**Pearson
Edexcel Award**

Centre Number

Candidate Number

Monday 13 January 2020

Morning (Time: 1 hour 30 minutes)   Paper Reference **AST10/01**

Statistical Methods
Level 1
Calculator allowed

You must have:
Pen, HB pencil, eraser, calculator, ruler, protractor.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The bar chart gives information about the number of parking tickets issued in a town centre on Monday, on Tuesday, on Wednesday and on Thursday last week.
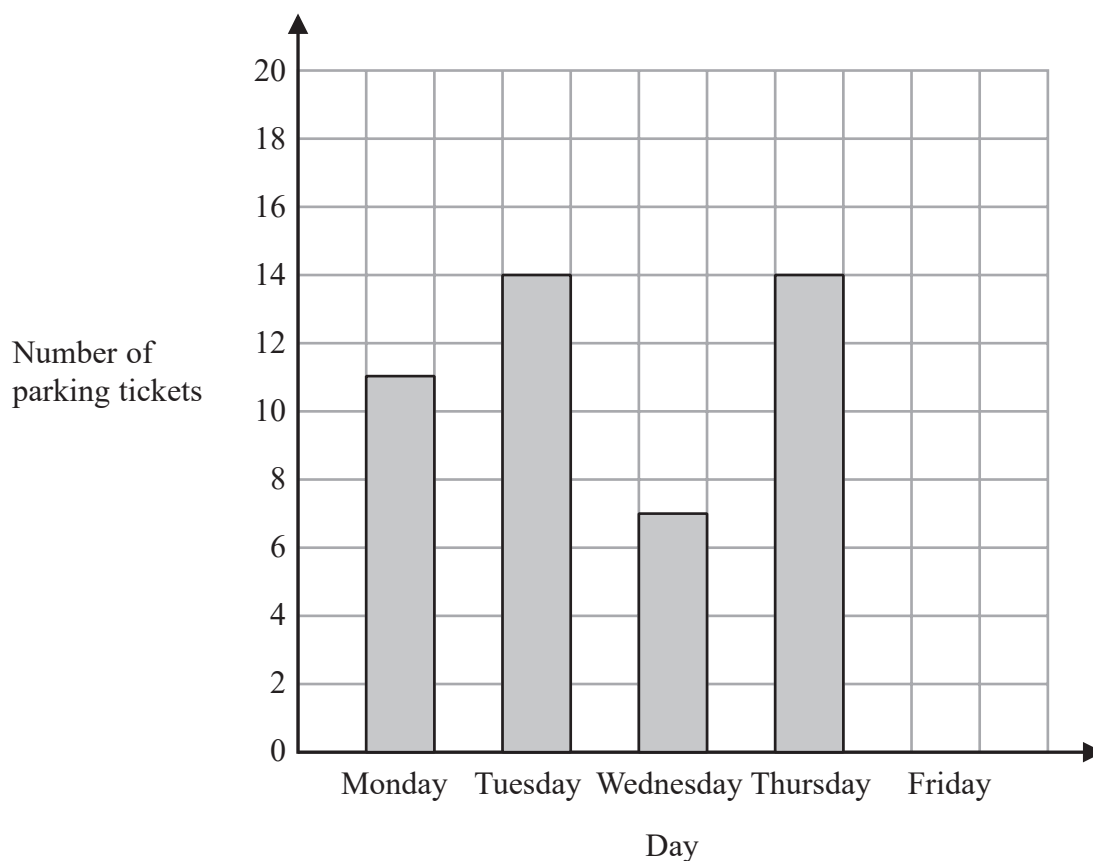
(a) How many parking tickets were issued on Wednesday?

....

(1)

On Friday, 15 parking tickets were issued.

(b) Show this information on the bar chart.

(1)

The same number of parking tickets were issued on two of the five days.

(c) Which two days?

.... and ....

(1)

(Total for Question 1 is 3 marks)
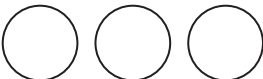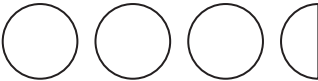
2 The incomplete pictogram gives some information about the favourite type of take away meal for a sample of people.

