Further Pure Maths: Rectangular Cartesian Coordinates: Test Pack

Total Marks

EDEXCEL 4PM1 · Calculator allowed · about 20 minutes

Name: _____ Date: ____ / ____ / _____

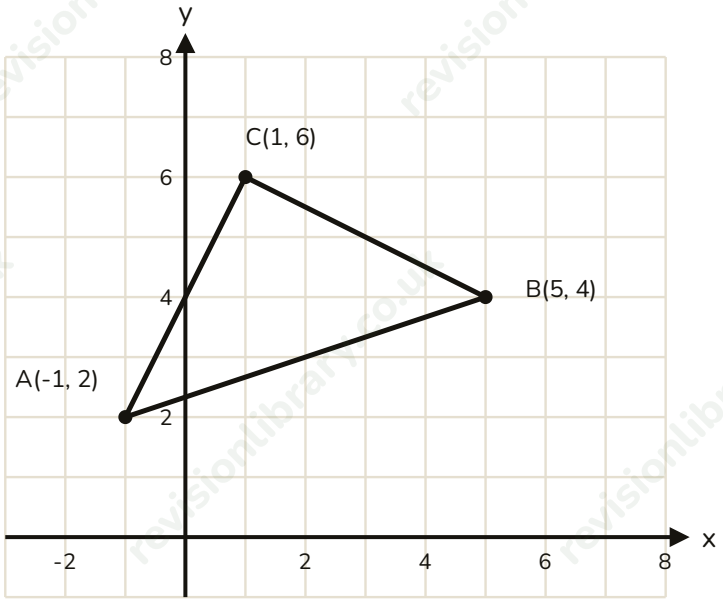
Show your working. Give exact answers unless stated otherwise. Coordinates use the same unit on both axes.

1 Find the distance between A(-3, 2) and B(5, 8).

(Total for Question 1 is 2 marks)

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2 The points A(-1, 2), B(5, 4) and C(1, 6) form a triangle. Use coordinate methods to show that the angle at C is a right angle, and find the area of the triangle.



(Total for Question 2 is 5 marks)

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3 P has coordinates (t, 2*t + 1). P is equidistant from A(-1, 0) and B(5, 4). Find the coordinates of P.

(Total for Question 3 is 4 marks)

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4 A point P lies on the segment from A(-4, 7) to B(11, -3), with AP:PB = 2:3. Find P.

(Total for Question 4 is 3 marks)

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Mark scheme · Further Pure Maths: Rectangular Cartesian Coordinates: Test Pack

Question 1

Use $\sqrt{(5 - (-3))^2 + (8 - 2)^2}$.	**M1**
10 units; accept an equivalent exact form. Accept any valid method for the corresponding marks.	**A1**

Answer: 10

Question 2

Calculate gradients CA = 2 and CB = -1/2, or calculate squared lengths CA = 20, CB = 20, AB = 40.	**M1**
Explain that the gradient product is -1, or that $CA^2 + CB^2 = AB^2$, establishing the right angle at C.	**A1**
Obtain both perpendicular side lengths as $\sqrt{20}$, or identify base and perpendicular height by another valid coordinate method.	**M1**
Use area = (1/2)*CA*CB, or an equivalent valid area method.	**M1**
Area = 10 square units. Accept any valid method for the corresponding marks.	**A1**

Answer: Right angle at C; area = 10

Question 3

Equate the squared distances PA and PB using the printed coordinates.	**M1**
Expand and cancel quadratic terms to obtain 28*t = 32 or an equivalent linear equation.	**M1**
t = 8/7.	**A1**
P = (8/7, 23/7); accept equivalent exact forms and any valid method for the corresponding marks.	**A1**

Answer: (8/7, 23/7)

Question 4

Use a fraction 2/(2 + 3) of the displacement from A to B, or equivalent weighted coordinates.	**M1**
x = -4 + (2/5)*15 = 2.	**A1**
y = 7 + (2/5)*(-10) = 3, giving P = (2, 3). Accept any valid method for the corresponding marks.	**A1**

Answer: (2, 3)

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