

# Straight lines and linear models

3 questions · 19 marks

Answer all questions. The marks available are shown against each part. Every question is taken unaltered from a past paper; the source is noted beneath it. Some questions are taken from higher level papers, where they examine the same standard level content.

1. [Maximum mark: 5] 5 marks

Point P has coordinates  $(-3, 2)$ , and point Q has coordinates  $(15, -8)$ . Point M is the midpoint of [PQ].

(a) Find the coordinates of M. [2]

Line  $L$  is perpendicular to [PQ] and passes through M.

(b) Find the gradient of  $L$ . [2]

(c) Hence, write down the equation of  $L$ . [1]

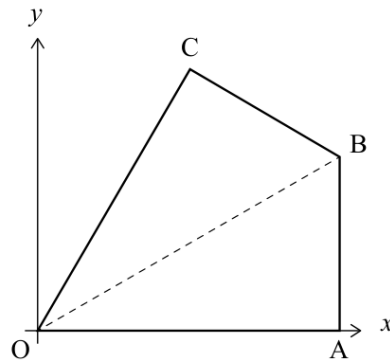
IB 2223 – 7109 Maths AA · May 2023 Paper 1 TZ1 SL, Question 1

2.

[Maximum mark: 7]

7 marks

Quadrilateral OABC is shown on the following set of axes.



OABC is symmetrical about  $[OB]$ .

A has coordinates  $(6, 0)$  and C has coordinates  $(3, 3\sqrt{3})$ .

- (a) (i) Write down the coordinates of the midpoint of  $[AC]$ .
- (ii) Hence or otherwise, find the equation of the line passing through the points O and B. [4]
- (b) Given that  $[OA]$  is perpendicular to  $[AB]$ , find the area of the quadrilateral OABC. [3]

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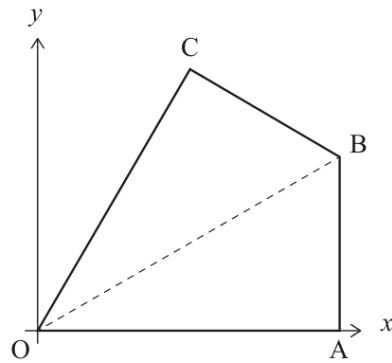
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3.

7 marks

[Maximum mark: 7]

Quadrilateral OABC is shown on the following set of axes.



OABC is symmetrical about  $[OB]$ .

A has coordinates  $(6, 0)$  and C has coordinates  $(3, 3\sqrt{3})$ .

- (a) (i) Write down the coordinates of the midpoint of  $[AC]$ .
- (ii) Hence or otherwise, find the equation of the line passing through the points O and B. [4]
- (b) Given that  $[OA]$  is perpendicular to  $[AB]$ , find the area of the quadrilateral OABC. [3]

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