



GCSE Foundation/Higher 22

Handling Data



Questions



65 minutes



58 marks

Representing data

- Q1.** Anna hits some old tennis balls.
The speeds (mph) of the balls are shown.

46	55	64	48	51
57	65	60	53	72
61	59	52	53	49

- (a) Show the data in an ordered stem-and-leaf diagram.
Remember to complete the key.

Key: | represents mph

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(4)

- (b) Work out the median speed.

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Answer mph

(1)

- (c) Anna hits some new tennis balls.
The median speed of the new balls is 59 mph.

She says the speeds of the new balls are at least 5% faster than the old balls.

Is she correct?

You **must** show your working.

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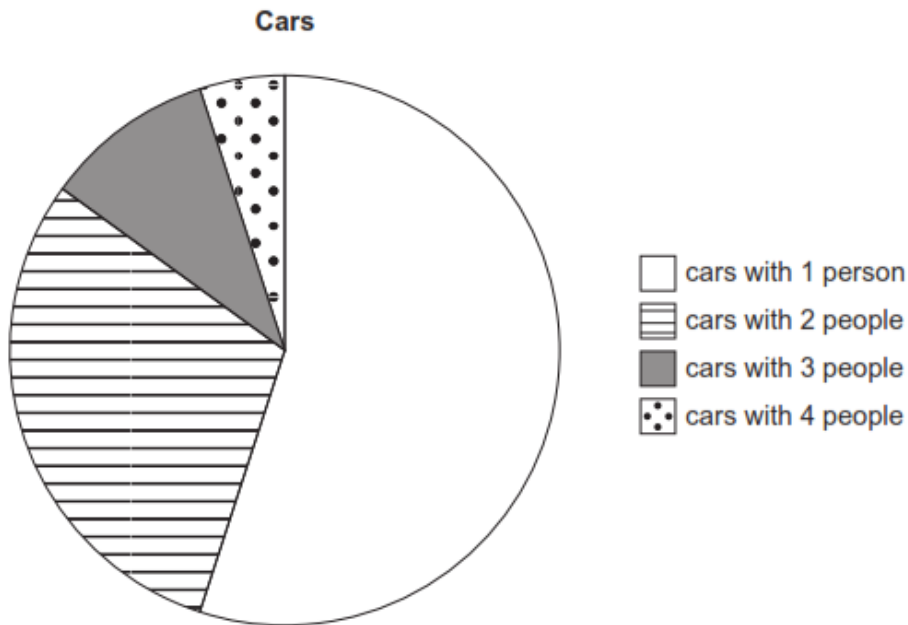
(3)

(Total 8 marks)

Q2. A council sets this target to reduce traffic.

More than 40% of cars should have 2 or more people in them.

The council collects data.



Is the target met?
Show how you decide.

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(Total 3 marks)

Q3. Each day 147 trains leave Lea Road station.
One day, most trains are on time (0 minutes late).
19 trains are late.

(a) What percentage of trains are late?
Give your answer to 1 decimal place.

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Answer %

(3)

- (b) The station manager records the number of minutes late for each of the 19 trains.

6	11	1	21	8	10	17	4	35	22
2	3	41	8	23	7	16	28	19	

- (i) Draw an ordered stem-and-leaf diagram to show the data for the late trains. Complete the key.

Key: | represents minutes late

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(4)

- (ii) For the 19 late trains, write down the modal number of minutes late.

Answer minutes

(1)

- (iii) Write down the modal number of minutes late for all 147 trains.

Answer minutes

(1)

- (c) The station manager says,
 “The late times are all one minute less than I recorded.
 For example, the train I recorded as 6 minutes late was actually only 5 minutes late.”

Which modal number of minutes late changes?
 Tick a box.

☐ The 19 late trains

☐ All 147 trains

☐ Both

☐ Neither

Give a reason for your answer.

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(2)
 (Total 11 marks)

- Q4.** Seb investigates whether members of an athletics club perform better than non-members in a 10 kilometre race.

The table summarises the finishing times of the members.

Finishing time, t (minutes)	Frequency		
$30 \leq t < 40$	10		
$40 \leq t < 50$	12		
$50 \leq t < 60$	6		
$60 \leq t < 70$	2		

- (a) (i) Calculate an estimate of the mean finishing time of the members.

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Answer minutes

(4)

- (ii) What fraction of the members finish in less than 50 minutes?

