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

Total Marks

Statistics

PAPER 1
Foundation Tier
(Calculator)

Time: 1 hour 30 minutes

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

Surname					
Other names					
Centre Number					
Candidate Number					

X68619A

Pearson

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 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.

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.

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 in the Data Booklet.

It shows an incomplete pictogram.

The incomplete pictogram gives information about the numbers of cars sold from a garage in August and in September.

In October, 25 cars were sold from the garage.

(a) Complete the pictogram for October.

(1 mark)

(b) Compare the number of cars sold from the garage in August to the number of cars sold from the garage in September.

Give a reason for your answer.

(2 marks)

Answer lines continue on the next page.

1. (b) continued.

In November, 17 cars were sold from the garage.

(c) Explain why the use of this key may NOT be appropriate for representing 17 cars in the pictogram.
(1 mark)

(Total for Question 1 is 4 marks)

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

It shows a 5–sided spinner that Rahul has.

The spinner is a fair spinner.

(a) Explain what the word FAIR means in this description of the spinner.

(1 mark)

_____

_____

(continued on the next page)

2. continued.

Rahul is going to spin his spinner once.

(b) Underline the word from the list below that best describes the likelihood that the spinner will land on 3

impossible

unlikely

evens

likely

certain

(1 mark)

(continued on the next page)

2. continued.

(c) Underline the word from the list below that best describes the likelihood that the spinner will land on 4

impossible

unlikely

evens

likely

certain

(1 mark)

(continued on the next page)

2. continued.

Look at the table for Question 2(d) in the Data Booklet.

Chloe has a 6-faced dice.

She rolls the dice 60 times and records the number on which the dice lands each time.

The table shows information about Chloe's results.

(d) Explain what the information in the table tells you about whether the dice is fair.

(2 marks)

(Total for Question 2 is 5 marks)

3. Look at the diagram for Question 3 in the Data Booklet.

It shows a time series graph.

The time series graph shows the percentages of households in the United Kingdom with internet access from **2000** to **2018**

(a) Write down an estimate for the percentage of households with internet access in

(i) **2000**

_____ %

(ii) **2018**

(2 marks)

_____ %

(continued on the next page)

3. continued.

The percentage of households with internet access in 2019 was 93%

(b) Plot this information on the time series graph.
(1 mark)

(c) Write down the first year where the percentage of households with internet access was greater than 50
(1 mark)

(continued on the next page)

3. continued.

Using the information given in the time series graph,

(d) compare the change in percentage of households with internet access from 2001 to 2005 with the change in percentage of households with internet access from 2015 to 2019

You must show how you get your answer.

(2 marks)

Answer lines continue on the next page.

3. (d) continued.

(Total for Question 3 is 6 marks)

4. Alexa needs to know the population of California.

Using the internet, Alexa found that an estimate for the population of California in 2019 is 39·5 million people.

(a) Explain why this statistic is an example of secondary data.
(1 mark)

(continued on the next page)

4. continued.

(b) Give one advantage and one disadvantage of using secondary data.

(2 marks)

Advantage _____

_____

_____

Disadvantage _____

_____

_____

(Total for Question 4 is 3 marks)

5. **Jane is a car mechanic at MPG Autos.**

Jane recorded the time, in minutes, that she took to change a tyre on each of 9 cars.

Here are her results.

25 32 19 27 17 24 35 29 15

(a) Explain whether or not her results have a mode.

(1 mark)

(b) Find the median of her results.

(2 marks)

_____ **minutes**

(continued on the next page)

5. continued.

Remember, the results are:

25 32 19 27 17 24 35 29 15

(c) Show that the range of her results is 20 minutes.

(1 mark)

(continued on the next page)

5. continued.

Remember, the results are:

25 32 19 27 17 24 35 29 15

The range of the times that Jane took to change the oil in each of these 9 cars is 28 minutes.

(d) Are the times that Jane took to change a tyre on each of these 9 cars more consistent than the times that she took to change the oil in each of these 9 cars?

Give a reason for your answer.

(1 mark)

(Total for Question 5 is 5 marks)

6. Look at the diagram for Question 6 in the Data Booklet.

It shows a composite bar chart.

Northern Stationery Supplies has only three branches, one in each of Manchester, Rotherham and York.

Employees working at Northern Stationery Supplies work either in the office or they work in the warehouse.

The composite bar chart in the Data Booklet gives information about the numbers of employees of Northern Stationery Supplies who work in either the Manchester branch or in the Rotherham branch.

