

Coordinates & Graphs: Hard Practice Paper 7 Answers

Q#	Answer	Explanation
1	D	AB is 8 units long, and splitting it so that one part is three times the other divides it into 4 equal pieces of 2 units. C sits three pieces along from A, which is $3 \times 2 = 6$ units, so it is at $1 + 6 = 7$ across. The up value stays 3, giving (7, 3).
2	C	Draw a right-angled triangle under the line. It goes 3 across, from -2 to 1, and 4 up, from 1 to 5. A triangle with short sides of 3 and 4 has a longest side of 5, so the line is 5 units long.
3	B	The point sits 2 squares directly below the centre of rotation. A quarter turn clockwise swings anything below the centre round to the left of it, keeping the same distance. So the image is 2 squares to the left of (3, 4), which is (1, 4).
4	C	The base runs from 1 to 9, so it is 8 units long. The area is half the base times the height, and half of 8 is 4, so the height must be $20 \div 4 = 5$ squares. The base sits at 2, so the top corner is at $2 + 5 = 7$.
5	A	The bottom side is 6 units and the upright side is 8 units. Those two meet at a right angle at (6, 0), and a right-angled triangle with sides 6 and 8 has a longest side of 10. The perimeter is $6 + 8 + 10 = 24$ units.
6	D	The side from (1, 1) to (5, 1) is flat. For the corner at (5, 1) to be a right angle, the other side leaving that corner must be upright, so it has to keep the same across value of 5. Only (5, 4) does that.
7	E	The two given points are one above the other, 6 apart, so anything the same distance from both must sit level with the middle of them, at 3 up. Of the five points only (5, 3) has an up value of 3.
8	D	A reflection turns a shape over but does not change its size, so the area is still 15 squares. Multiplying every coordinate by 2 makes the shape twice as wide and twice as tall, so the area becomes $2 \times 2 = 4$ times bigger: $15 \times 4 = 60$ squares.

9	C	In a parallelogram opposite sides are equal and parallel. Going from (5, 2) to (7, 5) is 2 across and 3 up, so the same move from (1, 2) gives $1 + 2 = 3$ across and $2 + 3 = 5$ up. The fourth vertex is (3, 5), which is indeed to the left of (7, 5).
10	C	The line joins two opposite corners, so it is a diagonal of the rectangle. A diagonal always cuts a rectangle into two triangles of exactly the same size, so one half lies below it.
11	C	The rectangle is 6 across and 4 up. Its perimeter is $6 + 4 + 6 + 4 = 20$ units and its area is $6 \times 4 = 24$ squares. The area is the larger number, by $24 - 20 = 4$.
12	D	From (1, 4) to (3, 10) the line moves 2 across and climbs $10 - 4 = 6$. Going another 2 across must climb another 6, so k is $10 + 6 = 16$.
13	B	The centre of the square starts at (4, 4), so moving it to the origin means going 4 left and 4 down. Applying that same move to the corner (2, 2) gives $2 - 4$, which is -2, in both directions, so it ends up at (-2, -2).
14	C	The shape is a trapezium with two flat sides. The bottom runs from 1 to 8, so it is 7 squares, the top runs from 3 to 6, so it is 3 squares, and it stands 4 squares high. Add the two flat sides, halve, and multiply by the height: $7 + 3 = 10$, then $10 \div 2 = 5$, and $5 \times 4 = 20$ squares.
15	D	The known side runs from 1 to 7, so it is 6 units long, and the rectangle must therefore be $24 \div 6 = 4$ units tall. The other side can be built upwards, giving $2 + 4 = 6$, or downwards, giving $2 - 4$, which is -2. Both rectangles have an area of 24.