



GCSE Foundation 24

Handling Data



218 minutes



212 marks

Interpreting and discussing results

- Q1.** Eva owns a restaurant.
The table shows the number of customers on four days.

	Tuesday	Wednesday	Thursday	Friday
Lunch	25	22	27	31
Dinner	50	48	70	89
Total	75	70	97	120

- (a) How many **more** customers in total were there on Friday than on Thursday?

.....

Answer

(2)

- (b) She keeps a tally of the number of customers who order pudding each day.

Complete the table.

Day	Tally	Frequency
Tuesday		17
Wednesday		
Thursday		
Friday		30

(2)

- (c) What fraction of **Friday's** customers ordered a pudding?
Give your answer in its simplest form.

.....

.....

Answer

(2)

(d) Here is some information about Saturday.

Number of customers	150
Number who order pudding	50

Eva thinks the fraction of customers who ordered puddings on Saturday is greater than on Friday.

Is she correct?

You **must** show your working.

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(3)
(Total 9 marks)

Q2. Here are six numbers.

14 14 15 18 21 24

(a) Why is 14 the mode?

.....

(1)

(b) Each number is doubled.

What is the new mode?

.....

.....

Answer

(1)

(c) Here are the six numbers again.

14 14 15 18 21 24

Round each number to the nearest 10.

What is the mode now?

.....
.....

Answer

(2)
(Total 4 marks)

Q3. The stem-and-leaf diagram shows the number of visitors to a castle over 15 days.

Key: 7 | 0 represents 70 visitors

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

(a) How many days had more than 80 visitors?

.....

Answer

(1)

(b) Work out the range.

.....

Answer

(2)
(Total 3 marks)

- Q4.** (a) The number of cakes sold in a shop on 5 days is shown.

Day	Mon	Tue	Wed	Thu	Fri
Number of cakes sold	44	38	48	55	60

Work out the mean number of cakes sold.

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.....

Answer

(3)

- (b) On Saturday the shop had 60 cakes to sell.
41 cakes were sold.

The profit on each cake sold is 40 p.
The loss on each cake **not** sold is 10 p.

Work out the overall profit for these 60 cakes.

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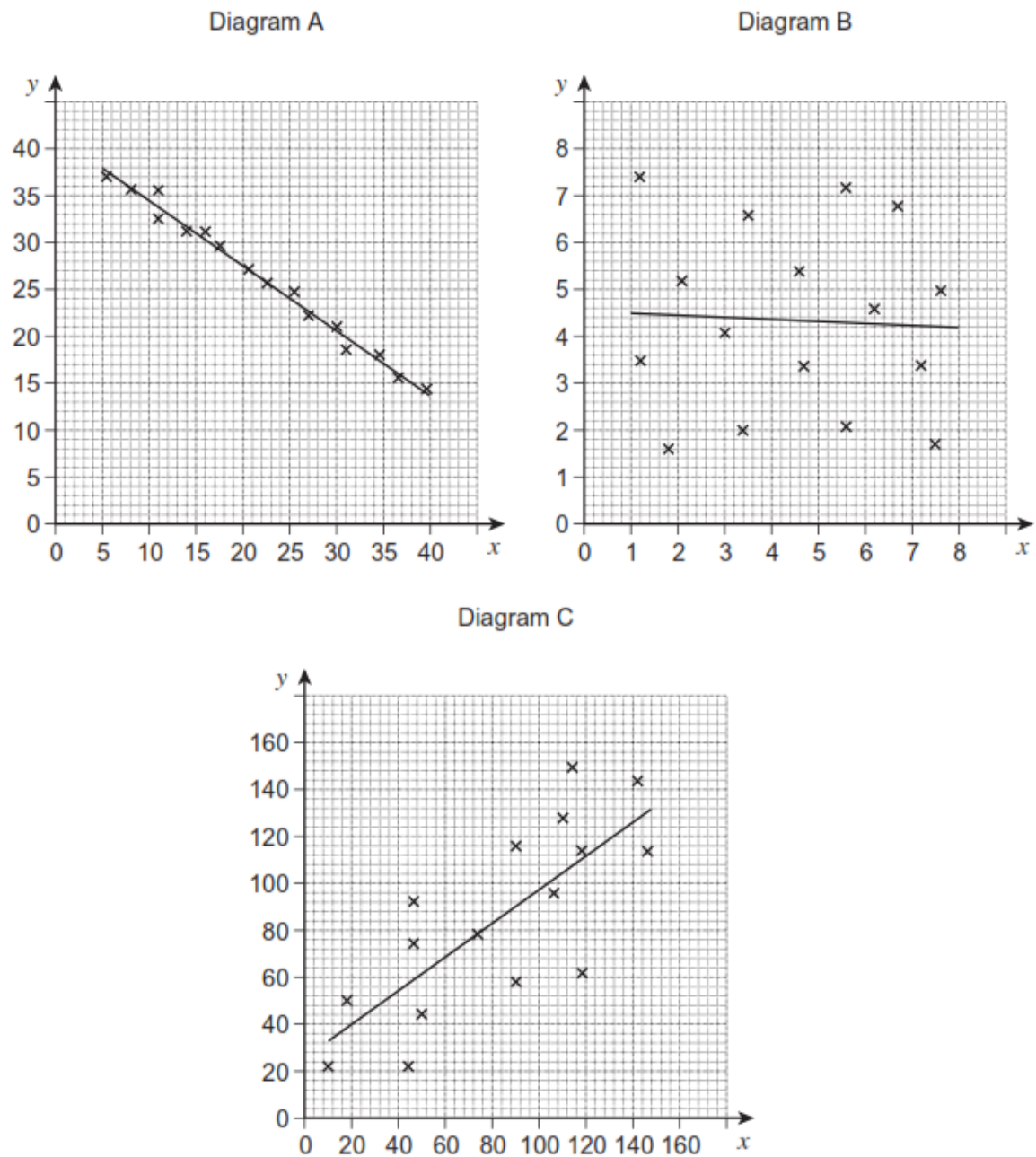
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Answer £

(4)

(Total 7 marks)

Q5. A student draws three scatter diagrams. She draws a line of best fit on each one.