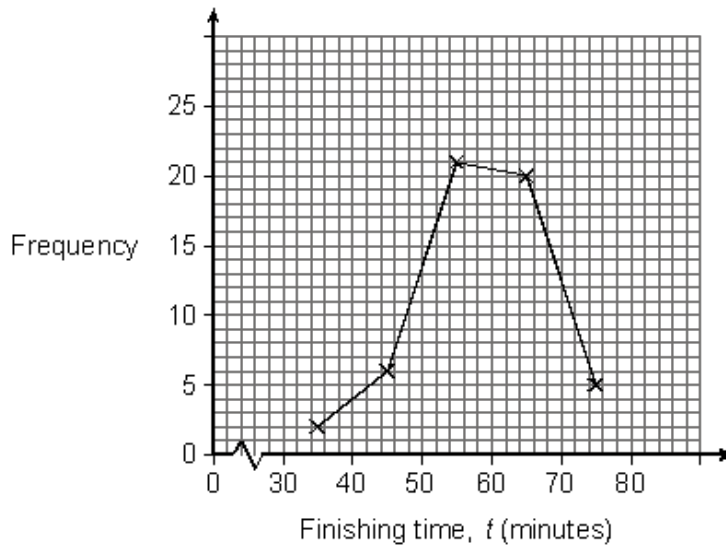
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Answer

(2)

- (b) The frequency polygon for the finishing times of non-members is shown below.



- (i) On the same axes draw the frequency polygon for the finishing times of the members.

(2)

- (ii) Seb claims that on average non-members are slower and have more varied finishing times than members.

How can you tell that **both** of Seb's claims are correct?

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(2)

- (c) Brendan finished 11th in the race.

Which of the following could be his finishing time?

Circle your answer.

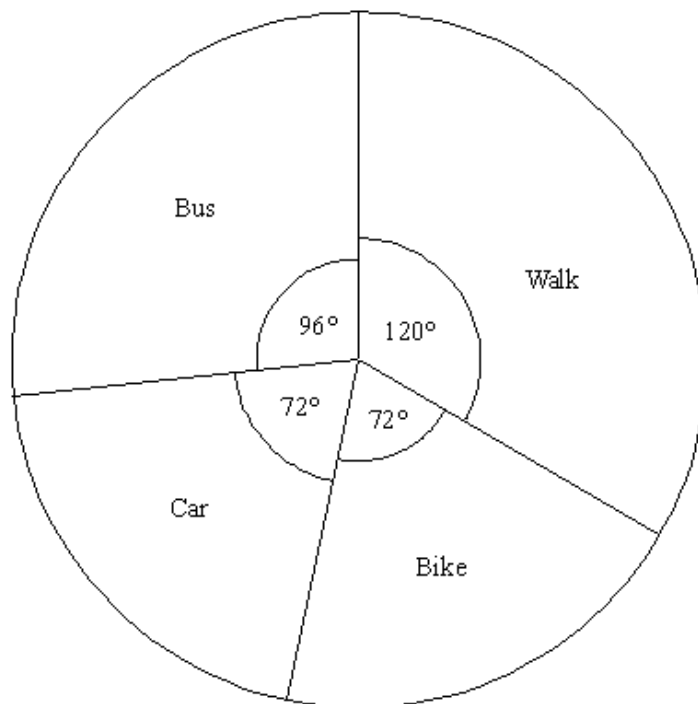
39 minutes 42 minutes 48 minutes 52 minutes

Explain your choice of answer.

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(2)
(Total 12 marks)

- Q5.** (a) The pie chart shows the ways that 30 pupils travel to school.



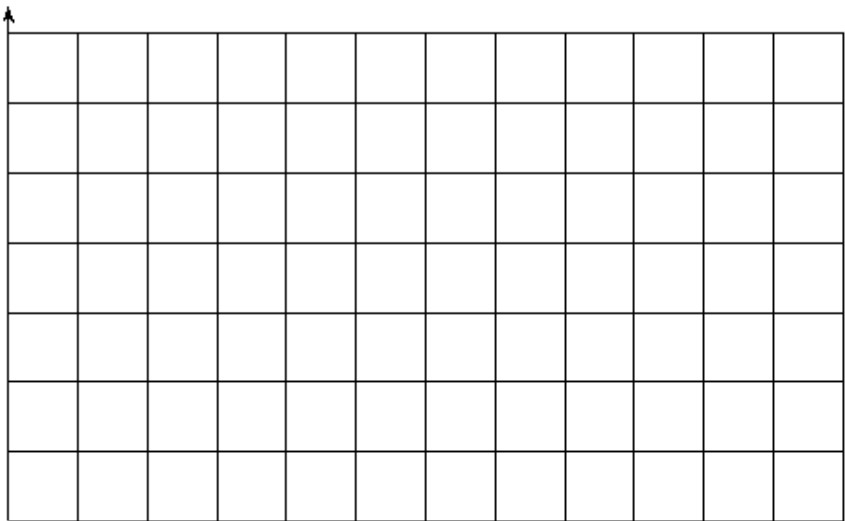
On the grid below, draw and label a bar chart to represent the same information.

