Area, Perimeter & Volume: Hard Practice Paper 8 Answers

Q#	Answer	Explanation
1	C	Cut the shape along the line 4 squares up. Below it is a rectangle 6 by 4, giving 6 × 4 = 24 squares, and above it is a rectangle 10 by 5, giving 10 × 5 = 50. The area is 24 + 50 = 74 square centimetres.
2	A	The large cube has a surface area of 6 × 36 = 216 square centimetres and the small one has 6 × 9 = 54, which comes to 270 altogether. Where they meet, the bottom of the small cube and a matching patch of the large cube are both hidden, and each is 9 square centimetres. So the answer is 270 − 18 = 252 square centimetres.
3	B	A length and a width together make half the perimeter, which is 46 ÷ 2 = 23 metres. Two numbers 3 apart adding to 23 are 10 and 13, so the lawn is 13 m by 10 m and its area is 13 × 10 = 130 square metres.
4	A	Doubling one measurement multiplies the area by 2 and halving the other divides it by 2, so the two changes cancel out. A 6 cm by 4 cm rectangle has an area of 24 square centimetres, and afterwards it is 12 cm by 2 cm, which is still 24.
5	C	Joining the two triangles along their longest sides makes a rectangle with the base and height of the triangles as its sides, so it measures 8 cm by 5 cm. Its perimeter is 8 + 5 + 8 + 5 = 26 centimetres.
6	C	The water is 120 × 1000 = 120000 cubic centimetres. It sits on a base measuring 80 × 50 = 4000 square centimetres, so its depth is 120000 ÷ 4000 = 30 centimetres. The 60 cm height of the tank is not needed.
7	C	Put the 5 cm edge upright. Along the 40 cm side there is room for 40 ÷ 10 = 4 boxes, along the 30 cm side for 30 ÷ 10 = 3, and up the 25 cm height for 25 ÷ 5 = 5. That gives 4 × 3 × 5 = 60 boxes.

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8	A	The rectangle has an area of 10 × 6 = 60 square centimetres. The triangle covers half of 10 × 4 = 40, which is 40 ÷ 2 = 20. Together they give 60 + 20 = 80 square centimetres.
9	C	The room covers 6 × 4.5 = 27 square metres, so the carpet costs 27 × 21 = 567 pounds. The fitting charge is added once, not for each square metre, giving 567 + 75 = 642 pounds.
10	D	One face has an area of 216 ÷ 6 = 36 square centimetres, so the edge is 6 cm because 6 × 6 = 36. The volume is 6 × 6 × 6 = 216 cubic centimetres. It is only a coincidence that this number matches the surface area.
11	C	The car park covers 40 × 25 = 1000 square metres. Ten per cent of that is 1000 ÷ 10 = 100 square metres, so thirty per cent is 100 × 3 = 300 square metres.
12	C	Count the squares along the eight sides in turn: 10, 5, 4, 3, 2, 3, 4 and 5. Adding them gives 10 + 5 + 4 + 3 + 2 + 3 + 4 + 5 = 36 centimetres. The notch cut into the top adds to the perimeter even though it takes area away.
13	C	Put both measurements into centimetres first. 1.2 m is 120 cm, so the area is 120 × 80 = 9600 square centimetres.
14	E	Multiply the three measurements for each box. They give 125, 128, 120, 120 and 108 cubic centimetres, so the 9 cm by 3 cm by 4 cm box holds the least.
15	C	The lawn has sides of 12 m, because 12 × 12 = 144. The fence runs right around it, a distance of 4 × 12 = 48 metres, so it costs 48 × 12 = 576 pounds.

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