Knowledge audit – Worked solutions

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| **No.** | **Answer** | **Marks** | **Out of** |
| 1 | Two and a half squares shaded in.  Counting squares like coordinates, they are:  (7, 5), (6,5) and top left-hand half of (6,4). |  | 3 |
| 2 | Area of a rectangle is length x width, so 2 x length = 16, therefore length = 8 cm.  The perimeter is 2 + 2 + 8 + 8 = 20 cm. |  | 3 |
| 3 | 1. A rhombus has equal sides, so it’s an isosceles triangle with two base angles b. Angles of a triangle add up to 1800, if we take away 800 from that, we are left with 2b = 1000, so b = 100 500. 2. Using the same reasoning as above, the third angle must also be 80°, so angle a is 1800 – 800 – 800 = 200. |  | 6 |
| 4 | To go from O to R must be three times as far as going from O to P, so the coordinates of R are (75, 36) – (3 x 25, 3 x 12). |  | 4 |
| 5 | 1. If we change them all to cm, we have (in the order of the question) 50cm, 3.5cm, 2.5cm, 20cm. Therefore the order, starting with the shortest, is 25mm, 3.5cm, 20cm, ½m. 2. One kg = 1000 grams, so 200 grams is one fifth of a kg. So the answer is £2.10 (£10.50 5) |  | 6 |
| 6 | There are several ways to work out the missing numbers. Here is one way.  Fill in 26 as the total number who do not wear glasses. The total number who do wear glasses must be 4 (30 minus 26).  A quarter of the pupils who wear glasses are boys, so there must be 4 4 = 1 boy who wears glasses, so there must be 3 girls who wear glasses.  There are a total of 30 pupils and there are two more boys than girls, so there must be 16 boys and 14 girls. So the number of boys who do not wear glasses must be 16 – 1 = 15, and the number of girls 14 – 3 = 11. So the completed table is:   |  |  |  | | --- | --- | --- | | 1 | 15 | 16 | | 3 | 11 | 14 | | 4 | 26 | 30 | |  | 6 |
| 7 | Several correct solutions. The four numbers must total 16, and the range (biggest minus smallest) must be 4. So the possible solutions are:  1 5 5 5  2 2 6 6  2 4 4 6  2 3 5 6  3 3 3 7 |  | 5 |
| 8 | Following the vertical grid line up from 20 minutes on the bottom axis, the intermediate section goes from 700 words to 1000 words. So the answer is between 700 and 1000.  30 words per minute is the same as e.g. 300 words in 10 minutes. The coordinate (10,300) lies in the **Elementary** section. |  | 6 |
| 9 | The pie chart is divided into 8 sectors, and there are 32 children in the survey, so one sector represents 32 8 = 4 children.  The **chips** part covers two sectors so must represent 2 x 4 = 8 children, so the first statement is **not correct**.  The **mashed potatoes** part covers 2 sectors which make one quarter of the total, and one quarter is the same as 25%, so the second statement is **correct**.  **Roast potatoes** is just one sector, which is one eighth of the total, so the third statement is **not** **correct.**  **Jacket potatoes** covers three sectors, so represents 3 x 4 = 12 children so the fourth statement is **correct**.  X  √  X  √ |  | 6 |
| 10 | Nuts and cereal bars both have bigger parts for girls than boys, so the answer is 2.  Each section of the bars represents two children. 11 boys and 7 girls chose raisins, so the answer is 4 (11 – 7).  The answer is bananas (10 boys and 5 girls chose bananas). |  | 6 |
| 11 | We can only compare these numbers if we convert them all to the same form. The easiest way is to convert them all to decimals.  21% = 0.21  = 0.15 (multiply top and bottom by 5)  0.18 = 0.18  = 0.16 (multiply top and bottom by 2)  So now it is easy to see that the correct order starting with the smallest is:  0.18 21% |  | 5 |
| 12 | of 72 = 72 3 = 24 (liked football best)  of 72 = 72 4 = 18 (liked basketball best)  of 72 = 72 8 x 3 = 27 (liked athletics)  24 + 18 + 27 = 69  So the number of pupils who liked swimming best must be 72 – 69 = 3. |  | 5 |
| 13 | 1. Three quarters of the number is 60, so one quarter is 60 20, so the number is 20 x 4 = 80. 2. 10% of 50% = 5% or (the easiest way to work this out is to convert both to decimals: 10% is 0.1, a half is 0.5, 0.1 x 0.5 = 0.05 which is the same as 5% or ). 3. 10% is 64 32, so 50% is 5 x 32 = 160 |  | 6 |
| 14 | 1. One pen costs £10.80 £1.35 so five pens cost £1.35 x 5 = £6.75. 2. Total number of parts of the ratio is 2 + 3 = 5, so one part is 250 5 = 50 ml, so two parts is 2 x 50 = 100ml. |  | 6 |
| 15 | If it’s 25% off then it’s 75% “on”. £30 represents 75% or three quarters, so 100% (i.e. the original price) is £30 3 x 4 = £40. |  | 4 |
| 16 | Going from left to right, each term is doubled. Going from right to left, each term is halved. So the first two ?s are 1.25, 2.5 (or 1, 2)  Last ? is 160 |  | 5 |
| 17 | 1. Taking one t away from both sides gives 4 = 8t, then dividing both sides by 8 gives t = 0.5 (or ). 2. Taking 2w away from both sides gives w – 6 = 7. Adding 6 to both sides gives w = 13. |  | 6 |
| 18 | 1. If the perimeter is 24 cm, then one length plus one width must be half this, i.e. 12 cm. If the length is three times the width, we have to divide 12 cm in the ratio 1:3. 1 + 3 = 4, and 12 so the dimensions of rectangle are 3cm by 9 cm, so area is 3 x 9 = 27 cm2 2. Lots of possible answers (any set of three numbers that multiply together to make 24): 1,1,24; 1,2,12; 1,3,8; 1,4,6; 2,3,4. 3. 3 x 3 x 3 = 27, so he would need 27 – 20 = 7 more cubes. |  | 6 |
| 19 | 1. Substituting in 22 for n in the formula gives (15 x 22) + 75 = £405 2. Substituting in 825 for C gives 825 = 15n + 75. Subtracting 75 from both sides gives (825 -75) = 750 = 15n. Dividing both sides by 15 gives 750 15 = 50. So there are 50 words in the advert. |  | 6 |
|  | **Total marks** |  | **100** |