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(4)

(b) The pupils who walked to school took these times in minutes.

5 12 7 14 23 11 18 10 8 11

Draw an ordered stem and leaf diagram to show this information.

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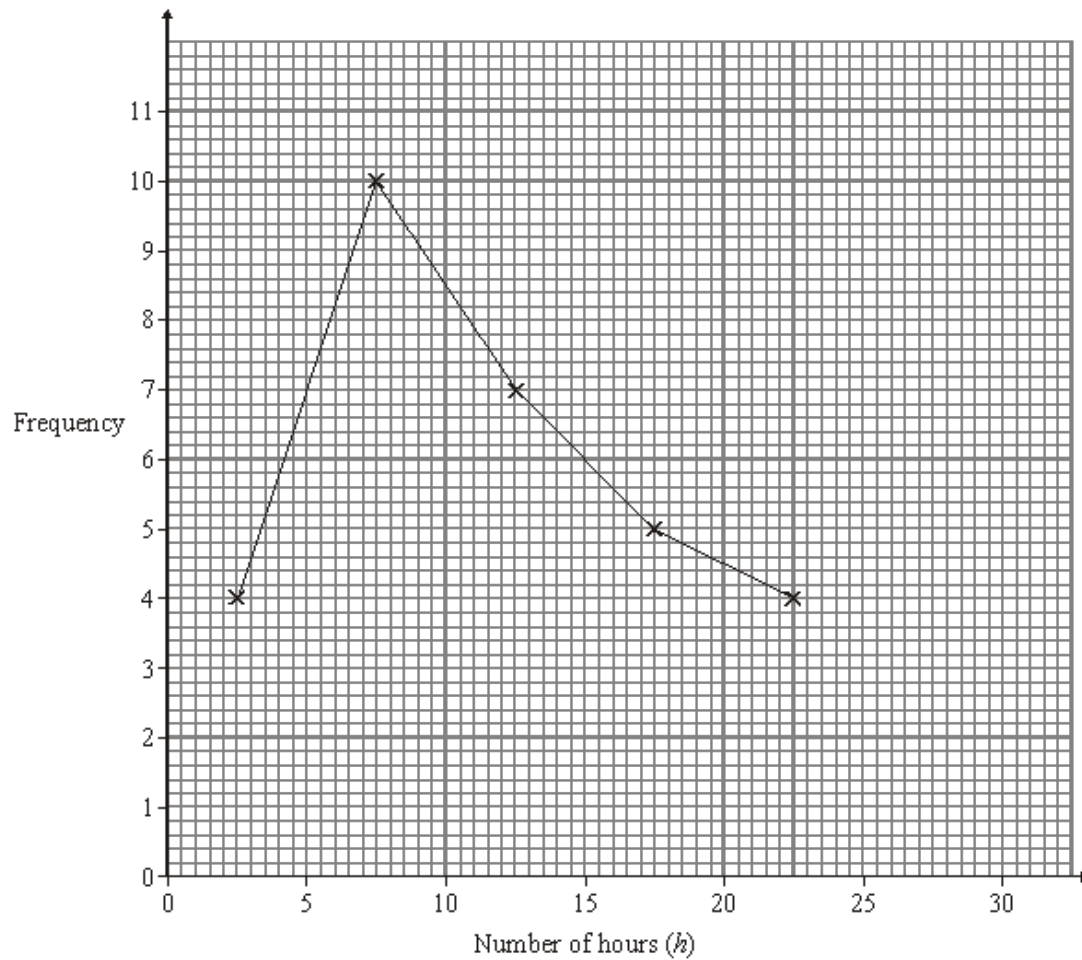
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Key: | 1 | 2 represents 12 minutes



(3)
(Total 7 marks)

- Q6.** The frequency polygon shows the number of hours of television watched each week by 30 teachers.



- (a) One of the teachers is picked at random.
What is the probability that this teacher watches more than 15 hours of television each week?

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Answer

(2)

- (b) The number of hours of television watched each week by 30 students is shown below.

