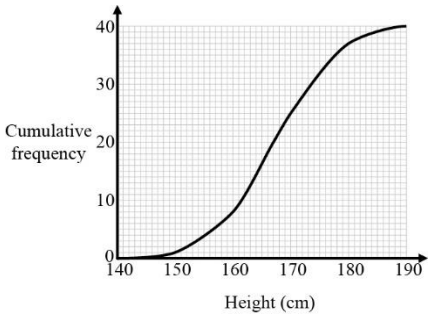
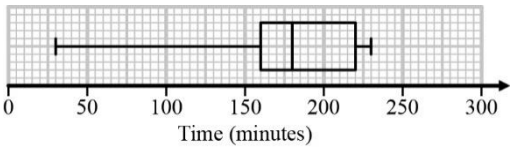
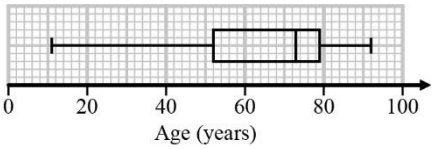
This is a calculator test (50 minutes).

The following marks are awarded for each question.

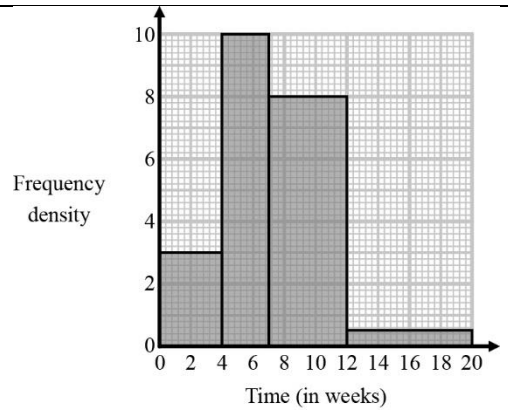
B	Unconditional accuracy mark
M	Method mark – the correct method must be shown but there may be an arithmetic error; the sight of the value given in brackets implies the award of the method mark
A	Accuracy mark – unless the question specifies that working **must** be shown then the sight of the correct answer implies the award of full marks (unless the answer clearly comes from incorrect working)
C	Communication mark
P	Process mark to show correct process for problem solving. Any other process of a similar standard to achieve an accurate result is acceptable to achieve this mark
FT	Incorrect values may be **followed through** from one step to the next **provided** that the correct method is seen in each step and the only errors are arithmetic. This is shown in mark schemes by putting a number in inverted commas
OE	Or equivalent answer mark

Q	Answer	Mark	Comment
1	For two different correct reasons, e.g. too small a sample, time of day, specific day, place, same type of people, same age of people, not random	B2	B1 for one correct reason
3a	8, 25, 37, 40	B1	
3b	Points (150, 1), (160, 8), (170, 25), (180, 37), (190, 40) plotted and joined up using a curve or line segments.  	B2	B1 for four or five of their points plotted correctly B1 for points plotted at correct heights and consistently within the class interval and joined by a curve or line segments
3c	167 (cm)	B1	FT from graph where points plotted at correct heights and consistently within the class interval and joined allow answer in the range 166 to 168

5a	See completed box plot below.  	M1	for box drawn with at least two correct points from 160, 180 and 220 or with a maximum value 230 plotted
		A1	fully correct box plot
5b	A correct comparison of medians eg girls watched more television than boys as their median is higher.	C1	
	A correct comparison of a measure of spread with correct figures, e.g. the amount of television watched by the boys was more spread out than the girls as the range for boys is 240 and girls is 200	C1	only award both marks if there is at least one comparison in context. or use IQR which is 60 for girls and 120 for boys

7	Complete correct box plot with box at 52 and 79 with median marked at 73, lowest and highest values marked at 11 and 92.  	B2	B2 for Lowest value identified as 11, lower quartile 52, median 73, upper quartile 79, highest value 92 B1 for a box plot with three values correct or for five points (may be small vertical lines) marked but not joined
		A1	
9a	54, 106, median drawn at 73 and minimum value drawn 23	B3	B2 for three correct B1 for two correct
9b	60	M1	0.75 × 80 OE or 80 ÷ 4
		A1	

11	Frequency used for heights instead of frequency density or the areas are not proportional to the frequencies	C1	
	The middle two bars are the wrong width	C1	accept either of the middle two bars are the wrong width
13a	Bars drawn: width 0 to 4 height 3, width 4 to 7 height 10, width 7 to 12 height 8 and width 12 to 20 height 0.5	B3	B2 for all four bars fully correct with areas in the ratio 3:7.5:10:1 OE

			B1 for two or three bars drawn in the correct ratio to each other or B1 for labelling the vertical axis 'frequency density' and consistent scaling

13b	No, with reason	C2	C1 for a method to work out the frequency for more than 4 weeks, e.g. April: 40 + 4 (= 44) and for October: 4 × (20 − 7) (= 52) OE C1 for No with 44 and 52 seen

Question	Topic	Step	Marks
1	Identify possible sources of bias and plan to minimise it; Understand how different sample sizes may not be representative of a whole population.	7th	2
3a	Construct cumulative frequency tables	8th	1
3b	Construct cumulative frequency graphs	9th	2
3c	Use cumulative frequency graphs to find the median, quartiles and interquartile range	9th	1
5a	Produce a box plot using summary data	9th	2
5b	Compare the measures of spread between a pair of box plots/cumulative frequency graphs	10th	2
7	Produce box plots from raw data and identify outliers when given quartiles and median	9th	3
9a	Produce a box plot using summary data	9th	3
9b	From a box plot estimate frequency greater/less than a given value	9th	2
11	From a histogram understand and define frequency density	11th	2

13a	Construct and interpret histograms from class intervals with unequal width	11th	3
13b	Understand and use frequency density	11th	2