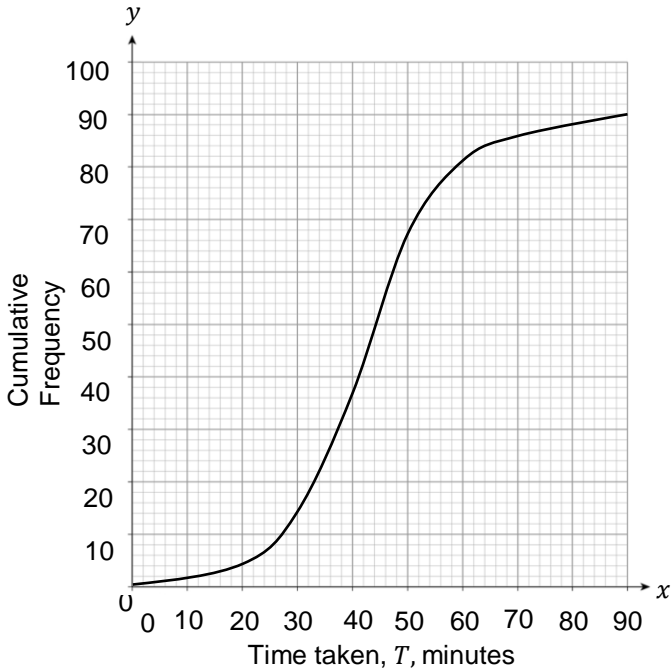
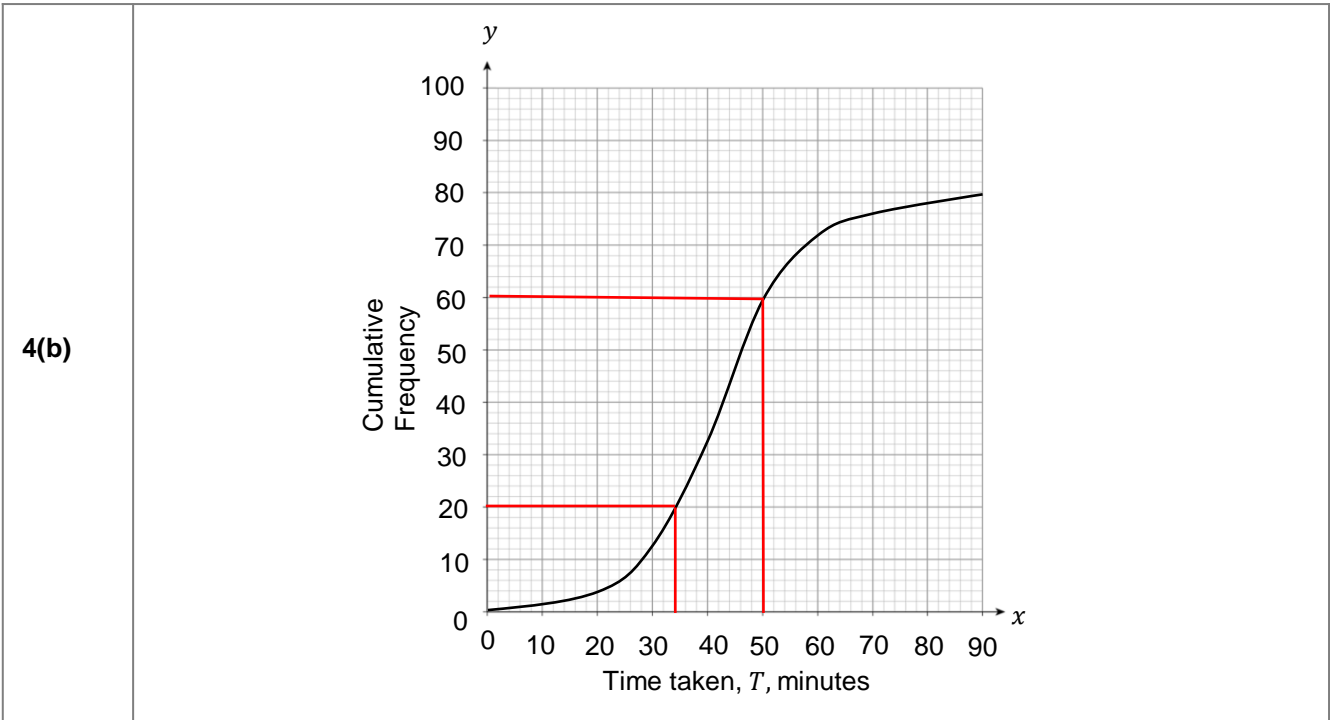


