Cumulative Frequency Mark Scheme

1(a)

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

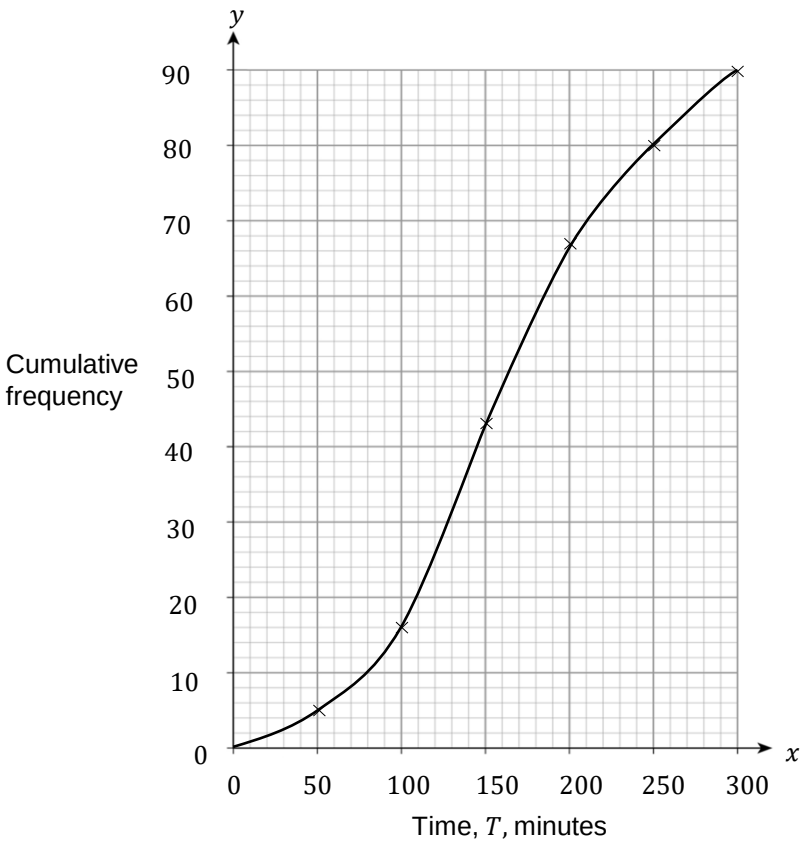
[1] Three correctly summed values

[1] All correct values

1(b) $(2, 6)$ — [1] x-coordinate -highest value of the respective group and coordinate should be the cumulative frequency found in part (a)

$(4, 19)$ — [1]

2

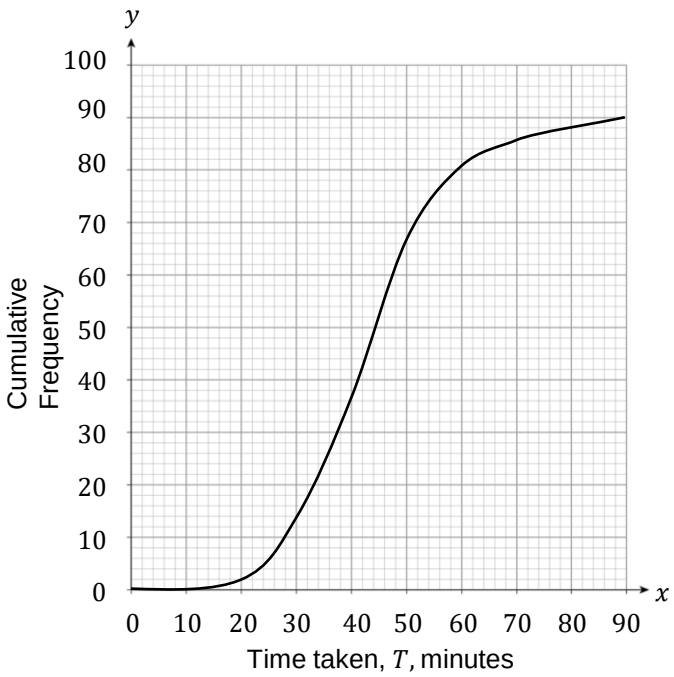


All coordinates plotted correctly	[1]
Smooth curve passing through all points	[1]
Starting from 0	[1]