Type of take away meal	Number of people
Chinese	◯ ◯ ◯
Fish and chips	◯ ◯ ◯ ◖
Indian	◯ ◔
Pizza	

24 people said that Chinese was their favourite type of take away meal.

(a) Complete the key.

Key: ◯ represents .... people

(1)

(b) Write down the number of people who said Indian was their favourite type of take away meal.

....

(1)

34 people said Pizza was their favourite type of take away meal.

(c) Complete the pictogram.

(1)

(Total for Question 2 is 3 marks)

3 The table shows information about 8 books.

Book	Type of book	Type of cover	Number of chapters	Number of pages	Price (£)
A	Fiction	Paperback	31	239	8.99
B	Non-fiction	Paperback	8	240	4.99
C	Fiction	Hardback	133	509	18.99
D	Fiction	Hardback	6	285	5.99
E	Non-fiction	Hardback	13	64	4.95
F	Non-fiction	Hardback	8	490	26.50
G	Non-fiction	Paperback	23	1255	21.99
H	Non-fiction	Paperback	8	218	7.99

(a) Write down the number of pages in book E.

....
(1)

(b) Which book has the greatest number of chapters?

....
(1)

(c) What is the price of the book with the greatest number of pages?

£...
(1)

Two of the non-fiction books are paperbacks with the same number of chapters.

(d) What are the prices of these two books?

£............................... and £...............................
(1)

A book is chosen at random from these books.

(e) On the probability scale, mark with a cross (✗) the probability that the book is a paperback.

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|————————————————+————————————————|
0                                 1
```
(1)
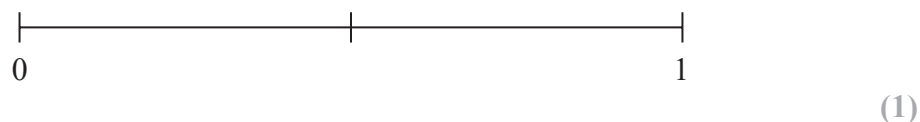
(f) On the probability scale, mark with a cross (✗) the probability that the price of the book is more than £5