(a) Which diagram shows the strongest correlation?
Circle your answer.

A

B

C

(1)

- (b) Which line of best fit should **not** have been drawn?

Give a reason for your answer.

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(1)
(Total 2 marks)

- Q6.** (a) Matthew records the types of birds that visit his garden one morning.

- (i) Complete the table.

Type of bird	Tally	Frequency
robin	IIII	
blackbird	III	
starling	### ## II	
sparrow	### IIII	
	Total	

(3)

- (ii) What fraction of the birds are robins?
Give your answer in its simplest form.

.....

Answer

(2)



- (b) This table shows the types of birds that Leah records in her garden one morning.

Type of bird	robin	blackbird	starling	sparrow
Frequency	4	6	5	3

She has finished the first row of a pictogram to show the results.

Complete the key and pictogram.

Key:  represents birds

robin	 
blackbird	
starling	
sparrow	

(4)

- (c) 500 000 people record the types of birds in their gardens.
In total, they record eight million birds.

On average, how many birds does each person record?

.....
.....
.....

Answer

(3)

(d) Here is a list of the birds at a bird table.

robin	robin	sparrow	blackbird	starling
blackbird	starling	blackbird	robin	blackbird

One bird flies away.
Another bird arrives at the bird table.

The new mode is robin.

What type of bird flies away and what type of bird arrives?
Complete the table.

.....
.....

	Type of bird
Flies away	
Arrives	

(2)
(Total 14 marks)

Q7. Danni and Ed are in the same quiz team.
In each round a person can score up to 10 points.

Here are the scores for Danni.

1 1 10 2 10 1 3

The scores for Ed have a range of 3.
The mean score for Ed is 5.

(a) Compare the scores for Danni and Ed.

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(5)

- (b) In the final round, only one person can play.
Their team needs 9 points to win.

Who would you choose, Danni or Ed?
Give a reason for your answer.

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(1)
(Total 6 marks)

Q8. Ian sells cans of drinks.

- (a) The table shows the percentages of drinks sold on Monday morning.

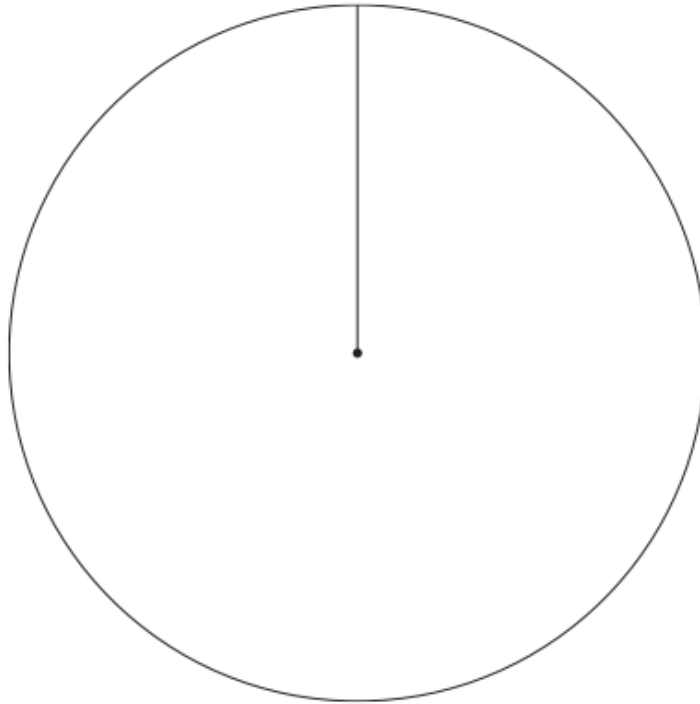
Drink	Percentage Sold
Cola	30%
Lemonade	20%
Orange	50%

Draw a pie chart for the data.

.....











.....

.....



(4)

- (b) The pictogram shows information about the drinks sold on Monday afternoon. The key is missing.

Cola	    
Lemonade	 
Orange	  

80 cans were sold that afternoon.

How many cans of cola were sold?

.....

.....

.....

Answer

(3)

(c) 80 cans were also sold in the morning.

- (i) Write down **one** difference between the cans sold in the morning and in the afternoon.

.....
.....

(1)

- (ii) Ian orders more cans.

Which flavour should he order least of, based on Monday's sales?
Circle your answer.

Cola

Lemonade

Orange

(1)

(Total 9 marks)

Q9. Here is a list of numbers.

0 3 5 7 12 29

- (a) Write down **three** numbers from the list with a median of 7.

Answer , and

(1)

- (b) Write down **three** numbers from the list with a range of 7.

.....
.....

