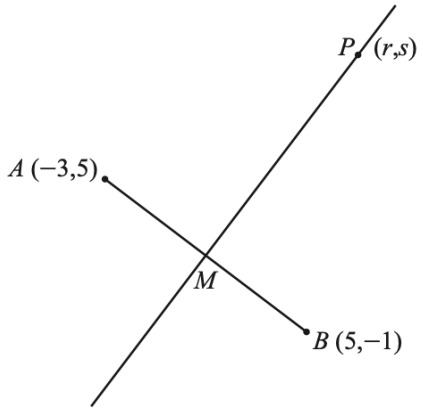
5.



The diagram shows the points A (–3, 5) and B (5, –1). The midpoint of AB is M and the line PM is perpendicular to AB. The point P has coordinates (r, s).

a. Find the equation of the line PM in the form $y = mx + c$, where m and c are exact constants.

[5]

b. Hence find an expression for s in terms of r.

[1]

c. Given that the length of PM is 10 units, find the value of r and of s.

[5]