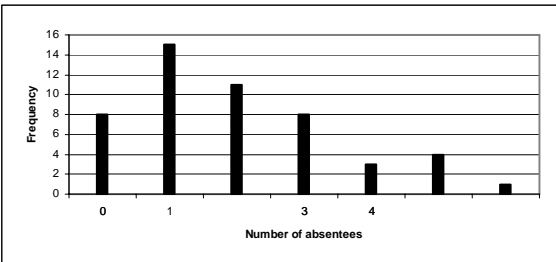
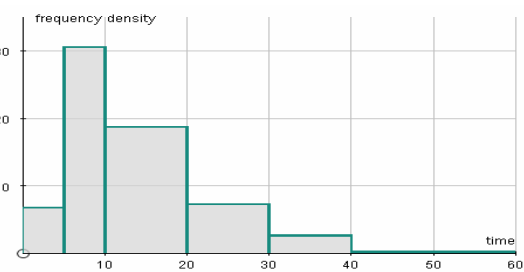


<b>1</b> <b>(i)</b>	Median = 4.06 – 4.075 (inclusive)  Q <sub>1</sub> = 3.8 Q <sub>3</sub> = 4.3  Inter-quartile range = 4.3 – 3.8 = 0.5	B1cao  B1 for Q <sub>1</sub> (cao) B1 for Q <sub>3</sub> (cao)  B1 ft for IQR must be using t-values not locations to earn this mark	<b>4</b>
<b>(ii)</b>	Lower limit ‘their 3.8’ – 1.5 × ‘their 0.5’ = (3.05) Upper limit ‘their 4.3’ + 1.5 × ‘their 0.5’ = (5.05) Very few if any temperatures <u>below 3.05 (but not zero)</u> None <u>above 5.05</u> ‘So few, if any outliers’ scores SC1	B1ft: must have -1.5 B1ft: must have +1.5 E1ft dep on -1.5 and Q <sub>1</sub> E1ft dep on +1.5 and Q <sub>3</sub>  Again, must be using t-values NOT locations to earn these 4 marks	<b>4</b>
<b>(iii)</b>	Valid argument such as ‘Probably not, because there is nothing to suggest that they are not genuine data items; (they do not appear to form a separate pool of data.)’ Accept: exclude outlier – ‘measuring equipment was wrong’ or ‘there was a power cut’ or ref to hot / cold day [Allow suitable valid alternative arguments]	E1	<b>1</b>
<b>(iv)</b>	Missing frequencies 25, 125, 50	B1, B1, B1 (all cao)	<b>3</b>
<b>(v)</b>	Mean = $(3.2 \times 25 + 3.6 \times 125 + 4.0 \times 243 + 4.4 \times 157 + 4.8 \times 50) / 600$  $= 2432.8 / 600 = 4.05(47)$	M1 for at least 4 midpoints correct and being used in attempt to find $\sum ft$  A1cao: awfw (4.05 – 4.055) ISW or rounding	<b>2</b>
<b>(vi)</b>	New mean = 1.8 × ‘their 4.05(47)’ + 32 = 39.29(84) to 39.3 New s = 1.8 × 0.379 = 0.682	B1 FT M1 for 1.8 × 0.379 A1 CAO awfw (0.68 – 0.6822)	<b>3</b>
		TOTAL	<b>17</b>

<b>2</b> <b>(i)</b>	Amount	0- <	20-	50- <	100- 0	B1 for amounts B1 for frequencies	<b>2</b>
	Frequency	800	480	400	200		
<b>(ii)</b>	Total $\approx$ $10 \times 800 + 35 \times 480 + 75 \times 400 + 150 \times 200 = \text{£}84800$					M1 for their midpoints $\times$ their frequencies A1 CAO	<b>2</b>
						<b>TOTAL</b>	<b>4</b>

<b>3(i)</b>	$11^{\text{th}}$ value is 4, $12^{\text{th}}$ value is 4 so median is 4 Interquartile range = $5 - 2 = 3$	B1 M1 for either quartile A1 CAO	<b>3</b>	
<b>(ii)</b>	No, not valid any two valid reasons such as : <ul style="list-style-type: none"> <li>the sample is only for two years, which may not be representative</li> <li>the data only refer to the local area, not the whole of Britain</li> <li>even if decreasing it may have nothing to do with global warming</li> <li>more days with rain does not imply more total rainfall</li> <li>a five year timescale may not be enough to show a long term trend</li> </ul>	B1  E1 E1	<b>3</b>	
			<b>TOTAL</b>	<b>6</b>

<b>4</b>	<b>(i)</b>		<p>G1 labelled linear scales on both axes G1 heights</p>	<b>2</b>
	<b>(ii)</b>	$\text{Mean} = \frac{99}{50} = 1.98$ $S_{xx} = 315 - \frac{99^2}{50} (= 118.98)$ $\text{rmsd} = \sqrt{\frac{118.98}{50}} = 1.54$ <p><i>NB full marks for correct results from recommended method which is use of calculator functions</i></p>	<p>B1 for mean M1 for attempt at <math>S_{xx}</math> A1 CAO</p>	<b>3</b>
	<b>(iii)</b>	<p>New mean = <math>30 - 1.98 = 28.02</math> New rmsd = 1.54 (unchanged)</p>	<p>B1 FT their mean B1 FT their rmsd</p>	<b>2</b>
	<b>TOTAL</b>			<b>7</b>

<b>5</b>	<b>(i)</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>time</th> <th>freq</th> <th>width</th> <th>f dens</th> </tr> </thead> <tbody> <tr> <td>0-</td> <td>5</td> <td>5</td> <td>6.8</td> </tr> <tr> <td>5-</td> <td>10</td> <td>5</td> <td>30.6</td> </tr> <tr> <td>10-</td> <td>20</td> <td>10</td> <td>18.8</td> </tr> <tr> <td>20-</td> <td>30</td> <td>10</td> <td>7.3</td> </tr> <tr> <td>30-</td> <td>40</td> <td>10</td> <td>2.7</td> </tr> <tr> <td>40</td> <td>50</td> <td>20</td> <td>0.25</td> </tr> </tbody> </table>	time	freq	width	f dens	0-	5	5	6.8	5-	10	5	30.6	10-	20	10	18.8	20-	30	10	7.3	30-	40	10	2.7	40	50	20	0.25	<p>M1 for fds A1 CAO</p> <p>Accept any suitable unit for fd such as eg freq per 5 mins.</p>	<b>5</b>
	time	freq	width	f dens																												
	0-	5	5	6.8																												
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		<p>G1 linear scales on both axes and label G1 width of bars G1 height of bars</p>																														
<b>(ii)</b>	Positive skewness	<p>B1 CAO (indep)</p>	<b>1</b>																													
<b>TOTAL</b>			<b>6</b>																													