Answer , and

(1)

- (c) Find **three** numbers from the list with a mean that is a whole number.

.....
.....

Answer , and

(2)

- (d) Find **three** numbers from the list with the range double the median.
Write down the values of the range and median.

.....

.....

.....

.....

.....





Answer, and

Range = Median =

(3)
(Total 7 marks)

Q10. Nick takes four tests.

The pictogram shows his scores.

English	
Geography	
Mathematics	
Science	

- (a) Nick scores 60% in English.

Complete the key. Key:  represents%

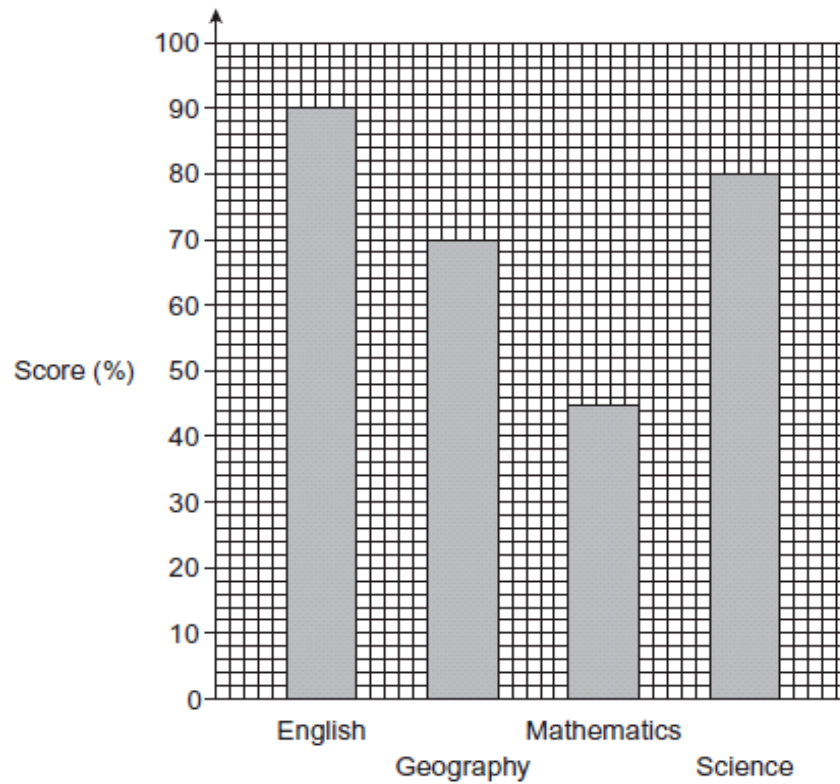
(1)

- (b) In which subject is his highest score?

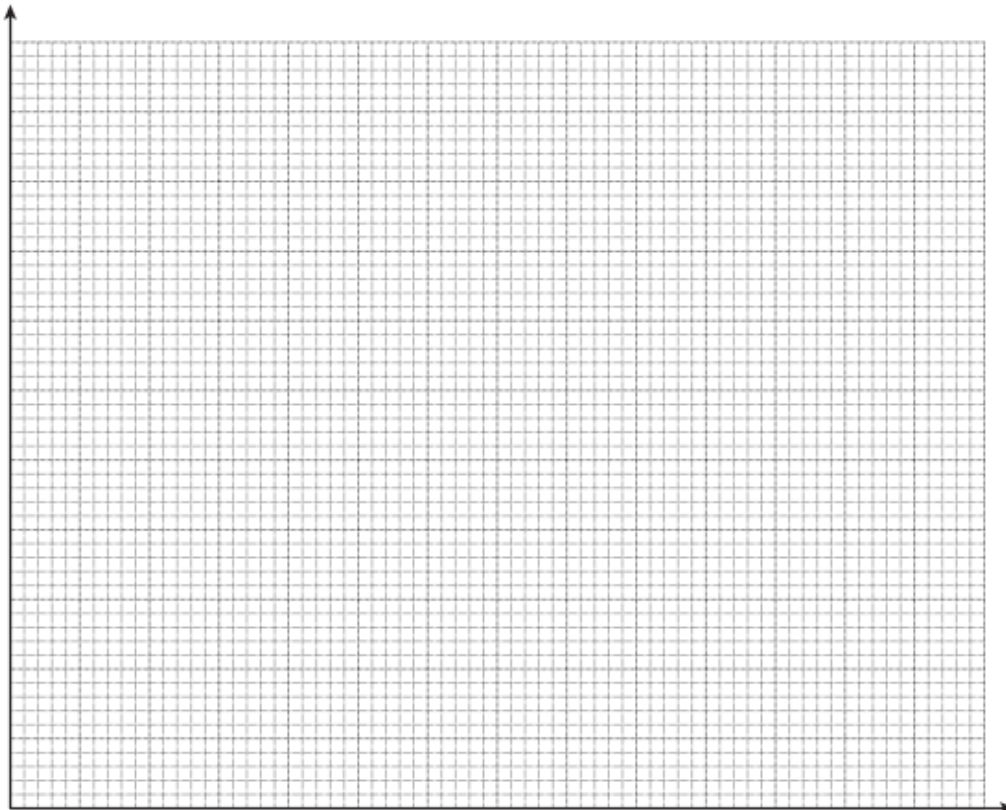
Answer

(1)

- (c) Jen takes the same four tests.
The bar chart shows her scores.



