

### Stratified Sampling Mark Scheme

<b>1(a)</b>	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Lunch choice</th> <th style="padding: 5px;">School lunch</th> <th style="padding: 5px;">Lunch from home</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Number at school</td> <td style="padding: 5px; text-align: center;">210</td> <td style="padding: 5px; text-align: center;">350</td> </tr> <tr> <td style="padding: 5px;">Number in sample</td> <td style="padding: 5px; text-align: center;">30</td> <td style="padding: 5px; text-align: center;">50</td> </tr> </tbody> </table>	Lunch choice	School lunch	Lunch from home	Number at school	210	350	Number in sample	30	50	[2]									
Lunch choice	School lunch	Lunch from home																		
Number at school	210	350																		
Number in sample	30	50																		
<b>1(b)</b>	Total Population size is $350 + 210 = 560$	[1] Total population																		
	$\frac{80}{560} \times 100 = 14\%$ (2 s.f.)	[1] Final answer																		
<b>2</b>	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Day</th> <th style="padding: 5px;">Number in Sample</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Monday</td> <td style="padding: 5px; text-align: center;">6</td> </tr> <tr> <td style="padding: 5px;">Tuesday</td> <td style="padding: 5px; text-align: center;">9</td> </tr> <tr> <td style="padding: 5px;">Wednesday</td> <td style="padding: 5px; text-align: center;">10</td> </tr> <tr> <td style="padding: 5px;">Thursday</td> <td style="padding: 5px; text-align: center;">9</td> </tr> <tr> <td style="padding: 5px;">Friday</td> <td style="padding: 5px; text-align: center;">6</td> </tr> </tbody> </table>	Day	Number in Sample	Monday	6	Tuesday	9	Wednesday	10	Thursday	9	Friday	6	<p>[2] Correct calculations</p> <p>[1] Round properly to nearest whole number</p>						
Day	Number in Sample																			
Monday	6																			
Tuesday	9																			
Wednesday	10																			
Thursday	9																			
Friday	6																			
<b>3</b>	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Age Bands</th> <th style="padding: 5px;">Number of People</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">16 – 25</td> <td style="padding: 5px; text-align: center;">157</td> </tr> <tr> <td style="padding: 5px;">26 – 35</td> <td style="padding: 5px; text-align: center;">246</td> </tr> <tr> <td style="padding: 5px;">36 – 45</td> <td style="padding: 5px; text-align: center;">372</td> </tr> <tr> <td style="padding: 5px;">46 – 55</td> <td style="padding: 5px; text-align: center;">396</td> </tr> <tr> <td style="padding: 5px;">56 – 65</td> <td style="padding: 5px; text-align: center;">329</td> </tr> </tbody> </table>	Age Bands	Number of People	16 – 25	157	26 – 35	246	36 – 45	372	46 – 55	396	56 – 65	329	<p>[1] 3 correct values</p> <p>[1] 4 correct values</p> <p>[1] All correct</p>						
Age Bands	Number of People																			
16 – 25	157																			
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<b>4(a)</b>	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Exam Subject</th> <th style="padding: 5px;">GCSE</th> <th style="padding: 5px;">Sample</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Maths</td> <td style="padding: 5px; text-align: center;">96</td> <td style="padding: 5px; text-align: center;">6</td> </tr> <tr> <td style="padding: 5px;">English</td> <td style="padding: 5px; text-align: center;">80</td> <td style="padding: 5px; text-align: center;">5</td> </tr> <tr> <td style="padding: 5px;">Physics</td> <td style="padding: 5px; text-align: center;">75</td> <td style="padding: 5px; text-align: center;">5</td> </tr> <tr> <td style="padding: 5px;">History</td> <td style="padding: 5px; text-align: center;">65</td> <td style="padding: 5px; text-align: center;">4</td> </tr> <tr> <td style="padding: 5px;">Physical Education</td> <td style="padding: 5px; text-align: center;">64</td> <td style="padding: 5px; text-align: center;">4</td> </tr> </tbody> </table>	Exam Subject	GCSE	Sample	Maths	96	6	English	80	5	Physics	75	5	History	65	4	Physical Education	64	4	<p>[1] for correct percentage 6.25%</p> <p>[1] Correct sample values</p> <p>[1] Correct GCSE values</p>
Exam Subject	GCSE	Sample																		
Maths	96	6																		
English	80	5																		
Physics	75	5																		
History	65	4																		
Physical Education	64	4																		
<b>4(b)</b>	This could be due to rounding to the nearest whole number:	[1] Mention effect of rounding																		
	$65 \times 0.0625 = 4.0625$ while $4 \div 0.0625 = 64$	[1] Example shown																		

Turn over ►

<b>5(a)</b>	<table border="1"> <thead> <tr> <th>City</th> <th>Population</th> <th>Sample</th> </tr> </thead> <tbody> <tr> <td>Belfast</td> <td>220</td> <td>4</td> </tr> <tr> <td>Cardiff</td> <td>468</td> <td>10</td> </tr> <tr> <td>Edinburgh</td> <td>523</td> <td>10</td> </tr> <tr> <td>Liverpool</td> <td>872</td> <td>17</td> </tr> <tr> <td>Manchester</td> <td>420</td> <td>8</td> </tr> <tr> <td>London</td> <td>7500</td> <td>150</td> </tr> </tbody> </table>	City	Population	Sample	Belfast	220	4	Cardiff	468	10	Edinburgh	523	10	Liverpool	872	17	Manchester	420	8	London	7500	150	<p>[1] Multiply each population value by 0.02 to find 2%</p> <p>[1] Round properly to nearest whole number</p>
	City	Population	Sample																				
	Belfast	220	4																				
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London	7500	150																					
<b>5(b)</b>	Rounding	[1]																					
	199 in sample	[1]																					
	2% of population is 200 <b>or</b> there is a difference of 1 between expected and actual sample size	[1] 200 must be given to gain the mark																					
<b>6</b>	<table border="1"> <thead> <tr> <th>Countries</th> <th>Medals by country</th> <th>Sample</th> </tr> </thead> <tbody> <tr> <td>USA</td> <td>121</td> <td>17</td> </tr> <tr> <td>GBR</td> <td>63</td> <td>9</td> </tr> <tr> <td>CHI</td> <td>70</td> <td>10</td> </tr> <tr> <td>RUS</td> <td>56</td> <td>8</td> </tr> <tr> <td>GER</td> <td>42</td> <td>6</td> </tr> </tbody> </table>	Countries	Medals by country	Sample	USA	121	17	GBR	63	9	CHI	70	10	RUS	56	8	GER	42	6	<p>[1] Ratio is established of 7: 1</p> <p>[1] Ratio is applied to find missing values</p> <p>[1] Rounding is correct</p> <p>[1] Subtraction is used to find RUS</p>			
	Countries	Medals by country	Sample																				
	USA	121	17																				
	GBR	63	9																				
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END