```
|————————————————+————————————————|
0                                 1
```
(1)

(Total for Question 3 is 6 marks)

4 Here is a fair 10-sided spinner.
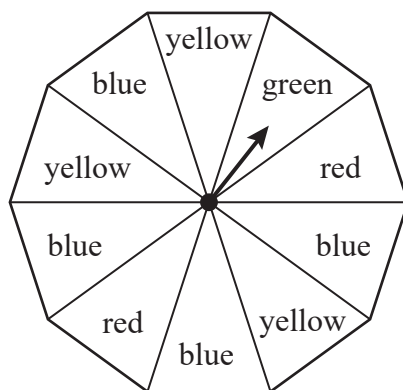
Matthew spins the spinner once.

(a) Underline the word which best describes the likelihood that the spinner lands on green.

Impossible   Unlikely   Evens   Likely   Certain

(1)

(b) Underline the word which best describes the likelihood that the spinner lands on white.

Impossible   Unlikely   Evens   Likely   Certain

(1)

(c) Fill in the blanks to make these statements correct.

The probability that the spinner lands on .... is $\frac{4}{10}$

The probability that the spinner lands on red is ....

(2)

(Total for Question 4 is 4 marks)

5 Indre carries out a survey.
She asks each of her friends which type of television programme they like the best.

Design a suitable data collection sheet that Indre could use to collect this information.

(Total for Question 5 is 2 marks)

6 The owners of a company want to find out about the overtime worked by their staff.

They use this question on a questionnaire.

How many hours of overtime do you work?

☐ 1 – 2

☐ 3 – 4

☐ 4 – 5

☐ More than 5

Write down two things that are wrong with this question.

1 ....

....

2 ....

....

(Total for Question 6 is 2 marks)

7 Amir is going to take his driving test.
He can either pass or fail his driving test.
The probability that he passes his driving test is 0.63

What is the probability that Amir fails his driving test?

....

(Total for Question 7 is 2 marks)

8 The dual bar chart gives information about the length of time, in hours, Lisa and Tamika each spent exercising in each of four weeks.