- (i) Nick wants to compare his scores with Jen's scores.
Draw a suitable diagram that he can use.



- (ii) Write down **three** facts comparing their scores.

Fact 1

.....

Fact 2

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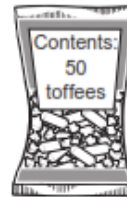
Fact 3

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(3)
(Total 9 marks)

- Q11.** A company makes bags of toffees.

The company checks that the bags contain 50 toffees.



- (a) The number of toffees in a sample of 11 bags is

51 50 51 51 52 43 50 50 51 51 50

- (i) Write down the mode.

Answer

(1)

- (ii) Work out the median.
You **must** show your working.

.....

.....

Answer

(2)

- (iii) Work out the mean.

.....

.....

Answer

(3)

(b) The company claims there are 50 toffees in a bag.

(i) Give a reason why this claim seems fair.

.....
.....

(1)

(ii) Give a reason why this claim seems unfair.

.....
.....

(1)

(c) The company uses the first 11 bags produced each Monday to check the contents.

State **two** ways this method of sampling can be improved.

1
.....
2
.....

(2)

(Total 10 marks)

Q12. Clive works for the local council.

One of his jobs is to check that taxi companies charge reasonable fares.

Each week he checks 10 taxi journeys with local companies.

(a) Design a suitable observation sheet for Clive to use to record the fare and distance of each journey.

(2)

- (b) Clive expects strong positive correlation between the length of the journey and the fare charged.

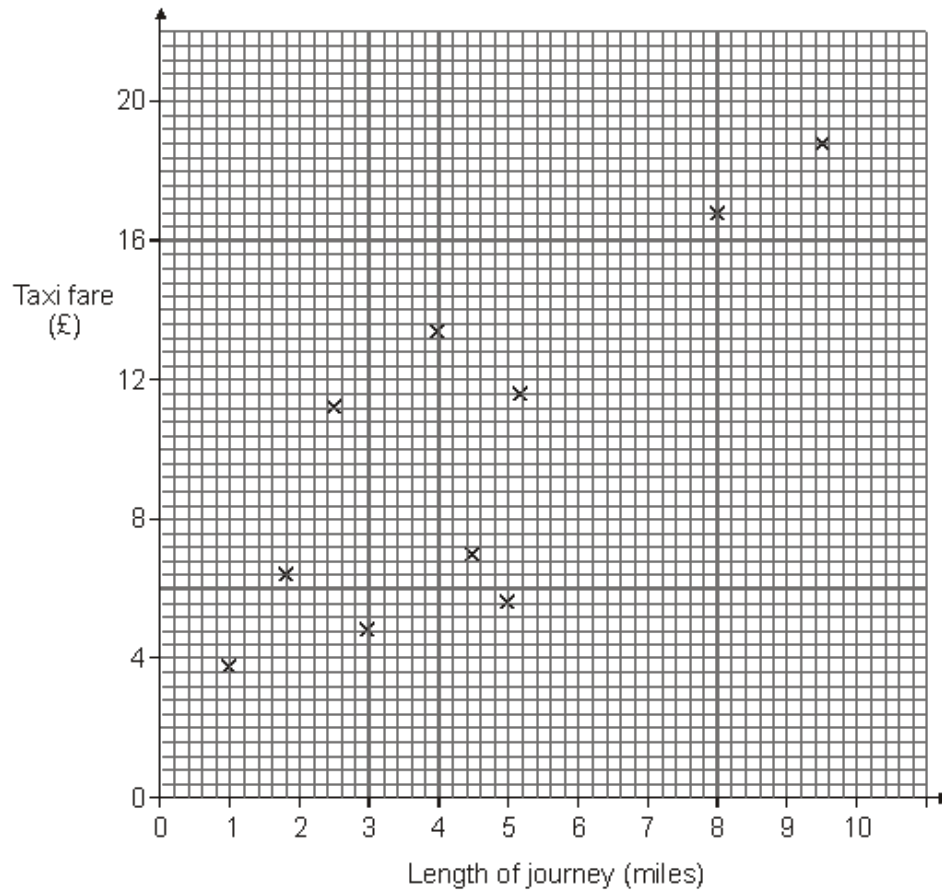
Explain why he might expect this.

.....

.....

(1)

- (c) The scatter diagram shows the results for a week in January 2009.



- (i) What was the fare for the 3-mile journey?

Answer £

(1)

- (ii) What would you expect to pay for a 7-mile journey?

Show how you obtain your answer.

Answer £

(2)

- (d) Does the data support Clive's view about the expected correlation between the length of journey and the fare?

Give a reason for your answer.

.....
.....

(1)
(Total 7 marks)

Q13. Here is a list of numbers

2 5 6 8 9

- (a) Write down the range of the numbers.

Answer

(1)

- (b) 10 is added to each of the numbers in the list.

What is the range now?

.....

Answer

(1)
(Total 2 marks)

- Q14.** Fastbus and Quickline run buses on the same routes.
Paul and Sally are comparing the service of Fastbus and Quickline.

The table shows the advertised journey time for each of nine routes.
It also shows the number of minutes late for the first bus on each route one morning.