Number of hours (h)	Frequency
$0 < h \leq 5$	1
$5 < h \leq 10$	2
$10 < h \leq 15$	7
$15 < h \leq 20$	9
$20 < h \leq 25$	7
$25 < h \leq 30$	4

On the same grid draw a frequency polygon to show this information.

(2)

- (c) Give **two** comparisons between the number of hours of television watched by these teachers and students.

Comparison 1

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Comparison 2

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(2)

(Total 6 marks)

- Q7.** A form teacher records the number of times her students were late during a term. She shows the data for those who were late in a stem and leaf diagram.

Key | 2 | 7 represents late 26 times

0	1	1	2	6
1	2	4	4	
2	3	6		
3	2			
4	0	9		
5	0			

17 students were never late.

Calculate the mean number of times students were late for the whole form.

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Answer

(Total 4 marks)

- Q8.** The ordered stem and leaf diagram shows the number of cameras sold each day, over a period of 20 days.

Key | 1 | 2 represents 12 cameras

0	4	8	9						
1	1	2	2	2	6	7	9	9	
2	0	3	5	8	8	8			
3	1	2	5						

The next day 28 cameras are sold.

Does the median increase, decrease or stay the same?

You **must** show your working.

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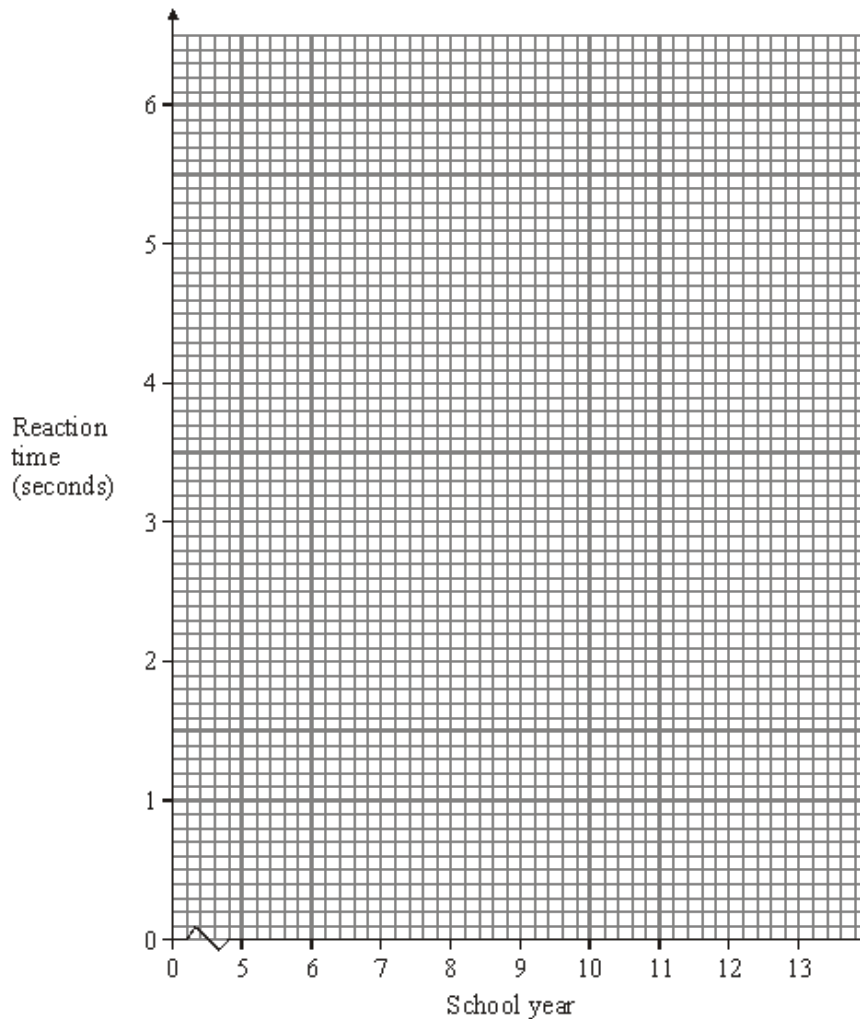
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(Total 3 marks)

- Q9.** The table shows the school year and the reaction time of eight people who took part in the same test.

School year	5	7	8	9	10	11	12	13
Reaction time (seconds)	6	5	4.8	4.5	4	4.2	3.5	3

- (a) Draw a scatter graph of these data.



(2)

- (b) Draw a line of best fit on your scatter graph.

(1)

- (c) Describe the relationship shown by your scatter graph.

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(1)

(Total 4 marks)

