Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Centre Number | | | | | |

Candidate Number | | | | |

Sample assessment material for first teaching September 2017

Morning (Time: 1 hour 30 minutes) | Paper Reference **1ST0/1F**

Statistics

Paper 1
Foundation Tier

You must have:
Ruler graduated in centimetres and millimetres, protractor, pen, HB pencil, eraser, scientific calculator.

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.*
- 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.*

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.

Turn over ▶

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S 5 4 1 9 0 A 0 1 2 4

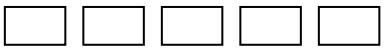
Pearson

Answer ALL the questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The incomplete pictogram shows the numbers of hours that Milly spent studying Biology, English and French.

Biology	
English	
French	
Maths	

Key:  represents 2 hours

Milly spent 6 hours studying Maths.

(a) Complete the pictogram for Maths.

(1)

Milly spent more hours studying English than she spent studying Biology.

(b) Work out how many more hours.

..... hours

(2)

Milly's teacher wants her to spend a total of more than 20 hours studying.

(c) Has Milly spent a total of more than 20 hours studying?
Give a reason for your answer.

.....

.....

.....

(2)

(Total for Question 1 is 5 marks)

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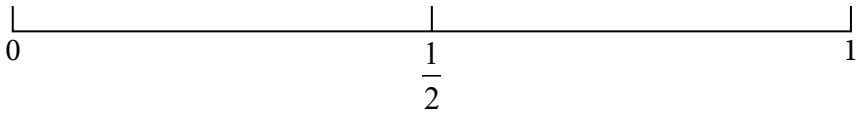
2 Ramon uses 10 letter cards to spell the word **STATISTICS**.

S	**T**	**A**	**T**	**I**	**S**	**T**	**I**	**C**	**S**

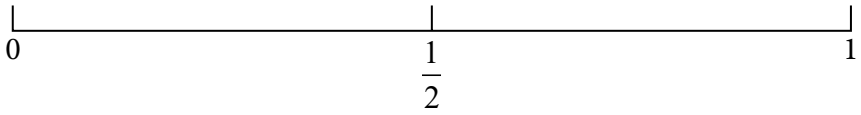
Ramon takes one of these cards at random.

(a) On the probability scale, mark with a cross (×) the probability that the letter on the card is **S**.



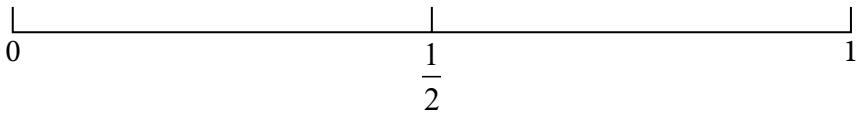
(1)

(b) On the probability scale, mark with a cross (×) the probability that the letter on the card is **Z**.



(1)

(c) On the probability scale, mark with a cross (×) the probability that the letter on the card is **not C**.



(1)

(Total for Question 2 is 3 marks)

3 Leyla wants to find out how often people in her town eat in a restaurant.

She asked a sample of 30 people how many times they had eaten in a restaurant during the last week.

Here are Leyla's results.

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

(a) Fill in the tally chart for this information **and** complete the frequency column.

Number of times	Tally	Frequency
1		
2		
3		
4		
5		

(2)

(b) Write down the mode.

.....

(1)

(c) Work out the number of people in Leyla's sample who had eaten in a restaurant fewer than 4 times during the last week.

.....

(2)

(d) Suggest a suitable diagram that Leyla could use to represent her data.

.....

(1)

(Total for Question 3 is 6 marks)

4 A researcher is investigating how much the employees at a large company are paid.

One hypothesis she investigates is

"Men are paid more than women".

The researcher could find it difficult to collect information to test her hypothesis.

(a) Give one difficulty the researcher could have when trying to find out how much each employee is paid.

.....

.....

(1)

(b) State the population for this investigation.

.....

(1)

(c) (i) Explain the difference between primary data and secondary data.

.....

.....

.....

(2)

(ii) The researcher plans to collect primary data. Give a reason why.

.....

(1)

The researcher plans to give a questionnaire to 60 employees of the company.

She asks the first 30 males and the first 30 females who come into work one morning to complete her questionnaire.

(d) Give one advantage and one disadvantage of this sampling method.

Advantage .....

.....

