

1	Mode = 7 Median = 12.5	B1 cao B1 cao	2
(i)	Positive or positively skewed	E1	1
(ii)	(A) Media (B) There is a large outlier or possible outlier of 58 / figure of 58. Just 'outlier' on its own without reference to either 58 or large scores E0 Accept the large outlier affects the mean (more) E1	E1 cao E1indep	2
(iii)	There are $14.75 \times 28 = 413$ messages So total cost = 413×10 pence = £41.30	M1 for 14.75×28 but 413 can also imply the mark A1cao	2
		TOTAL	7

2	Mean = $127.6/13 = 9.8$ Median = 8.6 Midrange = 14.5	M1 for $127.6/13$ soi A1 CAO B1 CAO B1 CAO	4
(i)	Mean slightly inflated due to the outlier Median good since it is not affected by the outlier Midrange poor as it is highly inflated due to the outlier	B1 B1 B1	3
		TOTAL	7

<p>3</p> <p>(i)</p>	<table border="1"> <caption>Data for Bar Chart</caption> <thead> <tr> <th>Number Correct</th> <th>Frequency</th> </tr> </thead> <tbody> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>3</td></tr> <tr><td>5</td><td>4</td></tr> <tr><td>6</td><td>7</td></tr> <tr><td>7</td><td>5</td></tr> </tbody> </table>	Number Correct	Frequency	1	1	2	2	3	3	4	3	5	4	6	7	7	5	<p>G1 Labelled linear scales</p> <p>G1 Height of lines</p>	<p>2</p>
Number Correct	Frequency																		
1	1																		
2	2																		
3	3																		
4	3																		
5	4																		
6	7																		
7	5																		
<p>(ii)</p>	<p>Negative (skewness)</p>	<p>B1</p>	<p>1</p>																
<p>(iii)</p>	<p>$\Sigma fx = 123$ so mean = $123/25 = 4.92$ o.e.</p> $S_{xx} = 681 - \frac{123^2}{25} = 75.84$ $\text{M.s.d} = \frac{75.84}{25} = 3.034$	<p>B1</p> <p>M1 for S_{xx} attempted</p> <p>A1 FT their 4.92</p>	<p>3</p>																
<p>(iv)</p>	<p>Total for 25 days is 123 and totals for 31 days is 155.</p> <p>Hence total for next 6 days is 32 and so mean = 5.33</p>	<p>M1 $31 \times 5 - 25 \times$their 4.92</p> <p>A1 FT their 123</p>	<p>2</p>																
	<p>TOTAL</p>	<p>8</p>																	

<p>4</p> <p>(i)</p> <p>(ii)</p> <p>(iii)</p>	<div data-bbox="284 307 855 635" data-label="Figure"> <table border="1"> <caption>Data points from the graph</caption> <thead> <tr> <th>Length of journey (miles)</th> <th>Height (ft)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>40</td></tr> <tr><td>2</td><td>70</td></tr> <tr><td>3</td><td>85</td></tr> <tr><td>4</td><td>100</td></tr> <tr><td>6</td><td>108</td></tr> <tr><td>10</td><td>115</td></tr> </tbody> </table> </div> <p>Median = 1.7 miles</p> <p>Lower quartile = 0.8 miles</p> <p>Upper quartile = 3 miles</p> <p>Interquartile range = 2.2 miles</p>	Length of journey (miles)	Height (ft)	0	0	1	40	2	70	3	85	4	100	6	108	10	115	<p>G1</p> <p>G1</p> <p>G1</p> <p>B1</p> <p>M1</p> <p>M1</p> <p>A1 ft</p> <p>E1</p>	<p>For calculating 38,68,89,103,112,120</p> <p>Plotting end points Heights inc (0,0)</p>
Length of journey (miles)	Height (ft)																		
0	0																		
1	40																		
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10	115																		

5	(i)	$10 \times 2 = 20.$	M1 for 10×2 A1 CAO	[2]												
	(ii)	$\text{Mean} = \frac{10 \times 65 + 35 \times 75 + 55 \times 85 + 20 \times 95}{120} = \frac{9850}{120} = 82.08$ <p>It is an estimate because the data are grouped.</p>	M1 for midpoints M1 for double pairs A1 CAO E1 indep	[4]												
	(iii)	$10 \times 65^2 + 35 \times 75^2 + 55 \times 85^2 + 20 \times 95^2 (= 817000)$ $S_{xx} = 817000 - \frac{9850^2}{120} (= 8479.17)$ $s = \sqrt{\frac{8479.17}{119}} = 8.44$	M1 for Σfx^2 M1 for valid attempt at S_{xx} A1 CAO	[3]												
	(iv)	$\bar{x} - 2s = 82.08 - 2 \times 8.44 = 65.2$ $\bar{x} + 2s = 82.08 + 2 \times 8.44 = 98.96$ <p>So there are probably some outliers.</p>	M1 FT for $\bar{x} - 2s$ M1 FT for $\bar{x} + 2s$ A1 for both E1 dep on A1	[4]												
	(v)	Negative.		[1]												
	(vi)	<table style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>Upper bound</td> <td>60</td> <td>70</td> <td>80</td> <td>90</td> <td>100</td> </tr> <tr> <td>Cumulative frequency</td> <td>0</td> <td>10</td> <td>45</td> <td>100</td> <td>120</td> </tr> </tbody> </table> 	Upper bound	60	70	80	90	100	Cumulative frequency	0	10	45	100	120	C1 for cumulative frequencies S1 for scales L1 for labels 'Length and CF' P1 for points J1 for joining points dep on P1 All dep on attempt at cumulative frequency.	[5]
Upper bound	60	70	80	90	100											
Cumulative frequency	0	10	45	100	120											
			TOTAL	[19]												

6 (i)	time	freq	width	f dens	M1 for fds A1 CAO Accept any suitable unit for fd such as eg freq per 5 mins. G1 linear scales on both axes and label G1 width of bars G1 height of bars	5
	0-	34	5	6.8		
	5-	153	5	30.6		
	10-	188	10	18.8		
	20-	73	10	7.3		
	30-	27	10	2.7		
40-	5	20	0.25			
(ii)	Positive skewness				B1 CAO (indep)	1
					TOTAL	6