Cumulative Frequency Mark Scheme																							
1(a)	<table border="1"> <thead> <tr> <th>Delay (mins)</th> <th>Frequency</th> <th>Cumulative Frequency</th> </tr> </thead> <tbody> <tr> <td>$0 < t \leq 2$</td> <td>6</td> <td>6</td> </tr> <tr> <td>$2 < t \leq 4$</td> <td>13</td> <td>19</td> </tr> <tr> <td>$4 < t \leq 6$</td> <td>34</td> <td>53</td> </tr> <tr> <td>$6 < t \leq 8$</td> <td>19</td> <td>72</td> </tr> <tr> <td>$8 < t \leq 10$</td> <td>13</td> <td>85</td> </tr> <tr> <td>$10 < t \leq 12$</td> <td>5</td> <td>90</td> </tr> </tbody> </table>	Delay (mins)	Frequency	Cumulative Frequency	$0 < t \leq 2$	6	6	$2 < t \leq 4$	13	19	$4 < t \leq 6$	34	53	$6 < t \leq 8$	19	72	$8 < t \leq 10$	13	85	$10 < t \leq 12$	5	90	<p>[1] Three correctly summed values</p> <p>[1] All correct values</p>
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1(b)	(2, 6)	[1] x-co-ordinate -highest value of the respective group and co-ordinate should be the cumulative frequency found in part (a)																					
	(4, 19)	[1]																					
2	<p>The graph is a cumulative frequency curve plotted on a grid. The vertical axis is labeled 'Cumulative frequency' and ranges from 0 to 90 with major grid lines every 10 units and minor grid lines every 2 units. The horizontal axis is labeled 'Time, T, minutes' and ranges from 0 to 300 with major grid lines every 50 units and minor grid lines every 10 units. The curve starts at the origin (0,0) and passes through the following points: (50, 6), (100, 19), (150, 53), (200, 72), (250, 85), and (300, 90). The curve is smooth and concave down.</p>																						
	All coordinates plotted correctly	[1]																					
	Smooth curve passing through all points	[1]																					
	Starting from 0	[1]																					