There is a total of 35 employees who work in the Manchester branch.

(a) Complete the labelling on the frequency axis. (1 mark)

(continued on the next page)

6. continued.

20 employees work in the warehouse in the Rotherham branch.

(b) Complete the key.

(1 mark)

In the York branch, 25 employees work in the office and 10 employees work in the warehouse.

(c) Complete the composite bar chart for the York branch.

(2 marks)

(continued on the next page)

6. continued.

(d) Find the total number of employees who work in the offices of Northern Stationery Supplies. (1 mark)

(continued on the next page)

6. continued.

Northern Stationery Supplies has a total of 125 employees.

One employee from Northern Stationery Supplies is chosen at random.

(e) Find the probability that this employee works in the warehouse in the Manchester branch.

(2 marks)

(Total for Question 6 is 7 marks)

7. Mrs Singh is the Headteacher of a school with **1200** students.

She wants to find out about the ways the students at her school use the internet to complete their homework.

She is going to write a plan for her enquiry.

Write down one thing Mrs Singh should include in her plan for each of

- data collection
- choice of sampling method
- a diagram to represent the data collected.

Explain why each of the things you have written down is appropriate.

(6 marks)

Answer lines continue on the next page.

7. continued.

(Total for Question 7 is 6 marks)

8. Sheffield City Council has more than **8000** employees.

These employees work at different locations in Sheffield.

A researcher wants to find out about the different methods of transport that these employees use to get to work.

She plans to ask the **9** employees, who work in one library, how they got to work that morning.

Give two reasons why this is NOT a good plan.

Reason 1 _____

_____

_____

Reason 2 _____

_____

_____

(Total for Question 8 is 2 marks)

9. Dylan investigates the ages of 150 people at a music festival.

The youngest person at the festival is 21 years old and the oldest person is 68 years old.

Dylan decides to use a grouped frequency table to show his results.

(a) (i) Give TWO advantages of using grouped data rather than raw data.

(2 marks)

(continued on the next page)

9. (a) continued.

(ii) Give ONE disadvantage of using grouped data rather than raw data.

(1 mark)

_____

_____

_____

(continued on the next page)

9. continued.

Look at the tables for Questions 9(b) and 9(c) in the Data Booklet.

They show two frequency tables.

Dylan is considering using one of the two possible frequency tables, TABLE A or TABLE B, shown in the Data Booklet.

Dylan claims that TABLE B gives more detail than TABLE A about his results.

(b) Assess whether or not Dylan's claim is appropriate.
(2 marks)

(continued on the next page)

9. continued.

Dylan wants to work out the average age of the 150 people at the music festival.

He decides to use TABLE B.

(c) Calculate an estimate for the mean age of the 150 people at the music festival.

Give your answer to one decimal place.

(3 marks)

_____ **years**

(Total for Question 9 is 8 marks)

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

It shows a Venn diagram.

120 adults were each asked if they enjoy watching any of the sports Football, Cricket or Rugby.

The Venn diagram gives information about the numbers of these adults who enjoy watching these sports.

(a) How many of these adults enjoy watching all three sports?

(1 mark)

(continued on the next page)

10. continued.

One of these adults is chosen at random.

(b) Find the probability that this adult enjoys watching Cricket.

(1 mark)

(c) Find the probability that this adult enjoys watching Rugby or Football.

(2 marks)

(continued on the next page)

10. continued.

One of the adults who enjoys watching Football is chosen at random.

(d) Find the probability that this adult also enjoys watching Cricket.

(2 marks)

(continued on the next page)

10. continued.

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

qualitative
quantitative
bivariate
discrete
continuous

(e) (i) Use one of the words in the list to describe the type of data needed for NAMES OF SPORTS.
(1 mark)

(continued on the next page)

10. (e) continued.

(ii) Use two of the words in the list to describe the type of data needed for NUMBERS OF ADULTS.

(2 marks)

_____ and _____

(Total for Question 10 is 9 marks)

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

It shows a scatter diagram.

A vet carried out a survey to see if there is a relationship between the weight of a dog and its lifespan.

The vet found the mean weight, in kg, and the median lifespan, in years, of a sample of five dogs in each of ten breeds of dogs.

Her results are shown in the table on the next page.

(continued on the next page)

11. continued.

