Bands 2 – 4 Problem Solving – Test 1 Answers

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| 1. | 35% of 160 = 56 thrillers  2/5 of 160 = 64 comedies  160 – (56 + 64) = 40 science fictions | 1 mark for calculating number of thrillers  1 mark for calculating number of comedies  1 mark for adding and subtracting from total  1 mark for correct answer | 4 |
| 2. | 4 m ÷ 20 cm = 20 tiles wide  3m ÷ 20 cm = 15 tiles high  20 x 15 = 300 tiles needed  300 ÷ 10 = 30 packs needed  30 x £35 = £1050  Alison cannot buy enough tiles | 1 mark for area of wall  1 mark for area of tile  1 mark for total tiles needed  **or**  1 mark for tiles needed for width  1 mark for tiles needed for length  1 mark for total tiles needed  **then**  1 mark for packs needed  1 mark for correct answer  1 mark for correct conclusion | 6 |
| 3. | ACB = 360 – (216 + 90) = 54° because angles around a point sum to 180°  ABC = (180 – 54) ÷ 2 = 63° because angles in a triangle sum to 180° and isosceles triangles have equal base angles | 1 mark for 54° seen  1 mark for correct answer  2 marks for 2 or more valid reasons | 4 |
| 4. | |  |  |  | | --- | --- | --- | | **Sports ‘4’ All**  12 x £4.50 = £54  £54 + £5 = £59 | **Edexcel Sports**  1/5 of £70 = £14  £70 - £14 = £56 | **Keef’s Sports**  20% of £50 = £10  £50 + £10 = £60 |   Samantha should buy her trainers from Edexcel Sports | 1 mark for 12 x £4.50  1 mark for each correct total price  1 mark for correct conclusion | 5 |
| 5. | 5 m ÷ 20 cm = 25 boxes high  10 m ÷ 50 cm = 20 boxes long  4 m ÷ 40 cm = 10 boxes wide  25 x 20 x 10 = 5000 boxes  **or**  500 x 1000 x 4000 = 2000 000 000 cm³  20 x 50 x 40 = 40 000 cm³  2000 000 000 ÷ 40 000 = 5000 boxes | 1 mark for boxes needed for each dimension  1 mark for correct answer  **or**  1 mark for volume of container  1 mark for volume of box  1 mark for container ÷ box  1 mark for correct answer | 4 |
| 6. | 100 + 10x = 150  10x = 50  x = 5  Plus 2 rooms = 7 people | 1 mark for £100 or 2 x £50 seen  1 mark for 5 people seen  1 mark for correct answer | 3 |
| 7. | 30 – 8 = 22 cm  22 ÷ 2 = 11 cm  11 + 8 = 19 cm | 1 mark for subtracting 8 from 30  1 mark for ÷2 seen  1 mark for correct answer | 3 |

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| 8. | 786 ÷ 3 x 5 = 1310 attending in total  1310 – 786 = 524 adults  (524 x 2t) + (786 x t) = 11921  1048t + 786t = 11921  t = £6.50  2t = £13 | 1 mark for total number attending  1 mark for number of adults  1 mark for equation equal to £11921  1 mark for calculating child ticket  1 mark for correct answer | 5 |
| 9. | £240 ÷ 3 : 5 = £90 : £150  ½ of £90 = £45  1/10 of £150 = £15  £45 + £15 = £60 | 1 mark for dividing into ratio  1 mark for calculating Colin’s share from Ann  1 mark for calculating Colin’s share from Bob  1 mark for correct answer oe (accept fractions only) | 4 |
| 10. | (4 x 24) – 24 = 72 cm | 1 mark for 4 x 24 or 3 x 24  1 mark for correct answer | 2 |
| 11. | 5 miles = 8 km so 1 mile = 1.6 km  30 mph = 48 km/h  4 lampposts = 150 m  Distance ÷ Time = 150 m ÷ 12 sec x 3600 ÷ 1000 = 45 km/h | 1 mark for 5 : 8 oe  1 mark for 150 m seen  1 mark for 150 ÷ 12 oe  1 mark for x 3600 or ÷ 1000 seen  1 mark for correct answer | 5 |

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| 12. | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **+** | **1** | **2** | **3** | **4** | **5** | **6** | | **1** | 2 | 3 | 4 | 5 | 6 | 7 | | **2** | 3 | **4** | **5** | **6** | **7** | **8** | | **3** | 4 | **5** | **6** | **7** | **8** | **9** | | **4** | 5 | **6** | **7** | **8** | **9** | **10** |   P(lose 50p) = 14/24  P(win £1) = 7/24  P(win £2) = 3/24  Profit = 14/24 x 360 x 50p = £105  Loss in prizes = (7/24 x 360 x £1) + (3/24 x 360 x £2)  = £105 + £90 = £195  Total loss of £90 | 2 marks for complete sample space diagram  (1 mark lost for each error)  1 mark for all probabilities stated  1 mark for profit calculation  1 mark for each loss calculation  1 mark for correct answer | 7 |