

Paper Reference 1ST0/1F  
Pearson Edexcel  
Level 1/Level 2 GCSE (9–1)

Total Marks
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Statistics  
PAPER 1  
Foundation Tier

Wednesday 5 June 2024 – Afternoon

Time: 1 hour 30 minutes

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

## **YOU MUST HAVE**

**Ruler, protractor, compasses, writing and drawing equipment, scientific calculator.**

## **YOU WILL BE GIVEN**

**Data Booklet**

## **INSTRUCTIONS**

**Answer ALL questions.**

**Answer the questions in the spaces provided in this Question Paper or on the separate data sheets – there may be more space than you need.**

**Scientific calculators may be used.**

**You must show all your working out with your answer clearly identified at the end of your solution.**

## **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.**

**There may be spare copies of some data sheets in case you need them.**

**Turn over**

**ADVICE**

**Read each question carefully before you start to answer it.**

**Try to answer every question.**

**Check your answers if you have time at the end.**

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**Answer ALL questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

- 1. Look at the diagram for Question 1(a) and 1(b) in the Data Booklet.**

**It shows an incomplete pictogram which gives information about the flavour and number of ice creams sold at Pradeep's cafe one Saturday morning.**

**20 chocolate ice creams were sold on Saturday morning.**

- (a) Complete the pictogram for the number of chocolate ice creams sold.  
(1 mark)**

**(continued on the next page)**

**1. continued.**

**(b) Work out the total number of ice creams sold  
on Saturday morning.**

**(2 marks)**

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**(continued on the next page)**

**1. continued.**

**Look at the diagram for Question 1(c) in the Data Booklet.**

**It shows a pictogram which gives information about the flavour and number of ice creams sold at Pradeep's cafe one Sunday morning.**

**(c) Compare the number of vanilla ice creams sold in the cafe on Saturday morning with the number of vanilla ice creams sold in the cafe on Sunday morning.**

**Give a reason for your answer.**

**(2 marks)**

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**(continued on the next page)**

**Turn over**

**1. continued.**

**Pradeep wants to use the collected data to estimate how many ice creams of each flavour she will sell for the whole of next week.**

**(d) Considering Pradeep's data decide if this is appropriate.**

**(2 marks)**

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**(Total for Question 1 is 7 marks)**

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- 2. Look at the diagram for Question 2 in the Data Booklet.**

**It shows an incomplete multiple bar chart which gives information about the home country of visitors to a theme park in 2003 and in 2013**

**In 2003, 40% of the visitors were from France.**

- (a) (i) On the multiple bar chart complete the label for the horizontal axis.**

**(1 mark)**

- (ii) On the multiple bar chart complete the label for the vertical axis.**

**(1 mark)**

**(continued on the next page)**

**2. continued.**

**In 2003, 10% of the visitors were from Germany.**

**In 2013, 5% of the visitors were from Germany.**

**(b) Complete the multiple bar chart for visitors from Germany.**

**(2 marks)**

**(c) Compare the change in the percentage of visitors to the theme park from France in 2003 and in 2013 with the change in the percentage of visitors to the theme park from the United Kingdom in 2003 and in 2013**

**(2 marks)**

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**(continued on the next page)**

**Turn over**

**2. continued.**

**John is investigating how the total number of visitors to the theme park has changed from 2003 to 2013**

- (d) Comment on whether or not it is appropriate to use this multiple bar chart for his investigation.  
(2 marks)**

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**(Total for Question 2 is 8 marks)**

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- 3. Look at Table 1 and Table 2 for Question 3 in the Data Booklet.**

**They show information about the number of episodes and viewing figures for two television programs, Emmerdale and Eastenders, for the years 2015 to 2018**

- (a) (i) In which of these years did Eastenders have its greatest number of episodes?  
(1 mark)**

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- (ii) What was the highest viewing figure for Emmerdale between 2015 and 2018?  
(1 mark)**

\_\_\_\_\_ million

**(continued on the next page)**

**Turn over**

**3. continued.**

**(b) Explain why the viewing figures in the tables may not be accurate.**

**(1 mark)**

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**(c) Compare the number of episodes for Emmerdale in 2016 with the number of episodes for Eastenders in 2016**

**Give a reason for your answer.**

**(2 marks)**

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**(continued on the next page)**

**3. continued.**

**Look at the diagram for Question 3(d) in the Data Booklet.**

**It is an incomplete graph which shows the highest viewing figures for Emmerdale and for Eastenders between 2015 and 2018**

**(d) Use the values for the highest viewing figures for Emmerdale from the tables to complete the graph.**

**(2 marks)**

**(e) Describe the trend for the highest viewing figures for Eastenders between 2015 and 2018**

**(1 mark)**

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**(Total for Question 3 is 8 marks)**

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4. A basketball team played 9 matches at the start of a season.

