FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

A8: Coordinates

Reason with coordinates in all four quadrants

20 marks · 25 minutes · Non-calculator

1) Show that the midpoint of $(-2, 5)$ and $(6, -1)$ is $(2, 2)$

[Question 1: 2 marks]

2) Ali says $(3, -2)$ is in the second quadrant. Explain why he is wrong.

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[Question 2: 1 marks]

3) Show that $(1, 1)$, $(4, 1)$ and $(4, 5)$ form a right-angled triangle and that its longest side is 5 units.

[Question 3: 3 marks]

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4) A is $(1, 2)$, B is $(5, 4)$ and C is $(3, 8)$. Is triangle ABC isosceles? Show your working.

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[Question 4: 3 marks]

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5) Show that $(2, 3)$, $(5, 7)$ and $(8, 11)$ lie on a straight line.

[Question 5: 2 marks]

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6) $(0,0)$, $(3,1)$ and $(2,4)$ are three corners of a square. Show that the fourth corner is $(-1,3)$

[Question 6: 2 marks]

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7) Explain why any point $(a,0)$ lies on the x-axis.

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[Question 7: 1 marks]

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8) $M(1,1)$ is the midpoint of AB and A is $(-3,4)$. Kim says B is $(-1,2.5)$. Explain her mistake and find B.

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[Question 8: 2 marks]

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9) Show that the distance between $(-1,-2)$ and $(5,6)$ is 10

[Question 9: 2 marks]

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10) Explain how you can tell which quadrant the point $(-4, -7)$ is in.

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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	Shown	$\frac{-2+6}{2}, \frac{5-1}{2}$ (M1); C1.
2	Fourth quadrant	Positive x and negative y (C1).
3	Shown	Horizontal and vertical sides, so a right angle (C1); $\sqrt{9+16}$ (M1); 5 (C1).
4	Yes	$AB = \sqrt{20}$ (M1); $BC = \sqrt{20}$ (M1); two equal sides (C1).
5	Shown	Gradients both $\frac{4}{3}$ (M1); C1.
6	Shown	Vector $(3, 1)$ and $(-1, 3)$ used (M1); C1.
7	Explanation	Its y-coordinate is 0 (C1).
8	$(5, -2)$	She found the midpoint of A and M (C1); B1.
9	Shown	$\sqrt{36+64}$ (M1); C1.
10	Third quadrant	Both coordinates negative (C1); left and down from the origin (C1).