	Fastbus		Quickline	
	Advertised journey time (minutes)	Number of minutes late	Advertised journey time (minutes)	Number of minutes late
Route A	120	5	140	0
Route B	60	0	70	0
Route C	145	15	150	45
Route D	180	30	180	60
Route E	95	5	100	0
Route F	140	20	150	5
Route G	95	5	120	0
Route H	110	0	120	25
Route I	70	10	80	0

Example: Route A - Fastbus 5 minutes late, Quickline on time (0 minutes late)

- (a) Write down the advertised journey time for Quickline on route B.
Give your answer in hours and minutes.

.....

Answer hours minutes

(1)

- (b) How many more minutes late was Fastbus than Quickline on route F?

.....

.....

Answer minutes

(2)

- (c) Show that the median number of minutes late for Fastbus is 5 minutes.

.....

.....

(2)

- (d) Complete the table below by working out the mean number of minutes late for Quickline.

.....

(2)

	Fastbus	Quickline
Mean number of minutes late	10	
Median number of minutes late	5	0
Modal number of minutes late	5	0

- (e) Paul and Sally disagree over who has the better bus service, Fastbus or Quickline.

- (i) Paul says that Fastbus is better.

Give **one** reason why Paul could be correct.

.....

(1)

- (ii) Sally says that Quickline is better.

Give **one** reason why Sally could be correct.

.....

(1)

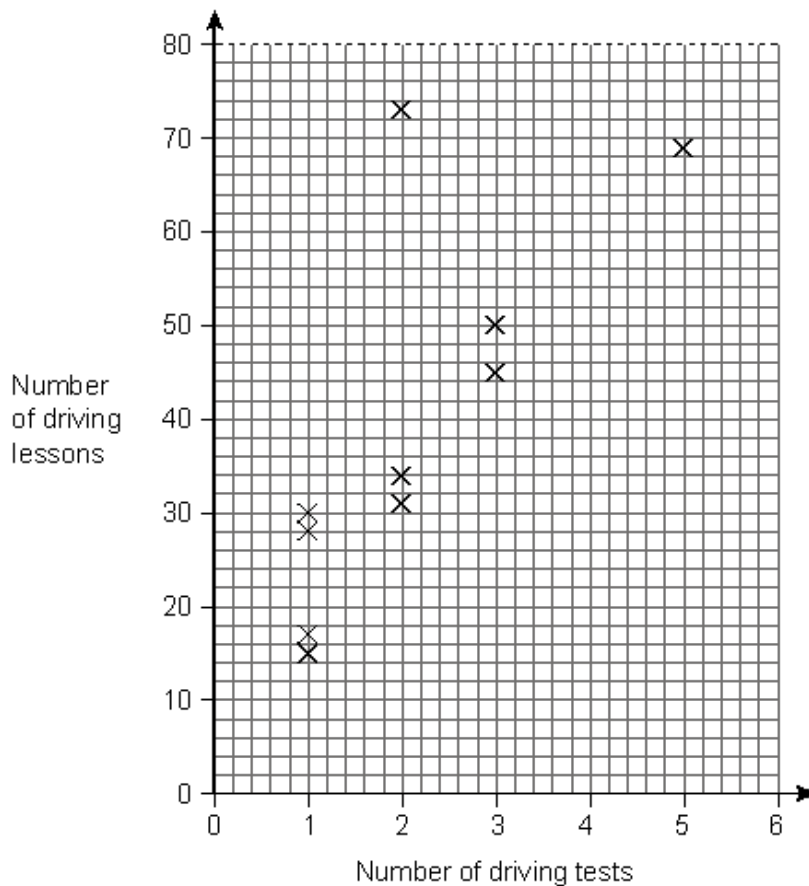
- (f) Give **one** other factor which could be used to compare the service of Fastbus and Quickline.

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(1)

(Total 10 marks)

- Q15.** Jeff wants to know the number of driving lessons he might need before he passes his driving test.
 He also wants to know the number of times he might have to take his driving test before he passes.
 He collects some data and shows it on this scatter graph.



- (a) Jeff ignores one of the points on the scatter graph.

Circle this point and give a reason why it should be ignored.

Reason

.....

(2)

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

(1)

- (c) Jeff has already failed his driving test three times after a total of 40 driving lessons.

- (i) Estimate how many **more** driving lessons Jeff needs if he is to pass his driving test on the fourth attempt.

.....

Answer

(2)

- (ii) Give a reason why this estimate might be unreliable.

.....

.....

(1)
(Total 6 marks)

Q16. Jody has a set of five single-digit number cards.



- (a) She says the median is greater than the mode.
Show that Jody is correct.

.....

.....

(2)

- (b) Here is another set of five cards.



Jody is asked to write numbers on the remaining two cards so that the median is the same as the mode.

She says, "If I write down two fives or two sixes or one of each, I cannot fail."

Show that Jody is correct.

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(3)
(Total 5 marks)

Q17. Write down four **different** numbers with a mean of 5

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.....
.....

Answer , , ,

(Total 2 marks)

Q18. Here is a list of numbers.

5 7 5 6 4 9 8 10 5

(a) Work out the median.

.....

Answer

(2)

(b) One of the numbers is chosen at random.

(i) What is the probability that the number is 5?

.....

Answer

(1)

(ii) Put these events in order of likelihood starting with the least likely.

A The number is 5.

B The number is even.

C The number is greater than 8.

.....

.....

Answer

(2)

(Total 5 marks)

Q19. Three whole numbers have a mean of 30.

- (a) The numbers are all different.

Write down three possible numbers.

.....

Answer and and

(1)

- (b) Two numbers are equal and the third number is smaller than the other two.