Turn over ►

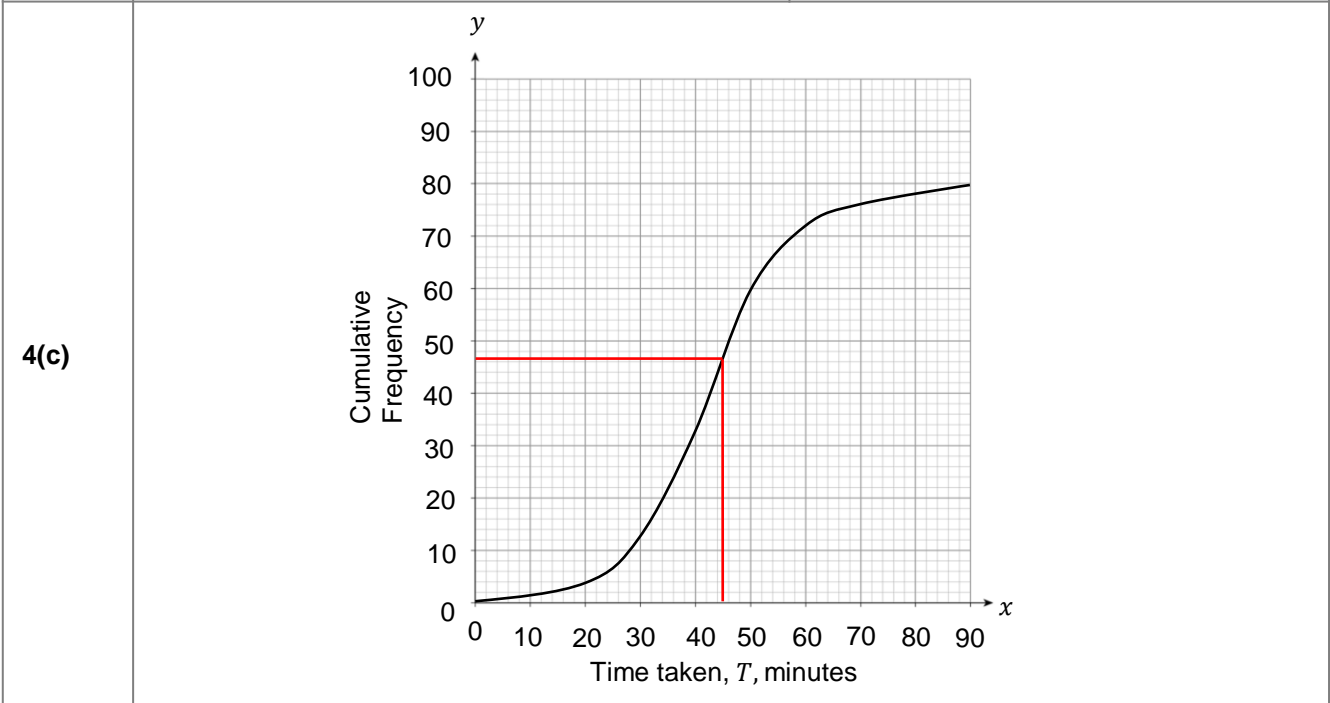
3(a)	$£335 \pm 5$	[1] line drawn across and down from CF = 50																								
3(b)	$£255 \pm 5$	[1] line drawn across and down from CF = 25																								
3(c)	$£400 \pm 5$	[1] line drawn across and down from CF = 75																								
3(d)	$£145 \pm 10$	[1] Value found in part (c) – (b)																								
3(e)	Draw up from £500. Intersect graph at 94	[1]																								
	6 people spent over £500	[1]																								
4(a)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Time taken (mins)</th> <th>Frequency</th> <th>CF</th> </tr> </thead> <tbody> <tr> <td>$0 < t \leq 20$</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> <tr> <td>$20 < t \leq 30$</td> <td style="text-align: center;">12</td> <td style="text-align: center;">14</td> </tr> <tr> <td>$30 < t \leq 40$</td> <td style="text-align: center;">23</td> <td style="text-align: center;">37</td> </tr> <tr> <td>$40 < t \leq 50$</td> <td style="text-align: center;">30</td> <td style="text-align: center;">67</td> </tr> <tr> <td>$50 < t \leq 60$</td> <td style="text-align: center;">14</td> <td style="text-align: center;">81</td> </tr> <tr> <td>$60 < t \leq 70$</td> <td style="text-align: center;">5</td> <td style="text-align: center;">86</td> </tr> <tr> <td>$70 < t \leq 90$</td> <td style="text-align: center;">4</td> <td style="text-align: center;">90</td> </tr> </tbody> </table>	Time taken (mins)	Frequency	CF	$0 < t \leq 20$	2	2	$20 < t \leq 30$	12	14	$30 < t \leq 40$	23	37	$40 < t \leq 50$	30	67	$50 < t \leq 60$	14	81	$60 < t \leq 70$	5	86	$70 < t \leq 90$	4	90	[1] Cumulative frequency values calculated
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		[1] Cumulative frequency plotted against Upper bound of group																								

Turn over ►



Lower quartile = 34 Upper quartile = 50	[1]
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Inter quartile range = 16 ± 2	[1]
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Line drawn up from 45 minutes, intersecting curve. (Shown above)	[1]
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46 ± 2	[1]
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Turn over ►

5(a)	83 – 31	[1]
	52 people (± 2)	[1]
5(b)	Eva's data has a higher median than Frances'	[1] Median compared
	Eva's data has a smaller interquartile range	[1] IQR compared
6(a)	Graham has used straight lines to join the points rather than a smooth curve.	[1]
	Graham plotted the data at the start of each interval instead of the mid-point.	[1]
	Graham only plotted the cumulative frequency up to 90 instead of 100.	[1]
6(b)		
	Upper of the group plotted against cumulative frequency	[1] All points plotted correctly.
	Smooth curve through all points.	[1]

END