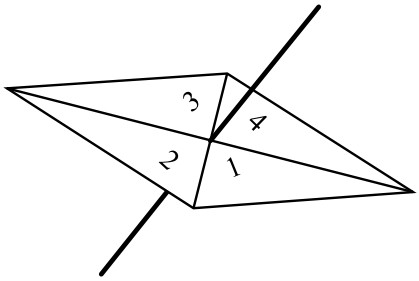
Disadvantage .....

.....

(2)

(Total for Question 4 is 7 marks)

5 Zander spins a fair 4-sided spinner.



(a) Write down the probability that the spinner lands on 1

.....

(1)

Zander now spins the spinner 60 times.

(b) Work out the expected number of times the spinner will land on 1

.....

(2)

Helen spins a biased 3-sided spinner 45 times.

On each spin, the spinner can land on 1 or on 2 or on 3

Here are her results.

Number	Frequency
1	7
2	9
3	29

Helen is going to spin the 3-sided spinner again.

(c) Use the results in the table to find an estimate that the spinner will land on 2 or on 3

.....

(2)

Helen concludes that the 3-sided spinner is most likely to land on a score of 3 the next time it is spun.

(d) Comment on the reliability of Helen's conclusion.

.....

.....

(2)

(Total for Question 5 is 7 marks)

6 Richard works in an animal rescue centre.

Richard has collected data on the weights, in kilograms, of 10 male cats and the weights, in kilograms, of 10 female cats at the centre.

Male	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.2	4.4	4.9
Female	3.0	3.1	3.1	3.2	3.3	3.3	3.5	3.7	3.9	9.5

Richard wants to compare the average weight of the male cats with the average weight of the female cats.

Richard thinks that he should use either the mean or the median.

(a) Which one of the mean or the median do you think he should use?
Give a reason for your answer.

.....

.....

.....

(2)

Richard plans to use a scatter diagram in order to compare the weights of the male cats with the weights of the female cats.

(b) Discuss whether or not a scatter diagram would be a suitable diagram to use.

.....

.....

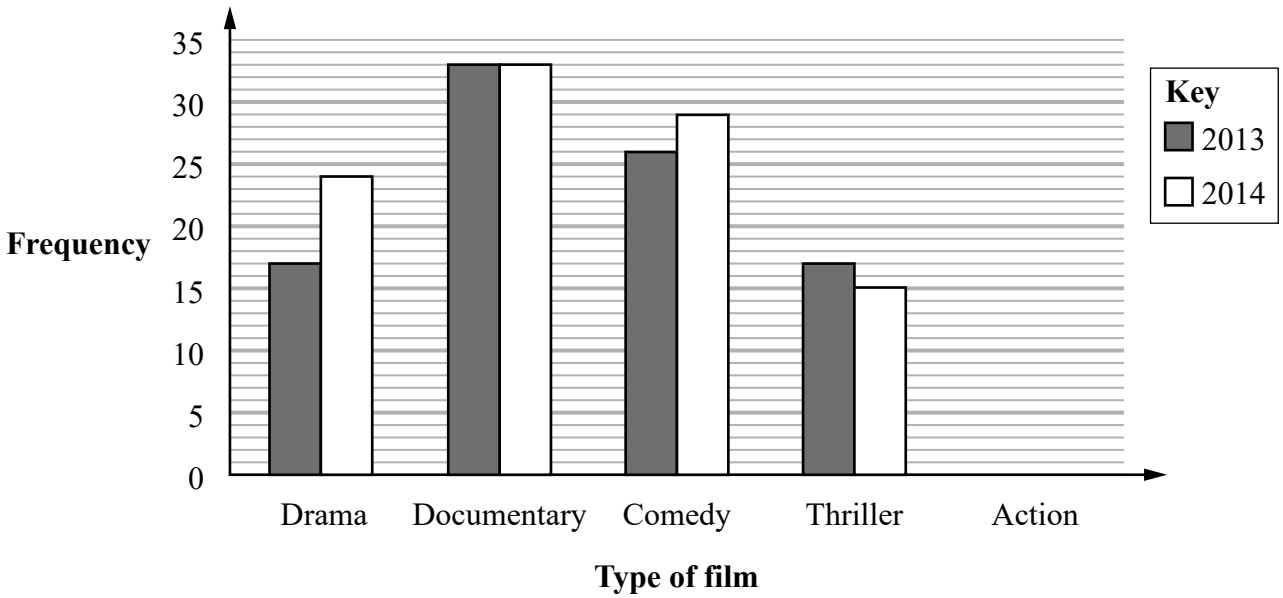
.....

.....

(2)

(Total for Question 6 is 4 marks)

7 The incomplete multiple bar chart shows information about the numbers of UK films first shown in 2013 and in 2014 for some types of film.