Find three possible numbers.

.....

Answer and and

(1)

- (c) Two numbers are equal and the third number is half the size of the other two.

Work out the three numbers.

.....

.....

Answer and and

(2)

(Total 4 marks)

Q20. Write down four whole numbers with a median of 6, a mode of 5 and a range of 3.

.....

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.....

.....

Answer , , ,

(Total 3 marks)

Q21. (a) Here are four numbers.

4 2 1 7

Explain why the median is 3.

.....
.....

(2)

(b) Here are five numbers.

4 2 1 7 5

What fraction of the numbers is below the median?

.....
Answer

(2)

(c) A set of six numbers has a median of 3.
Only one of the numbers is below the median.

Write down a possible set of the six numbers.

.....
.....
.....
Answer

(2)

(Total 6 marks)

Q22. The stem-and-leaf diagram shows the number of sweets in each of 25 bags.

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

Key 3 | 8 represents 38 sweets

(a) Calculate the range of the number of sweets in the bags.

.....
Answer

(2)

- (b) Write down the mode of the number of sweets in the bags.

Answer

(1)

- (c) Two extra bags each contain 51 sweets.
This information is added to the stem-and-leaf diagram.

- (i) State, with a reason, whether the range has changed.

.....
.....

(1)

- (ii) State, with a reason, whether the mode has changed.

.....
.....

(1)

(Total 5 marks)

- Q23.** Every hour a bank records the number of customers waiting to be served.
The results for one Monday are shown.

Time	10 am	11 am	12 pm	1 pm	2 pm	3 pm	4 pm
Number of customers waiting	7	5	15	24	9	6	4

- (a) At which one of these times were most customers waiting?

Answer

(1)

- (b) Calculate the mean number of customers waiting at these times.

.....
.....
.....

Answer

(3)

- (c) On Friday of the same week the mean number of customers waiting at these times was 20.

On which day should the bank employ more staff?
Explain your answer.

.....

.....

.....

(2)
(Total 6 marks)

Q24. Ten students attempted two fraction questions.

Question A: $2\frac{1}{5} + 1\frac{1}{3}$

Question B: $2\frac{1}{4} - 1\frac{1}{6} + 3\frac{1}{3}$

- (a) Work out $2\frac{1}{5} + 1\frac{1}{3}$

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Answer

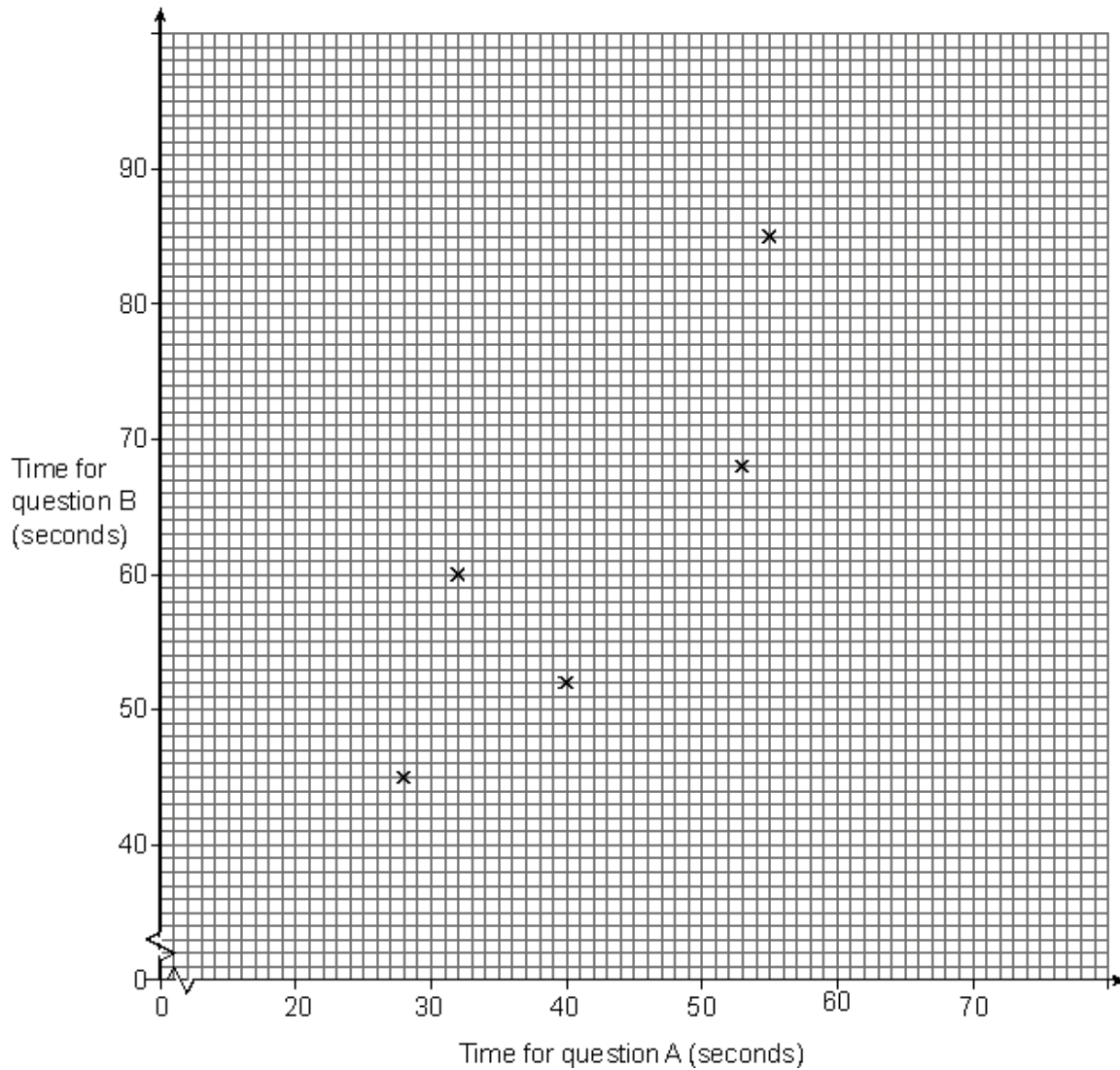
(3)

