FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

G11: Coordinate geometry

Solve geometric problems on coordinate axes

20 marks · 25 minutes · Non-calculator

1) A is $(2, 7)$ and B is $(8, -1)$. Find the midpoint of AB.

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[Question 1: 2 marks]

2) A is $(2, 7)$ and B is $(8, -1)$. Find the length of AB.

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[Question 2: 2 marks]

3) A is $(2, 7)$ and B is $(8, -1)$. Find the gradient of AB.

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[Question 3: 1 marks]

4) $ABCD$ is a parallelogram. A is $(1, 1)$, B is $(5, 2)$ and C is $(6, 5)$. Find the coordinates of D.

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[Question 4: 2 marks]

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5) A is $(2, 7)$ and B is $(8, -1)$. Find the equation of the perpendicular bisector of AB.

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[Question 5: 3 marks]

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6) A triangle has vertices $(0, 0)$, $(6, 0)$ and $(0, 4)$.

(a) Find its area.

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(1)

(b) Find its perimeter. Give your answer in the form $a + b\sqrt{13}$

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(2)

[Question 6: 3 marks]

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7) The point $(k, 5)$ lies on the line $y = 2x - 3$. Find k.

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[Question 7: 1 marks]

8) Find the point where the lines $y = 3x + 1$ and $y = -x + 9$ meet.

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[Question 8: 2 marks]

9) Find the points where the line $y = 3$ meets the circle $x^2 + y^2 = 25$

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[Question 9: 2 marks]

10) A triangle has vertices $(1, 1)$, $(4, 1)$ and $(1, 5)$. Explain why it is right-angled, and find the length of its longest side.

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[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$(5, 3)$	One coordinate correct (M1); A1.
2	10	$\sqrt{6^2 + 8^2}$ (M1); A1.
3	$-\frac{4}{3}$	B1.
4	$(2, 4)$	$A + C - B$ or vector method (M1); A1.
5	$y = \frac{3}{4}x - \frac{3}{4}$	Midpoint $(5, 3)$ (B1); gradient $\frac{3}{4}$ (B1); equation (B1, accept $4y = 3x - 3$).
6	(a) 12 (b) $10 + 2\sqrt{13}$	(a) B1. (b) Hypotenuse $\sqrt{52}$ (M1); A1.
7	4	B1.
8	$(2, 7)$	$3x + 1 = -x + 9$ (M1); A1.
9	$(4, 3)$ and $(-4, 3)$	$x^2 = 16$ (M1); A1.
10	5	Two sides lie along $y = 1$ and $x = 1$, which are perpendicular (B1); $\sqrt{9 + 16} = 5$ (B1).