The total number of points they scored in each match is listed below.

80    64    87    64    42    81    89    138    68

Here are some words used to describe data.

grouped

discrete

categorical

continuous

- (a) Select a word from the list to complete the sentence.

The total number of points scored in a match is an example of \_\_\_\_\_ data.

(continued on the next page)

4. continued.

Remember the scores:

80    64    87    64    42    81    89    138    68

(b) Work out the median score for these 9 matches.  
(2 marks)

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(c) Give one advantage of using the median to summarise this data.  
(1 mark)

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(continued on the next page)

Turn over



4. continued.

Remember the scores:

80    64    87    64    42    81    89    138    68

- (d) Work out the range of points for these  
9 matches.  
(2 marks)

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(continued on the next page)

**4. continued.**

The median and range for the final **9** matches of the season are shown in the table below.

<b>Median</b>	<b>90</b>
<b>Range</b>	<b>25</b>

**(e) Use your answers to part (b) and part (d) to compare the performance of the basketball team in the first **9** matches with the performance in the final **9** matches.**

**Give TWO comparisons and interpret BOTH in context.**

**(4 marks)**

**Answer lines continue on the next page.**

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4. (e) continued.

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(Total for Question 4 is 10 marks)

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5. Look at the diagram for Question 5 in the Data Booklet.

It shows two spinners.

Carol spins the two spinners **A** and **B**

She adds their scores together.

Look at the diagram for Question 5(a) and 5(b) in the Data Booklet.

It is a sample space diagram.

- (a) Complete the sample space diagram in the Data Booklet to show all the possible totals.  
There are nine spaces to fill.  
(2 marks)

(continued on the next page)

**5. continued.**

**(b) Assuming that the spinners are fair, find the probability**

**(i) that the total score is 3,  
(1 mark)**

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**(ii) that the spinners show the same score.  
(1 mark)**

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**(continued on the next page)**

**5. continued.**

**Look at the table for Question 5(c) in the Data Booklet.**

**Carol spins spinner A 120 times.**

**The table in the Data Booklet shows the scores that she got.**

**Carol concludes that spinner A is biased towards the number 1**

**(c) Assess whether or not Carol's conclusion is appropriate.  
(2 marks)**

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**(Total for Question 5 is 6 marks)**

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**Turn over**

6. The manager of a gym is reviewing the current opening times of the gym.

The manager thinks that if the gym is open for more hours it will affect the number of people using the gym.

- (a) Suggest a hypothesis that the manager could use.

(1 mark)

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(continued on the next page)

**6. continued.**

**The manager wants to get the opinions of the people who have a membership at the gym by giving them a questionnaire.**

**The manager obtains a numbered list of the 1500 people with a membership and decides to take a sample of 10% of the gym members.**

**The manager chooses the person who is numbered 0004 as the random starting point on the list and then picks every 20th person.**

**(b) Name the sampling method that the manager plans to use.**

**(1 mark)**

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**(continued on the next page)**



6. continued.

- (c) (i) Give one reason why this is a good plan.  
(1 mark)

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- (ii) Will the manager's plan give a 10% sample  
of the gym members?  
Give a reason for your answer.  
(2 marks)

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6. continued.

Here is one of the questions that the manager is considering for the questionnaire.

**“Do you agree that the gym should stay open for 24 hours a day?”**

**(d) Suggest two improvements to this question.  
(2 marks)**

1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**(continued on the next page)**

**6. continued.**

**The manager decides to do a pre-test of the questionnaire by giving it to a small group of people.**

**(e) (i) What is it called when a questionnaire is tested in this way?**

**(1 mark)**

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**(ii) Give TWO reasons why the manager might do this.**

**(2 marks)**

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**(continued on the next page)**

**Turn over**

**6. continued.**

**Following the full survey the manager concludes that if the gym is open for 24 hours a day it will not affect the number of people using the gym.**

**(f) Give a reason why it would also be appropriate for the manager to find the opinions of people who do NOT have a gym membership.**

**(1 mark)**

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**(Total for Question 6 is 11 marks)**

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- 7. Look at the diagram for Question 7 in the Data Booklet.**

**It shows two pie charts.**

**The pie charts give information about the different types of properties that were for sale in July 2020 in Harrogate and in July 2020 in South Shields.**

- (a) Compare the proportion of different types of properties for sale in Harrogate in July 2020 with the proportion of different types of properties for sale in South Shields in July 2020**  
**(2 marks)**

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**(continued on the next page)**

**7. continued.**

**Adam also drew two pie charts showing the different types of properties that were for sale in July 2021 in Harrogate and in July 2021 in South Shields.**

**Both pie charts have the same size angle for bungalows.**

**Adam uses this information to reach the following conclusion.**

**“The numbers of bungalows for sale in Harrogate in July 2021 and in South Shields in July 2021 were the same.”**

**(continued on the next page)**

7. continued.