- (b) The table shows the times (to the nearest second) taken by ten students to complete each question.

Student	Amy	Ben	Cat	Don	Eli	Fay	Gil	Haq	Ian	Jan
Time for question A (seconds)	32	28	53	55	40	28	58	52	60	45
Time for question B (seconds)	60	45	68	85	52	55	70	76	48	72

Complete the scatter diagram.
The results for the first five students have been plotted.

(2)



- (c) The times for one student do **not** follow the same pattern as the others.

Which student is this?

Answer

(1)

- (d) Estimate the time a student would take to complete question B if they take 50 seconds to complete question A.

Answerseconds

(2)

(Total 8 marks)

Q25. Jim records how many text messages he receives each day for ten days.

3 0 1 4 1 4 6 1 20 0

(a) Work out the median.

.....

.....

.....

Answer

(2)

(b) Work out the mean.

.....

.....

Answer

(2)

(c) Which of these two averages better represents the data?
Explain your answer.

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(1)

(Total 5 marks)

Q26. A rounders coach records the number of rounders the players in her squad scored in a season.

All the players scored at least once.

She shows the data in a stem and leaf diagram.

Key		2		7	represents 27 rounders scored
-----	--	---	--	---	-------------------------------

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

(a) What is the range of the data?

.....

Answer

(1)

(b) How many players are there in the squad?

.....

.....

Answer

(1)

(c) What is the median number of rounders scored?

.....

.....

Answer

(1)

(d) Calculate the mean number of rounders scored.

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.....

.....

Answer

(3)

(Total 6 marks)

Q27. A girls' basketball team plays six matches.
The scores are

28 30 25 35 39 26

(a) What is the median score?

.....

Answer

(2)

(b) What is the mean score?

.....

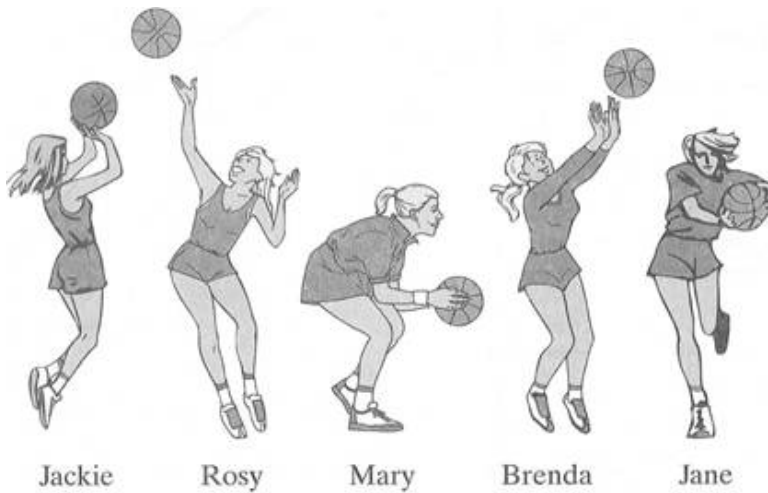
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Answer

(3)

(c) These are the members of the team.



One girl is to be chosen at random to be captain.
What is the probability that her name begins with J?

.....

Answer

(2)
(Total 7 marks)

Q28. A company puts this advert in the local paper.

AQA Motor Company
Mechanic needed
Average wage over £400 per week

The following people work for the company.

Job	Wage per week (£)
Apprentice	200
Cleaner	200
Foreman	350
Manager	800
Mechanic	250
Parts Manager	520
Sales Manager	620

(a) What is the mode of these wages?

.....
.....

Answer £

(1)

(b) What is the median wage?

.....

Answer £

(2)

(c) Calculate the mean wage.

.....

.....

