

Coordinates & Graphs: Hard Practice Paper 3 Answers

Q#	Answer	Explanation
1	E	Reflecting in the line $y = x$ swaps the two coordinates over, because across and up trade places. So $(2, 5)$ becomes $(5, 2)$.
2	B	Corner K is at $(1, 7)$. A reflection in $y = x$ swaps the coordinates round, so the image is at $(7, 1)$.
3	C	A quarter turn clockwise takes a point that is 3 right and 1 up to a point 1 right and 3 down, because the across step becomes a step down. So $(3, 1)$ lands on $(1, -3)$.
4	D	A half turn about the origin sends every point to the opposite side of the origin, so both coordinates change sign. So $(-2, 4)$ becomes $(2, -4)$.
5	E	Turning anticlockwise about the origin swings a point that is 4 right and 2 up round to 2 left and 4 up. So $(4, 2)$ lands on $(-2, 4)$.
6	B	Only the sign of the x-coordinate has changed, and the height is untouched. That is exactly what a reflection in the y-axis does.
7	C	Both coordinates have changed sign, which puts the point directly opposite the origin and the same distance from it. That is a half turn, or 180 degree rotation, about the origin.
8	C	Reflecting in $y = x$ swaps the two coordinates, keeping their signs. So $(5, -2)$ becomes $(-2, 5)$.
9	E	The shape sits where both coordinates are positive. A half turn about the origin changes the sign of both coordinates of every corner, so the image sits where both are negative.
10	A	Across, 3 right then 5 left is 2 left overall. Up, 2 up then 6 down is 4 down overall. So the single move is 2 left and 4 down.
11	A	The first reflection changes the sign of the y-coordinate and the second changes it back, so the point returns to its starting place.

12	D	Everything turns around the centre of rotation, and only that centre stays still. Here the centre is the origin, which is $(0, 0)$.
13	A	The line $x = 2$ runs down the middle of the square, so each half folds exactly onto the other. The other transformations all move the square away from where it started.
14	D	The reflection sends $(2, 1)$ to $(-2, 1)$. Moving 3 down takes 1 to $1 - 3$, which is -2 , so the image of A is at $(-2, -2)$.
15	A	A reflection is a mirror image, so lengths and angles are unchanged and the image is exactly the same size. What changes is the position, since the coordinates of every point are swapped over.