(b) Assess the validity of Adam's conclusion.

(2 marks)

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(Total for Question 7 is 4 marks)

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8. Look at the table for Question 8 in the Data Booklet.  
A fjord is a deep and narrow part of a sea with steep land on three sides.

Emily is investigating the length of fjords in Norway. She collects some data from the internet and puts the data into a grouped frequency table.

The grouped frequency table in the Data Booklet shows information about the results she collected.

- (a) Work out the number of fjords that have a length of at least 100 km  
(2 marks)

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(continued on the next page)

Turn over



8. continued.

(b) (i) Calculate an estimate of the mean length of these fjords.

Give your answer to 1 decimal place.

(3 marks)

\_\_\_\_\_ km

(continued on the next page)

8. (b) continued.

(ii) Explain why your answer to part (b)(i) is only an estimate.

(1 mark)

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(iii) How could Emily have improved the accuracy of her answer to part (b)(i)?

(1 mark)

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8. continued.

Emily plans to use a frequency polygon to represent the lengths of the fjords.

(c) Discuss whether or not a frequency polygon would be an appropriate diagram to use.

(2 marks)

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(Total for Question 8 is 9 marks)

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9. Look at the diagrams for Question 9 in the Data Booklet.

They show two population pyramids.

They give information about the percentage of the population who are male and who are female for each age group in France and in Italy in 2010

Tommy is investigating how the populations of Italy and France differ in 2010

He uses the two population pyramids to reach the following two conclusions.

- The percentage of people aged 50–54 was lower in France than the percentage of people aged 50–54 in Italy.
- The number of males aged 40–44 in France was greater than the number of males aged 40–44 in Italy.

(continued on the next page)

**9. continued.**

**Assess Tommy's two conclusions.**

**You should show clearly the value of any statistics you use in your answer.**

**(5 marks)**

**Answer lines are on the next page.**

**9. continued.**

[illegible]

**(Total for Question 9 is 5 marks)**

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**Turn over**

10. Look at the diagram for Question 10 in the Data Booklet.

It shows an incomplete histogram.

The time taken, in minutes, for some runners to complete a 5 km run was recorded.

The incomplete histogram in the Data Booklet and incomplete grouped frequency table below give information about the times taken, in minutes, for these runners to complete the 5 km run.

Time taken to run 5 km ( $t$ minutes)	Frequency
$15 < t \leq 20$	5
_____	25
$25 < t \leq 30$	_____
$30 < t \leq 35$	4
$35 < t \leq 40$	3

(continued on the next page)

**10. continued.**

- (a) Use the information in the histogram to complete the table on page 39.**

**There are two spaces to fill.**

**(2 marks)**

- (b) Estimate the number of runners that took less than or equal to 23 minutes to complete the race.**

**(2 marks)**

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**(continued on the next page)**

**Turn over**



**10. continued.**

**(c) Identify and interpret the skew shown on the histogram in the Data Booklet.**

**(2 marks)**

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**(Total for Question 10 is 6 marks)**

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**11. Look at the diagram for Question 11 in the Data Booklet.**

**It shows an incomplete tree diagram.**

**Kyryl and Matthew play against each other in a game of tennis and a game of squash.**

**In each game either Kyryl or Matthew wins.**

**The probability that Kyryl wins the game of tennis is  $0.35$**

**The probability that Matthew wins the game of squash is  $0.45$**

**(a) Complete the tree diagram in the Data Booklet to show this information.**

**There are four spaces to fill.**

**(2 marks)**

**(continued on the next page)**

**11. continued.**

- (b) Matthew says that the probability of him winning both games is greater than the probability of Kyryl winning both games. Is Matthew correct?**
- You must show how you get your answer.**
- (4 marks)**

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**(Total for Question 11 is 6 marks)**

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**TOTAL FOR PAPER IS 80 MARKS**

**END OF PAPER**

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