Ratio & Proportion: Hard Practice Paper 7 Answers

Q#	Answer	Explanation
1	E	Take the class as 3 lots of boys and 4 lots of girls. After the change there are twice as many girls as boys, and working it through gives 6 lots minus 4 equal to 4 lots plus 2, so one lot is 3. That makes 9 boys and 12 girls, which is 9 + 12 = 21 pupils.
2	C	The first job takes 3 × 5 = 15 worker-days for 90 m, so one worker lays 90 ÷ 15 = 6 metres a day. Five workers lay 5 × 6 = 30 metres a day, so 300 m takes 300 ÷ 30 = 10 days.
3	B	A square of side 1 cm on the plan stands for a square of side 5 m, whose area is 5 × 5 = 25 square metres. So the real area is 12 × 25 = 300 square metres, not 12 × 5.
4	D	If A were 6 and B were 5, then two thirds of 6 is 4 and four fifths of 5 is also 4, so the two sides match. A is the larger of the two, which rules out 5 : 6.
5	B	For every 5 parts of flour there should be 2 of sugar, so the sugar should be two fifths of the flour. Two fifths of 300 is 300 ÷ 5 × 2 = 120 grams, but Cara has used 125 g. The other three all fit the ratio.
6	A	One hour 45 minutes is 1.75 hours, so the journey is 80 × 1.75 = 140 kilometres. At the slower speed it takes 140 ÷ 70 = 2 hours.
7	C	Setting A's share as one lot, B has 2 lots and C has 2 lots and £50. Taking the £50 aside leaves 500 − 50 = 450 pounds to split into 1 + 2 + 2 = 5 lots, so one lot is 450 ÷ 5 = 90. C receives 2 × 90 = 180 pounds plus the extra 50, which is 180 + 50 = 230.
8	A	Volumes go with the cube of the edge ratio, and since 2 × 2 × 2 = 8 and 3 × 3 × 3 = 27, the edges are in the ratio 2 : 3. Areas go with the square of that, and 2 × 2 = 4 against 3 × 3 = 9, giving 4 : 9.

myfreeschool

9	D	The blue counters are 60% and the red 40%, so the reds are short by 20% of the bag. The 20 counters added close that gap, so 20% of the bag is 20 counters and the whole bag was 5 × 20 = 100.
10	D	The line is straight through the origin, and 10 miles is 16 km, so one mile is 1.6 km. That makes 25 miles equal to 1.6 × 25 = 40 kilometres, read off halfway between the 20 and 30 mile points.
11	C	At Shop A, 100 g costs 3 ÷ 5 = 0.6 pounds. At Shop B three packs cost 2 × 2.40 = 4.8 pounds and give 3 × 400 = 1200 grams, so 100 g costs 4.80 ÷ 12 = 0.4 pounds. Shop B is cheaper by 0.60 − 0.40 = 0.2 pounds, which is 20p.
12	E	The batch is 2 + 5 = 7 equal parts, so one part is 35 ÷ 7 = 5 kilograms. The sand has 5 − 2 = 3 parts more than the cement, which is 3 × 5 = 15 kilograms.
13	A	Make the blue cars match in both ratios: 2 : 3 becomes 4 : 6, so red, blue and white are in the ratio 4 : 6 : 5. The 24 red cars are 4 parts, so one part is 24 ÷ 4 = 6, and the white cars are 5 × 6 = 30.
14	B	An hour holds 60 ÷ 2 = 30 lots of two minutes, so the snail travels 15 × 30 = 450 centimetres. That is 450 ÷ 100 = 4.5 metres.
15	E	The first half takes 6 × 4 = 24 worker-days, and the second half needs the same again. To do 24 worker-days of work in 2 days needs 24 ÷ 2 = 12 workers.

myfreeschool