Turn over ►

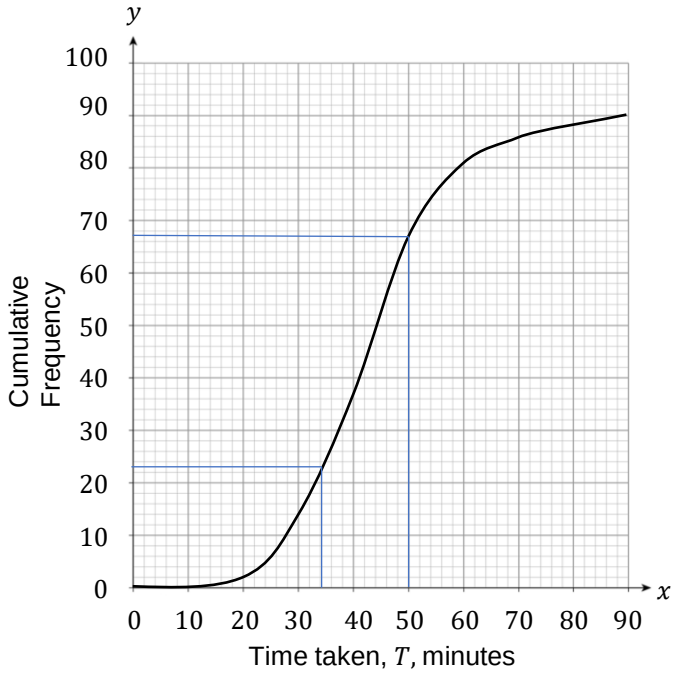
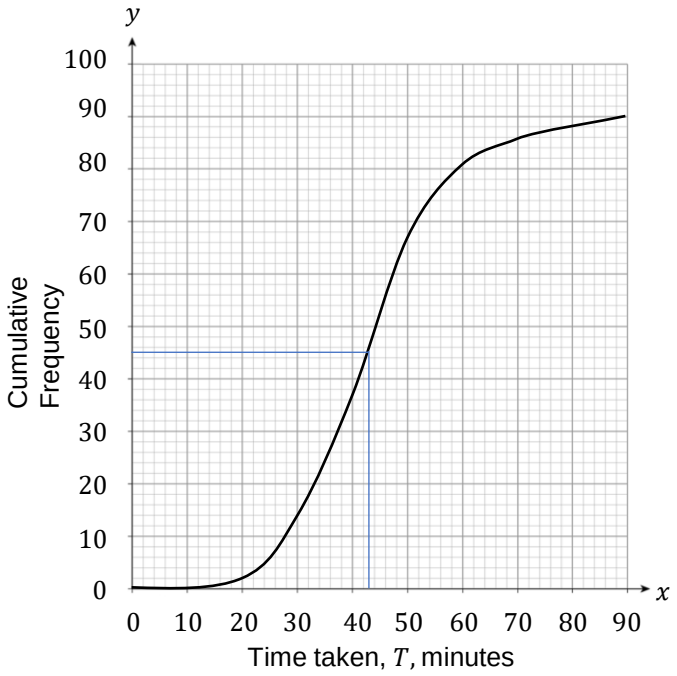
3(a)	£340 ± 5	[1] line drawn across and down from CF = 50
3(b)	£260 ± 5	[1] line drawn across and down from CF = 25
3(c)	£400 ± 5	[1] line drawn across and down from CF = 75
3(d)	£140 ± 10	[1] Value found in part (c) – (b)
3(e)	Draw up from £500. Intersect graph at 94	[1]
	6 people spent over £500	[1]
4(a)		[1] Cumulative frequency values calculated

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

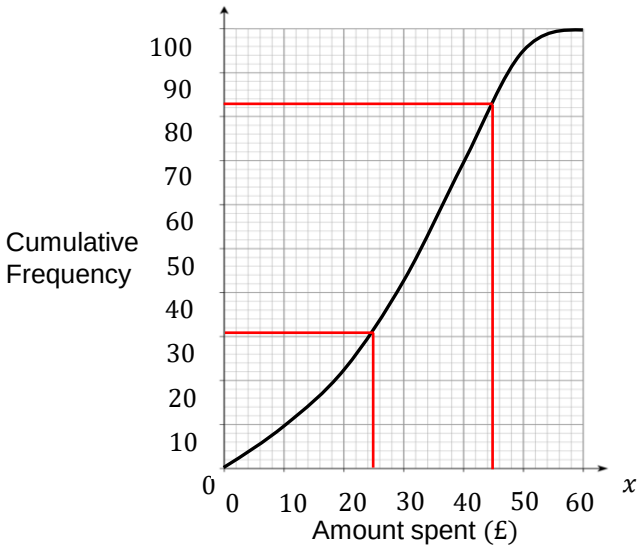
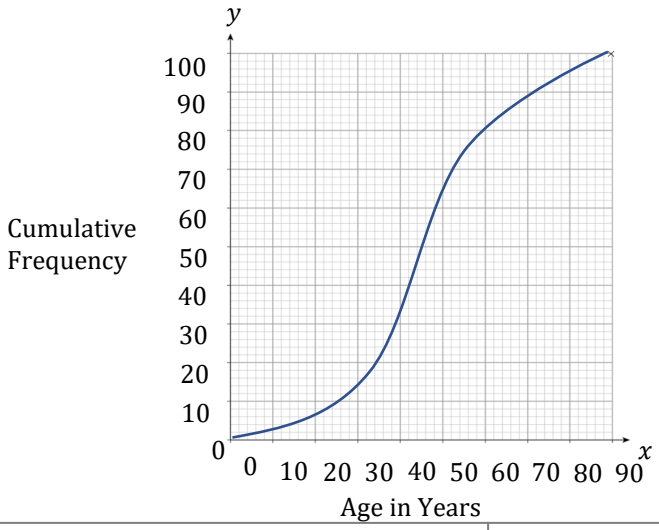


[1] Cumulative frequency plotted against Upper bound of group
[1] Smooth curve

Turn over ►

4(b)		
	Lower quartile $= 34 \pm 2$ Upper quartile $= 50 \pm 2$	[1]
	Inter quartile range = 16 ± 4	[1]
4(c)		
	Line drawn up from 45 minutes, intersecting curve. (Shown above)	[1]
	43 ± 2	[1]

Turn over ►

		
5(a)	$83 - 31$	[1]
	52 people (± 2)	[1]
5(b)	Eve's data has a higher median than Frances'	[1] Median compared
	Eve's data has a smaller interquartile range	[1] IQR compared
6(a)	Graham has used straight lines to join the points rather then 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 94 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