# Ratio & Proportion: Hard Practice Paper 1 Answers

| Q# | Answer | Explanation |
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| 1 | B | Make B the same in both ratios. A : B = 2 : 3 = 8 : 12 and B : C = 4 : 5 = 12 : 15, so A : B : C = 8 : 12 : 15 and A : C = 8 : 15. |
| 2 | C | Let one part be n, so there are 5n red and 3n blue. The red does not change, so in the new ratio 5 : 4 one part is still n and the blue becomes 4n. Therefore 3n + 10 = 4n, giving n = 10, and the red counters number 5 × 10 = 50. |
| 3 | C | Let the numbers be 7n and 3n. Then 2(7n − 12) = 5(3n − 12), so 14n − 24 = 15n − 60 and n = 36. The smaller number is 3 × 36 = 108, and checking: 240 : 96 = 5 : 2. |
| 4 | D | The job takes 6 × 10 = 60 worker-days, so 4 workers take 60 ÷ 4 = 15 days. Fewer workers means more time, which is inverse proportion. |
| 5 | B | Each person needs 300 ÷ 4 = 75 g of flour, so 450 g is enough for 450 ÷ 75 = 6 people. |
| 6 | C | There are 3 + 4 + 5 = 12 parts, so one part is £480 ÷ 12 = £40. The difference is 5 − 3 = 2 parts, which is 2 × £40 = £80. |
| 7 | B | The real distance is 6.4 × 25 000 = 160 000 cm. Dividing by 100 000 to change to kilometres gives 1.6 km. |
| 8 | C | Let the parts be 4n boys and 5n girls. Then 4n + 3 = 5n, so n = 3. The number of girls is 5 × 3 = 15. |
| 9 | D | There are 5 + 3 = 8 parts, so one part is 4 ÷ 8 = 0.5 kg. The copper is 5 parts, which is 5 × 0.5 = 2.5 kg. |
| 10 | C | The train's speed is 240 ÷ 3 = 80 km/h and the car's is 150 ÷ 2.5 = 60 km/h, so the train is 80 − 60 = 20 km/h faster. |
| 11 | C | The difference is 5 − 2 = 3 parts, so 3 parts = £36 and one part = £12. The total is 7 parts, which is 7 × £12 = £84. |

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| 12 | B | One part is £270 ÷ 9 = £30, so the shares are £60, £90 and £120. After the gift they are £75, £75 and £120, and dividing by 15 gives 5 : 5 : 8. |
| 13 | D | The grass lasts 5 × 12 = 60 cow-days, so with 3 cows it lasts 60 ÷ 3 = 20 days. |
| 14 | C | The real car is 18 × 24 = 432 cm long, and 432 ÷ 100 = 4.32 m. |
| 15 | C | Sam's £24 is 3 parts, so one part is £8 and Tim has 5 × £8 = £40. After spending £15 Tim has £25, so the new ratio is 24 : 25, which cannot be simplified. |

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