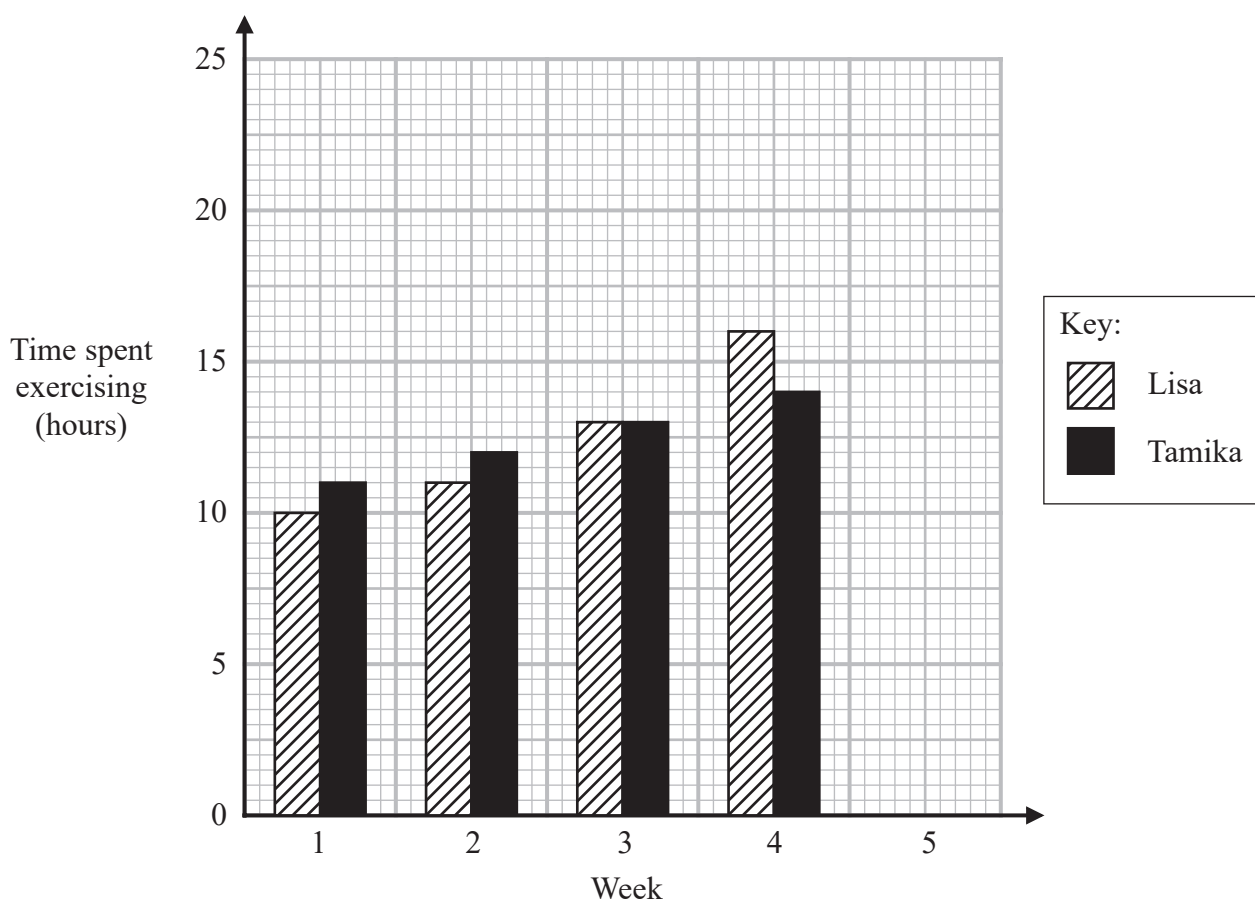
Lisa exercised for 9 hours in Week 5 and Tamika exercised for 16 hours in Week 5

(a) Show this information on the dual bar chart.

(2)

(b) What was the total number of hours that Lisa spent exercising in the five weeks?

....

(2)

(c) Write down **two** comparisons between the lengths of times that Lisa spent exercising and the lengths of times that Tamika spent exercising.

....

....

....

....

(2)

(Total for Question 8 is 6 marks)

9 8 teams of students entered a quiz.

Here are the total points that each team scored.

27   19   23   32   25   17   39   22

(a) Work out the median.

....
(2)

(b) Work out the mean.

....
(2)

(c) Work out the range.

....
(2)

Some teams of teachers also entered the quiz.

For the points scored by the teams of teachers, the mean was 23 and the range was 17

(d) Compare the means and the ranges for the points scored by the teams of students and the points scored by the teams of teachers.

Mean ....

....

Range ....

....
(2)

(Total for Question 9 is 8 marks)

10 Luis is choosing his breakfast.

He chooses from one of cereal (C) or fruit (F) or toast (T).

He also chooses a drink from one of milk (M) or juice (J) or water (W).

List **all** the possible combinations Luis could choose.
One has been done for you.

(C, M) ....

....

....

(Total for Question 10 is 2 marks)

11 A newsagent recorded the number of items bought by each of 30 customers.

Here are his results.

2	5	3	1	2	1	1	4	2	2
4	2	2	1	4	3	2	5	1	6
1	3	1	2	3	3	2	4	2	5

(a) The number of items bought is an example of what type of data?

....
(1)