Answer £

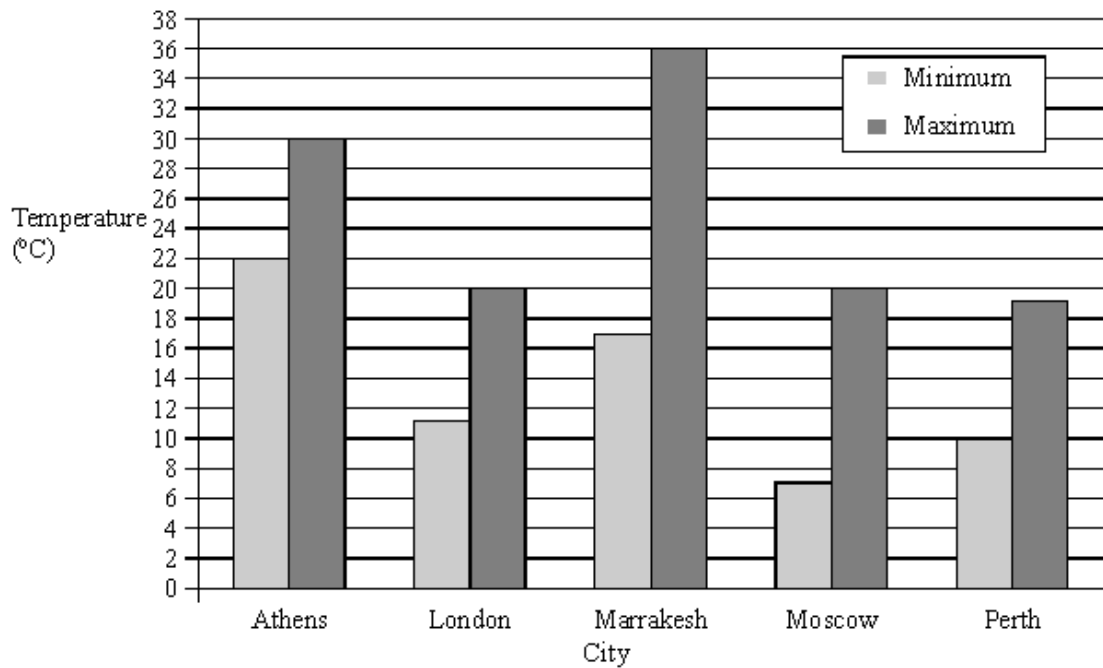
(3)

(d) Explain why the advert is misleading.

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.....

(1)
(Total 7 marks)

Q29. The diagram shows the minimum and maximum temperature, in °C, for one day in June in five cities.



(a) Which two cities have the same **maximum** temperature?

Answer

(1)

(b) Work out the difference between the minimum and maximum temperature in

(i) Athens,

.....

Answer °C

(ii) Perth.

.....

Answer °C

(2)

- (c) Mike says the minimum temperature is always about half the maximum temperature for each city.
Give an example to show that Mike is wrong.
Give a reason for your choice.

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.....

.....

.....

.....

(2)
(Total 5 marks)

- Q30.** The stem and leaf diagram shows the ages, in years, of 15 members of a badminton club.

Key: 2 7 means an age of 27 years

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

- (a) What is the median age of the members?

.....

Answer years

(1)

- (b) What is the range of the ages?

.....

Answer years

(1)
(Total 2 marks)

- Q31.** The sizes of the first eleven pairs of shoes sold in a shop one morning are

8 5 4 5 7 10 9 5 11 5 6

- (a) What is the mode of the data?

.....

Answer

(1)

- (b) What is the median shoe size?

.....

Answer

(2)

- (c) Which of the mode or median would be more useful to the shopkeeper when he is ordering more shoes?
Explain your answer.

.....

.....

(1)

(Total 4 marks)

- Q32.** (a) The entry prices at a theme park are

Adults	£5.25 each
Children	£3.40 each

Find the cost for 2 adults and 4 children to visit the theme park.

.....

.....

Answer £.....

(2)

- (b) The entry prices for a group are

Adults	£5.00 each
Children	£3.00 each

- (i) A group of adults and children goes to the theme park for a cost of £44.
There are 4 adults in the group.
How many children are in the group?

.....

.....

Answer children

(2)

- (ii) Another group also pays £44.
Find a different answer for the number of adults and children.

.....
.....

Answer adult(s) children

(2)

- (c) The temperature, in °C, at midday at the theme park on 6 winter days was recorded.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Temperature	– 3	–2	0	–4	–1	1

- (i) Which day was the warmest at midday?

Answer

(1)

- (ii) Which day was the coldest at midday?

Answer

(1)

- (d) The temperature, in °C, at midday at the theme park on 6 summer days was recorded.

21 17 25 30 21 18

Work out the mean temperature at midday for these 6 days.

.....
.....
.....
.....

Answer °C

(3)

(Total 11 marks)

- Q33.** The number of points scored by the Tigers in the last 10 rugby matches is listed.

38 16 18 76 32 16 16 40 60 42

- (a) Calculate the range of these scores.

.....

Answer points

(1)

- (b) (i) Write down the mode of these scores.

.....

Answer points

(1)

- (ii) In the next match the Tigers score 25 points.

What effect does this have on the mode?

Tick the correct box.

Decrease

☐

No change

☐

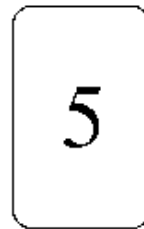
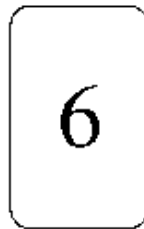
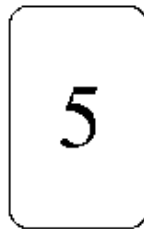
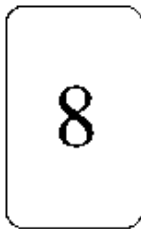
Increase

☐

(1)

(Total 3 marks)

Q34. Here are four cards.



James says that the mean of the numbers on the cards is higher than the mode.

Show that James is correct.

.....

.....

.....

.....

.....

(Total 3 marks)

Q35. Here are four cards.

8

5

6

5

James says that the mean of the numbers on the cards is higher than the mode.

Show that James is correct.

.....

.....

.....

.....

.....

(Total 3 marks)

