Bands 2 – 4 Problem Solving – Test 2 Answers

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| 1. | 24 ÷ 6 = 4 cm  12 x 4 = 48 cm | 1 mark for length of one side  1 mark for correct answer | 2 |
| 2. | 140 ÷ 30 = 4 hours = 4 hours 40 mins  4 hours 40 mins + 20 mins + 45 mins = 5 hours 45 mins  7:30 am + 5 hours 45 mins = 1:15 pm | 1 mark for 4 hours or 4 hours 40 mins seen  1 mark for attempt to add all times together  1 mark for 5 hours 45 mins seen  1 mark for correct answer | 4 |
| 3. | 14059 – 12967 = 1092  1092 x 44 = 48048p = £480.48  £480.48 ÷ 12 = £40.04 | 1 mark for 1092 seen  1 mark for calculating total cost in pence  1 mark for converting to £  1 mark for ÷ 12  1 mark for correct answer | 5 |
| 4. | Farm shop: £15 ÷ 25 = 60p per kg  Supermarket: £1.30 ÷ 2 = 65p per kg  Potatoes are best value at farm shop | 1 mark for 15 ÷ 25 or 1.3 ÷ 2  1 mark for each correct price per kg  1 mark for correct answer | 4 |
| 5. | Area = (12 + 18) x 0.5 x 9 = 15 x 9 = 135 m²  135 ÷ 20 = 6 r 15 = 7 bags needed  7 x £9.99 = £69.93 | 1 mark for calculating area of garden  1 mark for 6, 6 r 15 or 7 seen  1 mark for number of bags needed  1 mark for correct answer | 4 |

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| 6. | BDC = 180 – (40 + 90) = 50° because angles in a triangle sum to 180°  ADC = 180 – 50 = 130° because angles on a straight line sum to 180°  DAC = (180 – 130) ÷ 2 = 25° because angles in a triangle sum to 180° and isosceles triangles have equal base angles | 1 mark for BDC calculated  1 mark for ADC calculated  2 marks for correct answer (only award if at least 2 reasons given)  (1 mark if no reasons evident) | 4 |
| 7. | 1 L purple fire 🡪 750 (r) : 250 (b)  500 ml purple sea 🡪 125 (r) : 375 (b) +  Total 🡪 875 (r) : 625 (b)  625 x 3 = 1875 ml red needed  1875 – 875 = 1000 ml = 1 L | 1 mark for each mixture’s ratio  1 mark for adding ratios together  1 mark for 1875 seen  1 mark for correct answer oe | 5 |
| 8. | (0 + 0.5) x 2 = 1  (1 + 0.5) x 2 = 3  (3 + 0.5) x 2 = 7  (7 + 0.5) x 2 = 15  (15 + 0.5) x 2 = 31 | 1 mark for + 0.5 or x 2 seen  1 mark for at least 2 iterations attempted  1 mark for correct answer | 3 |
| 9. | 1200 – 650 = 550 L needed  550 x 70 = 38500p = £385  5% of £385 = £19.25  £385 - £19.25 = £365.75 | 1 mark for amount of fuel needed  1 mark for cost of fuel before discount  1 mark for calculating 5% of £385  1 mark for £385 - %5  1 mark for correct answer | 5 |

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| 10. | £2.10 ÷ 10 = 21p  £4.50 ÷ 18 = 25p  £13.20 ÷ 12 = £1.10  21p + 25p + £1.10 = £1.56   |  |  |  | | --- | --- | --- | | **10** | **18** | **12** | | 10 | 18 | 12 | | 20 | 36 | 24 | | 30 | 54 | 36 | | 40 | 72 | 48 | | 50 | 90 | 60 | | … | … | … | | 180 | 180 | 180 |   180 party bags | 1 mark for 1 correct calculation for an individual item  1 mark for 21p, 25p and £1.10 seen  1 mark for correct answer  1 mark for listing 5 or more multiples correctly of any number  1 mark for listing correct multiples for all 3 numbers  1 mark for correct answer | 6 |
| 11. | $24000 ÷ 1.2 = £20 000  £20 000 + £900 = £20 900  20% of £20 900 = £4180  £20 900 + £4180 = £25 080 | 1 mark for calculating cost of car in pounds  1 mark for adding £900 or calculating 20%  1 mark for correct answer | 3 |
| 12. | 2000 x 12 = 24000 miles per year  24000 ÷ 50 = 480 gallons of petrol  480 x £5 = £1200  £0.10 x 24000 = £2400  1200 + 2400 = £3600 total cost  £0.30 x 24000 = £7200 paid  £7200 - £3600 = £3600 so Barbara will NOT have enough for her holiday | 1 mark for total miles per year  1 mark for gallons of fuel needed  1 mark for total cost of fuel  1 mark for total cost to Barbara  1 mark for total amount paid to Barbara  1 mark for correct conclusion | 6 |