(b) Complete the frequency table for the newsagent's results.

Number of items bought	Tally	Frequency
1		
2		
3		
4		
5		
6		

(3)

(c) Write down the modal number of items bought.

....
(1)

(d) Work out the total number of items bought.

....
(2)

(Total for Question 11 is 7 marks)

12 Molly collected information about the distance, in miles, that she travelled on each of her last 25 car journeys.

She drew this stem and leaf diagram for this information.

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

Key:
3|1 represents 31 miles

(a) Write down the mode.

....miles

(1)

(b) Work out the range.

....miles

(2)

One of these 25 journeys is chosen at random.

(c) Find the probability that the distance travelled on this journey is greater than 35 miles.

....

(1)

(Total for Question 12 is 4 marks)

13 Tyler has a biased coin.
The coin can land on heads or on tails.

Tyler wants to find an estimate for the probability that the coin will land on heads.

Tyler spins the coin 12 times.
The coin lands on heads a total of 4 times.

(a) Write down an estimate for the probability that the next time Tyler spins the coin it will land on heads.

....

(1)

(b) Explain why this is not a reliable estimate.

....

....

(1)

(Total for Question 13 is 2 marks)

14 On Wednesday, 3 films are being shown at a cinema.
There is an action film, a comedy film and a romance film.

The cinema sells 3 types of ticket.
These are child tickets, adult tickets and senior tickets.

Some information about the numbers of tickets sold on Wednesday is shown in the two-way table.

		Type of ticket			
		child	adult	senior	Total
Type of	action	18	23		52
