Coordinates & Graphs: Hard Practice Paper 5 Answers

Q#	Answer	Explanation
1	C	Ben catches Anya where the two lines cross. That happens above 2 on the time axis, so it is 2 hours after Anya set off.
2	A	The lines cross level with 20 on the distance axis, so both had travelled 20 km from the start.
3	C	Ben starts at 1 hour and reaches 60 km at 4 hours, so he travels 60 km in 3 hours. His speed is 60 ÷ 3 = 20 km/h.
4	B	Anya covers 40 km in 4 hours, which is 40 ÷ 4 = 10 km/h, and Ben travels at 20 km/h. The difference is 20 − 10 = 10 km/h.
5	C	Average speed uses the total distance and the total time, rest included. That gives 45 ÷ 3 = 15 km/h.
6	D	The number of euros is 1.2 times the number of pounds. For £15 that is 15 × 1.2 = 18 euros, so the point is (15, 18).
7	B	When x = 3 the rule gives y = 12, and when x = 6 it gives y = 24. Since 24 is twice 12, doubling x doubles y, which happens whenever the line goes through the origin.
8	E	For a straight line the y values must go up by the same amount each time. Here they go up by 3, then 5, then 7, so the graph bends and is not a straight line.
9	D	The first centre is the midpoint of (1, 2) and (7, 8), which is (4, 5). The second is the midpoint of (3, 4) and (9, 10), which is (6, 7). Going from (4, 5) to (6, 7) is 2 right and 2 up.
10	E	The vase is the same width all the way up and the water arrives at a steady rate, so the depth grows by the same amount each second. Equal steps like that make a straight line that climbs.
11	E	Between the two points the line climbs 13 − 5 = 8 over 4 squares, so it rises 2 for every 1 across and the rule is y = 2x + 1. At x = 4 that gives 2 × 4 + 1 = 9, so (4, 9) is on the line.

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12	A	Cutting off the bottom of the scale stretches the part that is left, so a small rise fills a lot of the height and looks far more dramatic than it really is.
13	B	The path is the diagonal of a right-angled triangle 12 across and 5 up. Since 12 × 12 = 144 and 5 × 5 = 25, the square on the path is 144 + 25 = 169, and 13 × 13 = 169, so the path is 13 units.
14	A	Getting to the fifth point means taking the step four times. Across, 1 + 4 × 2 = 9, and up, 2 + 4 × 3 = 14, so the fifth point is (9, 14).
15	C	Every 20 minutes adds 30%, so after 60 minutes the phone is at 90%. The last 10% takes a third of another 20 minutes, which is about 7 minutes, giving roughly 67 minutes in total.

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