Breed	Mean weight (kg)	Median lifespan (years)
A	5·5	15·5
B	11·5	14·8
C	20·5	14·6
D	5·0	14·6
E	10·0	13·5
F	50·0	7·5
G	83·0	6·8
H	18·0	6·3
I	7·0	14·0
J	43·0	6·8

The vet used statistical software to draw the scatter diagram shown in the Data Booklet for her results.

(continued on the next page)

11. continued.

From the scatter diagram the vet concluded that there is a relationship between the weight of a dog and its lifespan.

Using the given statistical information,

(i) assess whether or not the vet's conclusion is appropriate,

(ii) assess the reliability of the vet's conclusion.

(Total for Question 11 is 2 marks)

12. Look at the diagram for Question 12 in the Data Booklet.

It shows two stem and leaf diagrams.

Bill is investigating how being grown in the shade and being grown in sunlight affects the heights of tree seedlings.

The stem and leaf diagrams in the Data Booklet give information about the heights, in centimetres, of

17 tree seedlings grown in the shade and

17 tree seedlings grown in sunlight.

The seedlings were all planted at the same time.

Compare the average height of the tree seedlings grown in the shade with the average height of the tree seedlings grown in sunlight.

State clearly the value of each average you use in order to make your comparison.

(3 marks)

Answer lines are on the next page.

12. continued.

(Total for Question 12 is 3 marks)

13. Look at the diagram for Question 13 in the Data Booklet.

It shows a population pyramid that gives information about the percentages of the population of the United Kingdom who are male and who are female in each age group for **2017**

Each percentage is given correct to one decimal place.

(a) Write down the percentage of the population who are female in the age group **50–54**

(1 mark)

_____ %

(continued on the next page)

13. continued.

(b) Work out the percentage of the population who are male in the age group **10–19**

(2 marks)

_____ %

(continued on the next page)

13. continued.

In 2017, the number of people age 100 and older (100+) in the United Kingdom was 13 310

Using the information above and information from the population pyramid,

(c) explain why the percentage of the population in the age group 100+ is given as 0·0% on the population pyramid.
You must show your working.
(3 marks)

(continued on the next page)

13. continued.

Jamie is carrying out research into the ages of people in the United Kingdom.

He uses the information in the population pyramid in the Data Booklet to claim,

"In the United Kingdom in 2017 the number of males who were older than 40 was greater than the number of females who were older than 40"

(d) Explain whether or not Jamie's claim is correct.

(2 marks)

Answer lines continue on the next page.

13. (d) continued.

(Total for Question 13 is 8 marks)

14. Look at the table for Questions 14(a) and 14(b) in the Data Booklet.

Weronika works for a road traffic organisation.

One day she is investigating the speeds of cars and the speeds of motorcycles along a motorway.

The table shows part of the spreadsheet that Weronika used to record her results.

(a) Give a reason why Weronika will need to clean the data.

(1 mark)

_____

_____

(continued on the next page)

14. continued.

Weronika concludes that the value of **124** in the spreadsheet must be wrong.

(b) Explain why.

(1 mark)

(continued on the next page)

14. continued.

Look at the table for Question 14(c) in the Data Booklet.

It shows the information about motorcycles from the spreadsheet with the data cleaned.

(c) Use linear interpolation to work out an estimate of the median speed of the motorcycles.
(3 marks)

_____ **miles per hour**

(continued on the next page)

14. continued.

Look at the diagram for Question 14(d) in the Data Booklet.

It shows the frequency polygon for the speeds of cars drawn on a grid.

(d) On the same grid in the Data Booklet, draw the frequency polygon for the speeds of the motorcycles using the values in the table for Question 14(c) in the Data Booklet.
(2 marks)

(continued on the next page)

14. continued.

(e) Using the two frequency polygons on the grid in the Data Booklet, compare the skew of the distribution of the speeds of the cars with the skew of the distribution of the speeds of the motorcycles.

Explain what your comparison means in context.

(2 marks)

(Total for Question 14 is 9 marks)

15. Look at the diagram for Question 15 in the Data Booklet.

It shows a choropleth map.

The choropleth map gives information about the numbers of orangutans living in the forests of the Malaysian state of Sabah in northern Borneo.

Some regions of the state are shaded and labelled with a number.

(a) Write down the number of a shaded region where there are not more than 100 orangutans.

(1 mark)

(continued on the next page)

15. continued.

Regions 15 and 16 are protected forest regions.

Adam claims that in a protected forest region there is a greater number of orangutans.

(b) Does the choropleth map support Adam's claim?

You must give a reason for your answer.

(2 marks)

(Total for Question 15 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

END OF PAPER