	comedy		4	7	
	romance	6		15	
	Total	43			120

Here are some words that can be used to describe types of data.

continuous   discrete   categorical   grouped

(a) Complete the sentence below with a word from the list.

Type of ticket is an example of .... data.

(1)

(b) Complete the two-way table.

(4)

(c) Which type of ticket was sold the most on Wednesday?

....

(1)

A market researcher chooses at random one person who went to see a film at the cinema on Wednesday.

(d) Find the probability that this person

(i) is a child who went to see the romance film,

....

(1)

(ii) had an adult ticket or a senior ticket.

....

(2)

(Total for Question 14 is 9 marks)

15 A game uses a spinner.

The spinner can only land on blue or on red or on yellow or on green.

The table shows the probability that the spinner lands on each of three of the four colours.

Colour	blue	red	yellow	green
Probability	0.25	0.1	0.35	

Mia spins the spinner.

Work out the probability that the spinner lands on

(i) red or yellow,

....
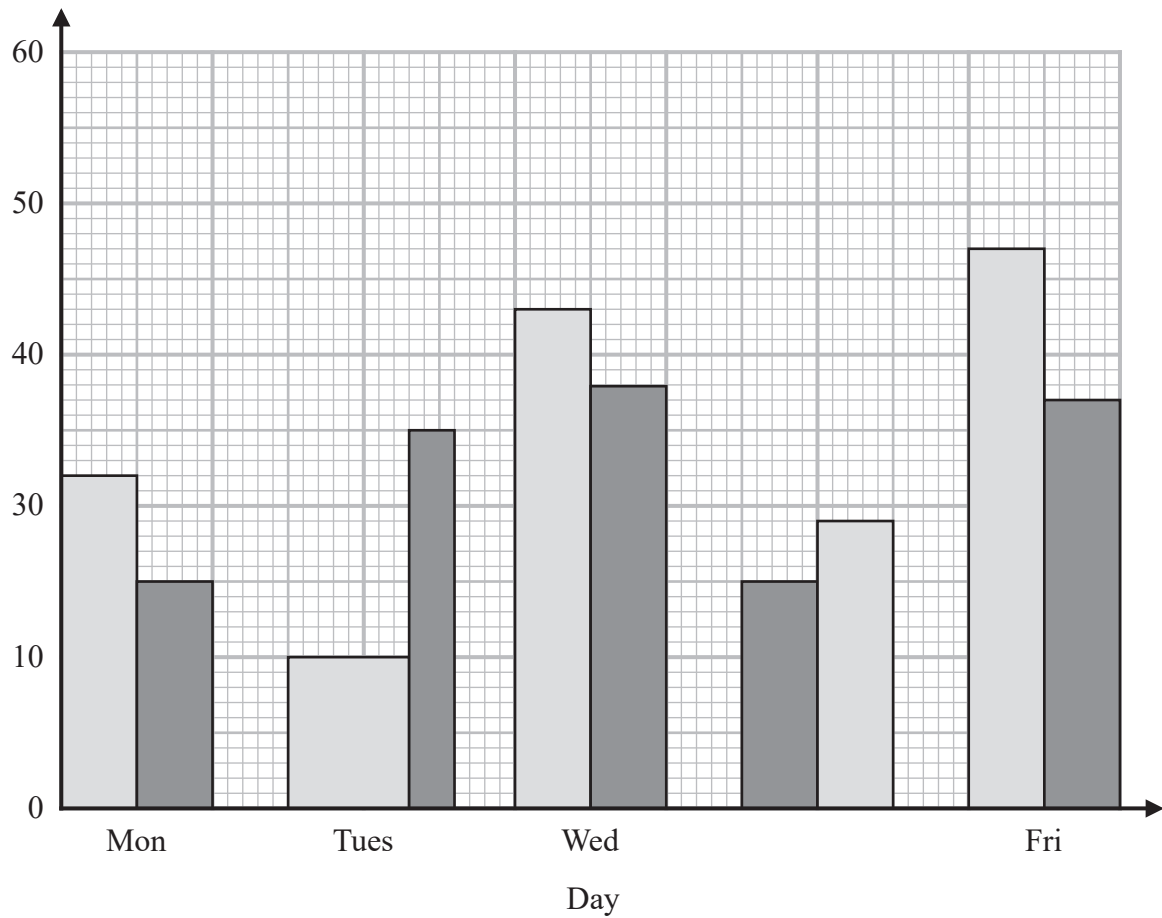**(2)**

(ii) green.

....
(2)

(Total for Question 15 is 4 marks)

16 The dual bar chart gives information about the numbers of hot drinks sold by two cafes on Monday, on Tuesday, on Wednesday, on Thursday and on Friday last week.

Write down three things that could be misleading or are wrong with the dual bar chart.

1 ....

....

2 ....

....

3 ....

....

(Total for Question 16 is 3 marks)

17 The time-series graph gives information about the electricity bill for a house in each quarter of 2016 and 2017.
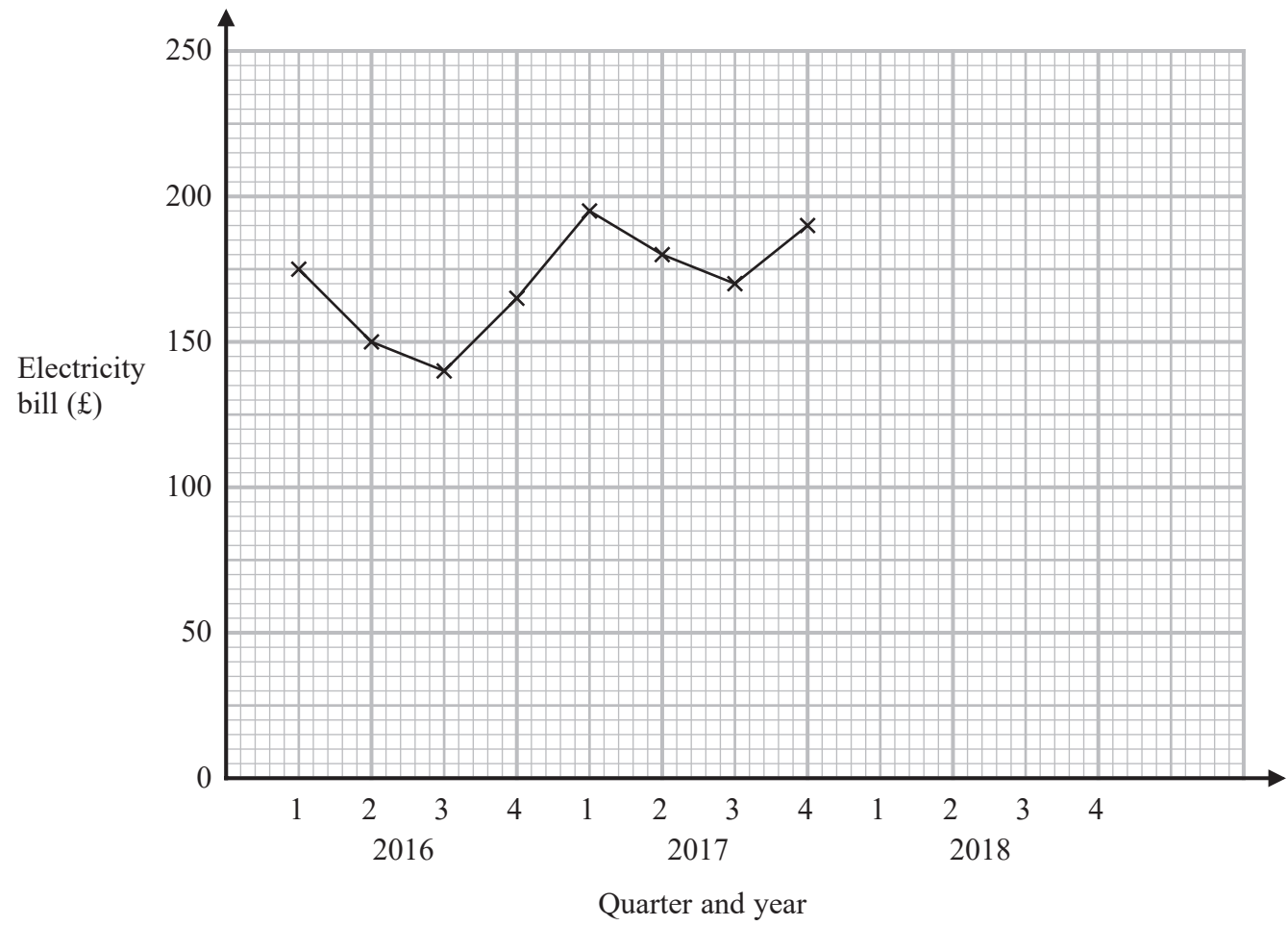
