FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

A8: Coordinates

Solve geometric problems with coordinates

20 marks · 25 minutes · Non-calculator

1) *ABCD* is a square. *A* is (1, 2) and *B* is (5, 2), and *C* and *D* have positive *y*-coordinates greater than 2. Find *D* and the area of the square.

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[Question 1: 3 marks]

2) $M(3,-1)$ is the midpoint of AB. A is $(-2,4)$. Find B and the exact length of AB.

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[Question 2: 3 marks]

3) $ABCD$ is a parallelogram. A is $(0,0)$, B is $(5,1)$ and D is $(2,4)$. Find C.

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[Question 3: 2 marks]

4) P lies on the x-axis and is the same distance from $(1,4)$ and $(7,2)$. Find P.

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[Question 4: 4 marks]

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5) A triangle has vertices $(0,0)$, $(8,0)$ and $(a,6)$. It is isosceles with the two equal sides meeting at $(a,6)$. Find a and the area of the triangle.

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[Question 5: 3 marks]

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6) $A(2,3)$, $B(6,3)$ and $C(6,y)$ form a right-angled triangle of area 10 square units. Find the two possible values of y.

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[Question 6: 3 marks]

7) A rectangle has three vertices at $(-1,1)$, $(3,1)$ and $(3,4)$. Find its perimeter.

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[Question 7: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$D(1,6)$; 16	Side 4 (P1); $D = (1,6)$ (A1); area 16 (A1).
2	$B(8,-6)$; $10\sqrt{2}$	B found (P1, A1); $\sqrt{100+100}$ (A1).
3	$(7,5)$	$C = B + D - A$ (P1); A1.
4	$(3,0)$	$(x-1)^2 + 16 = (x-7)^2 + 4$ (P1, P1); $12x = 36$ (P1); A1.
5	4; 24	Apex above midpoint of base (P1); $a = 4$ (A1); $\frac{1}{2} \times 8 \times 6$ (A1).
6	8 or -2	$\frac{1}{2} \times 4 \times \lvert y-3 \rvert = 10$ (P1); $\lvert y-3 \rvert = 5$ (P1); A1.
7	14	Sides 4 and 3 (P1); A1.