3.1 Coordinate Geometry: Straight Lines: 1-hour Pack

AQA 8365 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Find the midpoint of the points P(-3, 5) and Q(7, 1).

(Total for Question 1 is 1 mark)

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2 The points A(1, 5), B(6, k) and C(0, -3) lie on a straight line. Find the value of k.

(Total for Question 2 is 3 marks)

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3 A is the point (-1, 2) and B is the point (2, -3). Find the length of AB, giving your answer as a simplified surd, and find the midpoint of AB.

(Total for Question 3 is 4 marks)

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4 A is the point (2, -6) and B is the point (6, 6). Find the equation of the perpendicular bisector of AB, in the form $y = mx + c$.

(Total for Question 4 is 5 marks)

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5 The line $x + 3y = 6$ crosses the x-axis at A and the y-axis at B, and O is the origin. Find the area of triangle OAB.

(Total for Question 5 is 4 marks)

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6 A straight line passes through A(3, -3) and B(-1, -6). Find the equation of the line in the form $y = mx + c$.

(Total for Question 6 is 4 marks)

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7 Find the coordinates of the point where the lines $y = -3x + 15$ and $2x + y = 12$ meet.

(Total for Question 7 is 4 marks)

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8 A line has equation $2x + 6y = -1$. Find the equation of the line that is perpendicular to it and passes through (-4, 5). Give your answer in the form $ax + by = c$, where a, b and c are integers.

(Total for Question 8 is 3 marks)

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9 A is the point (-3, 3) and B is the point (-4, -4). Find the length of AB, giving your answer as a simplified surd, and find the midpoint of AB.

(Total for Question 9 is 4 marks)

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10 A is the point (-6, -1) and B is the point (2, 2). Find the equation of the perpendicular bisector of AB, in the form $y = mx + c$.

(Total for Question 10 is 5 marks)

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11 The points A(7, 5), B(4, k) and C(6, 1) lie on a straight line. Find the value of k.

(Total for Question 11 is 3 marks)

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12 A straight line passes through A(4, 6) and B(9, 5). Find the equation of the line in the form $y = mx + c$.

(Total for Question 12 is 4 marks)

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13 The line $8x + 3y = 96$ crosses the x-axis at A and the y-axis at B, and O is the origin. Find the area of triangle OAB.

(Total for Question 13 is 4 marks)

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14 Find the equation of the straight line passing through the points P(-2, 3) and Q(4, -9), giving your answer in the form $y = mx + c$.

(a) Find the equation of the line PQ. **(4)**

(Total for Question 14 is 4 marks)

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Mark scheme · 3.1 Coordinate Geometry: Straight Lines: 1-hour Pack

Question 1

(2, 3) cao	**B1**

Answer: (2, 3)

Question 2

gradient AC = 8	**M1**
gradient AB = gradient AC, or equation of AC found	**M1**
k = 45 cao	**A1**

Answer: k = 45

Question 3

$(3)^2 + (-5)^2$	**M1**
AB = $\sqrt{34}$	**A1**
midpoint method	**M1**
(1/2, -1/2)	**A1**

Answer: AB = $\sqrt{34}$, midpoint (1/2, -1/2)

Question 4

midpoint (4, 0)	**M1**
gradient of AB = 3	**M1**
perpendicular gradient -1/3	**M1**
substitutes the midpoint to find c	**M1**
y = -x/3 + 4/3 cao	**A1**

Answer: y = -x/3 + 4/3

Question 5

A(6, 0)	**M1**
B(0, 2)	**M1**
1/2 x base x height	**M1**
6 square units cao	**A1**

Answer: 6

Question 6

gradient = (-6 + 3)/(-1 - 3)	**M1**
m = 3/4	**A1**
substitutes a point to find c	**M1**
y = 3x/4 - 21/4 cao	**A1**

Answer: y = 3x/4 - 21/4

Question 7

substitutes y into the second equation	**M1**
collects terms and solves for x	**M1**
x = 3	**A1**
(3, 6) cao	**A1**

Answer: (3, 6)

Question 8

rearranges or finds the gradient of the given line	**M1**
perpendicular direction: coefficients swapped with one sign changed	**M1**
3x - y = -17 oe cao	**A1**

Answer: 3x - y = -17

Question 9

$(-1)^2 + (-7)^2$	**M1**
AB = $5\sqrt{2}$	**A1**
midpoint method	**M1**
(-7/2, -1/2)	**A1**

Answer: AB = $5\sqrt{2}$, midpoint (-7/2, -1/2)

Question 10

midpoint (-2, 1/2)	**M1**
gradient of AB = 3/8	**M1**
perpendicular gradient -8/3	**M1**
substitutes the midpoint to find c	**M1**
y = -8x/3 - 29/6 cao	**A1**

Answer: y = -8x/3 - 29/6

Question 11

gradient AC = 4	**M1**
gradient AB = gradient AC, or equation of AC found	**M1**
k = -7 cao	**A1**

Answer: k = -7

Question 12

gradient = (5 - 6)/(9 - 4)	**M1**
m = -1/5	**A1**
substitutes a point to find c	**M1**
y = -x/5 + 34/5 cao	**A1**

Answer: y = -x/5 + 34/5

Question 13

A(12, 0)	**M1**
B(0, 32)	**M1**
1/2 x base x height	**M1**
192 square units cao	**A1**

Answer: 192

Question 14

(a) gradient = (-9 - 3) / (4 - (-2)) oe	**M1**
(a) gradient = -2	**A1**
(a) y - 3 = -2(x + 2) oe	**M1**
(a) y = -2x - 1 cao	**A1**

(a) Answer: y = -2x - 1

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