The table gives information about the electricity bill for the house in each quarter of 2018.

| Year	2018			
Quarter	1	2	3	4
Electricity bill (£)	230	200	190	210

(a) Use the information in the table to complete the time-series graph.

(2)

(b) Describe the trend in the electricity bill for the house from 2016 to 2018.

....

(1)

(c) Calculate the total electricity bill for the house in 2016.

£.......................................

(2)

(Total for Question 17 is 5 marks)

18 8 violin students were learning to play a piece of music.

For each student, the number of hours spent practising and the number of errors made in the final performance were recorded.

The incomplete scatter graph and the incomplete table give information for these students.

Time spent practising (hours)
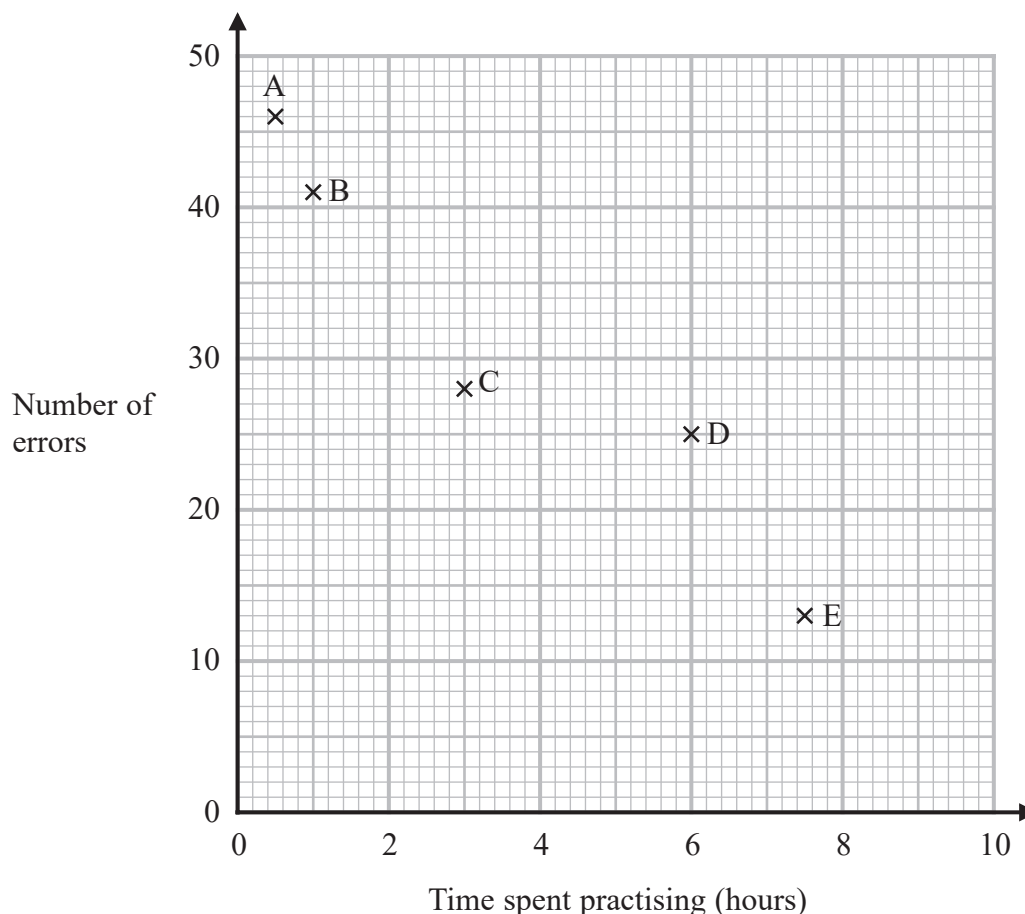
	Student							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Time spent practising (hours)					7.5	4	6.5	9
Number of errors					13	33	19	6

(a) Use the information in the scatter graph to complete the table.

(2)

(b) Use the information in the table to complete the scatter graph.

(2)

(c) What type of correlation does the scatter graph show?

....
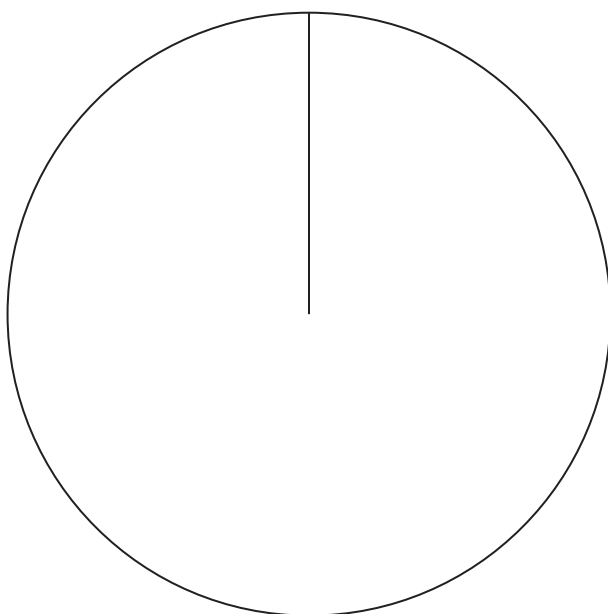
(1)

(Total for Question 18 is 5 marks)

19 Louise carried out a survey to find the type of chocolate 30 of her friends like the best.

She is going to draw a pie chart for her results.

The table gives information about her results.

Type of chocolate	Number of friends
White	5
Milk	16
Dark	9

Complete the pie chart for this information.

(Total for Question 19 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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