Bands 3 – 5 Problem Solving – Test 2 Answers

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| 1. | 3.5 m ÷ 50 cm = 7 slabs2 m ÷ 50 cm = 4 slabs7 x 4 = 28 slabsMatt does have enough**or**3.5 x 2 = 7 m² = 70 000 cm²50 x 50 = 2500 cm²70 000 ÷ 2500 = 28 slabsMatt does have enough | 1 mark for slabs needed for width1 mark for slabs needed for length1 mark for 28 seen1 mark for correct conclusion**or**1 mark for area of patio1 mark for area of slab1 mark for 28 seen1 mark for correct conclusion | 4 |
| 2. | 0.7 x $287.50 = $208.25 (30% = $86.25)£250 = $208.25£1 = $0.83 | 1 mark for 30% or 70% of New York price calculated1 mark for London price in dollars1 mark for correct answer | 3 |

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| 3. | Scale factor = 2Area scale factor = 2² = 44 x 100 = 400 cm²**or**$πr^{2}$= 100Radius of A = $\sqrt{\frac{100}{π}}$Radius of B = $2\sqrt{\frac{100}{π}}$Area of B = $π$ x $\left(2\sqrt{\frac{100}{π}}\right)^{2}$ = $π$ x $4\left(\frac{100}{π}\right)$ = 400 cm² | 1 mark for linear scale factor1 mark for area scale factor1 mark for correct answer**or**1 mark for radius of A in terms of $π$1 mark for expression for area of B1 mark for correct answer | 3 |
| 4. | 5x = x + 244x = 24 x = 6 | 1 mark for an equation1 mark for 4x seen oe1 mark for correct answer | 3 |
| 5. | 17.5 ÷ 5 = 3.5 mph3.5 x 8 = 28 kmSunita is correct | 1 mark for distance ÷ time1 mark for correct answer1 mark for 28 km seen1 mark for correct conclusion | 4 |

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| 6. | Volume of pot = $π$ x 6² x 15 = 1696.46… cm³1 L = 1000 cm³15 000 ÷ 1696.46… = 8.84…8 flowerpots can be filled **completely** | 1 mark for volume of flowerpot1 mark for litre/cm³ conversion1 mark for dividing total compost by volume of flowerpot1 mark for correct answer | 4 |
| 7. | 5 : 15 – 1 = 4 parts difference6 ÷ 4 = 1.5 kg1.5 x 5 = 7.5 kg | 1 mark for ratio1 mark for calculating parts difference1 mark for calculating value of 1 part1 mark for correct answer | 4 |
| 8. |  3h + 3r = 126- 3h + 2r = 114 r = 12 cm3h + 36 = 126 h = 30 cm2r + h = 24 + 30 54 cm**or**Difference is 1 rectangle and 12 cm3 x 12 = 36(126 – 36) ÷ 3 = 30 cm2 x 12 + 30 = 54 cm | 1 mark for 2 equations for r and h1 mark for r calculated1 mark for substituting r into either equation1 mark for h calculated 1 mark for correct answer**or**1 mark for 12 cm calculated1 mark for 3 x 121 mark for subtracting 36 and dividing by 31 mark for 30 cm calculated1 mark for correct answer | 5 |

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| 9. |

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| **Bank A** | **Bank B** |
| £4000 x 1.03² = £4243.60**or**£4000 x 0.03² = £243.60 | (£4000 x 0.32 x 2) + 4000 = £4256**or**(£4000 x 0.32 x 2) = £256 |

Henry should choose Bank B for more interest | 1 mark for Bank A calculation1 mark for Bank A answer1 mark for Bank B calculation1 mark for Bank B answer1 mark for correct conclusion (dependent on previous working) | 5 |
| 10. | A = 7, B = 3, C = 8, D = 3 | 1 mark for D calculated1 mark for A calculated1 mark for C calculated1 mark for 18 seen1 mark for B calculated | 5 |

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| 11. | 30 x £3 = £90 spent40% of £3 = £1.20Selling price = £3 + £1.20 = £4.20$\frac{3}{5}$ of 30 = 18 books sold at £4.2018 x £4.20 = £75.6080% of £4.20 = £3.36 (20% = 84p)12 x £3.36 = £40.32£75.60 + £40.32 = £115.92£115.92 - £90 = £25.92 profit25.92 x 100 = 28.8% profit 90 | 1 mark for total spent1 mark for new selling price1 mark for income for this selling price1 mark for 20% or 80% calculated1 mark for income at this selling price1 mark for total profit1 mark for correct answer (accept percentage only, accept 29%) | 8 |