

S3 Revision for the May Test - Arithmetic and Statistics		
1	The value of the average house in Scotland is £160 000 This house price is expected to rise by 2% each year. Calculate the value of the average house in 3 years	3
2	In the evening the temperature in a polytunnel drops by 4% per hour. At 8 pm the temperature is 26°C. What will the temperature be at 11 pm	3
3	The number of ants in a colony is 1.7×10^4 . The size of this colony is expected to increase by 11% each year. Calculate the size of the colony after 2 years. Give your answer in scientific notation correct to two significant figures.	4
4	A satellite orbits a planet in a circular path. The radius of this orbit is 6.7×10^{12} kilometres. Calculate the length of the orbit (the circumference of the orbit)	2
5	The price for Finlay's summer holiday is £926.97. This includes a 6% booking fee. What is the price of his holiday without the booking fee?	3
6	Calum's Car Insurance Premium for 2018 is £345.14. This represents a 3% decrease on his premium for 2017. Calculate how much he paid for car insurance last year.	3
7	Simplify $\frac{12d^4e^7}{3de^8}$	3
8	Simplify $2c^5 \times (c^4)^2$	2
9	Evaluate (a) $3\frac{1}{2} - \frac{4}{5}$ (b) $3\frac{1}{5} \div \frac{4}{7}$	4
10	Hannah records her wages that she earns from her part-time job each week. These are: 13 14 16 17 12 18 (a) Calculate the mean amount she earns each week (b) Calculate the standard deviation	1 3
11	A Hockey team scored the following goals in a series of matches 13 7 0 9 7 8 5 (a) Calculate the mean number of goals for these matches (b) Calculate the standard deviation (c) The following season the team appoints a new coach. Their first seven matches in this season give a mean of 9 goals and a standard deviation of 4.2. Make two valid statements about the performance of the team with this new coach.	1 3 2

Arithmetic and Statistics – Answers																																							
1	$160\,000 \times 1.02^3 = \text{£}169793.28$	2	$26 \times 0.96^3 = 23.0\text{ }^\circ\text{C}$																																				
3	$(1.7 \times 10^4) \times 1.11^2 = 20945.7 = 21000 = 2.1 \times 10^4$																																						
4	$Orbit = \pi \times 2 \times 6.7 \times 10^{12} = 4.209734156 \times 10^{13} = 4.2 \times 10^{13}$																																						
5	$106\% = \text{£}926.97 \rightarrow 100\% = \text{£}874.50$																																						
6	$97\% = \text{£}345.14 \rightarrow 100\% = \text{£}355.814433 = \text{£}355.81$																																						
7	$\frac{12d^4e^7}{3de^8} = \frac{4d^3}{e}$	8	$2c^5 \times (c^4)^2 = 2c^5 \times c^8 = 2c^{13}$																																				
9a	$3\frac{1}{2} - \frac{4}{5} = \frac{7}{2} - \frac{4}{5} = \frac{35}{10} - \frac{8}{10} = \frac{27}{10}$	b	$3\frac{1}{5} \div \frac{4}{7} = \frac{16}{5} \times \frac{7}{4} = \frac{28}{5}$																																				
10	<p>Mean is $90 \div 6 = 15$</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>x</th> <th>x^2</th> </tr> </thead> <tbody> <tr><td>13</td><td>169</td></tr> <tr><td>14</td><td>196</td></tr> <tr><td>16</td><td>256</td></tr> <tr><td>17</td><td>289</td></tr> <tr><td>12</td><td>144</td></tr> <tr><td>18</td><td>324</td></tr> <tr><td>$\Sigma 90$</td><td>$\Sigma 1378$</td></tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr> <th>$x - \bar{x}$</th> <th>$(x - \bar{x})^2$</th> </tr> </thead> <tbody> <tr><td>-2</td><td>4</td></tr> <tr><td>-1</td><td>1</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>4</td></tr> <tr><td>-3</td><td>9</td></tr> <tr><td>3</td><td>9</td></tr> <tr><td>$\Sigma 0$</td><td>$\Sigma 28$</td></tr> </tbody> </table> <p>Show substitution $s = \sqrt{\frac{1378 - \frac{90^2}{6}}{5}}$ or $s = \sqrt{\frac{28}{5}} = 2.366\dots$</p>			x	x^2	13	169	14	196	16	256	17	289	12	144	18	324	$\Sigma 90$	$\Sigma 1378$	$x - \bar{x}$	$(x - \bar{x})^2$	-2	4	-1	1	1	1	2	4	-3	9	3	9	$\Sigma 0$	$\Sigma 28$				
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