(Source: *BFI Statistical Yearbooks*)

9 UK action films were first shown in 2013

7 UK action films were first shown in 2014

(a) Complete the multiple bar chart.

(2)

The number of UK films first shown in 2013 was 17 for two types of film.

(b) Which two types of film?

..... and .....

(1)

(c) Work out the total number of drama films that were first shown in these two years.

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(1)

(d) Compare the numbers of UK films of the different types that were first shown in 2013 with those first shown in 2014

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(2)

(e) Explain why it would not be appropriate to display the information from the multiple bar chart in a time series graph.

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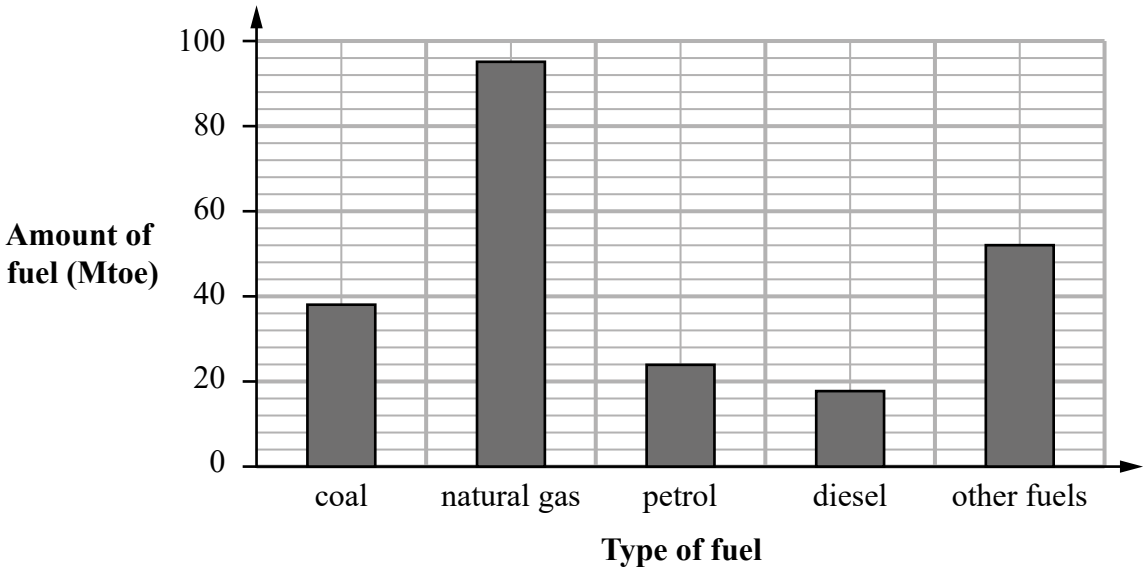
(1)

(Total for Question 7 is 7 marks)

8 The bar chart gives information about the amounts of different types of fuel, in Mtoe (millions of tonnes of oil equivalent), that were used in the United Kingdom in the year 2000



(Source: *Department of Energy and Climate Change*)

Ignoring 'other fuels',

(a) write down the type of fuel that used the least amount of Mtoe in the year 2000

.....

(1)

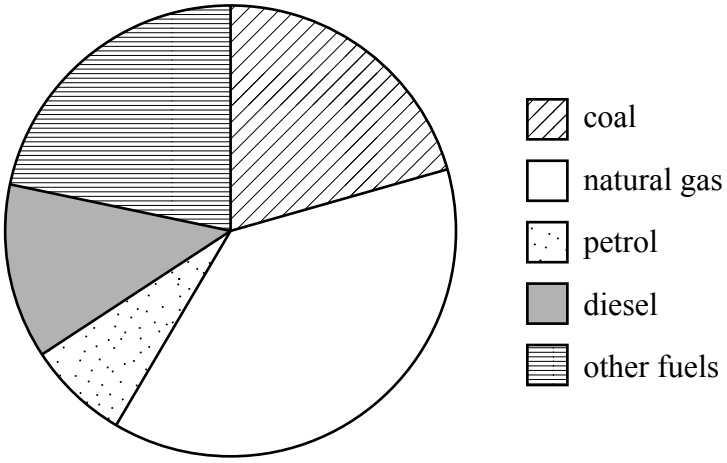
One type of fuel used one quarter of the amount of Mtoe used by natural gas in the year 2000

(b) Which type of fuel was this?

.....

(1)

The pie chart shows information about the amounts of different types of fuel, in Mtoe, that were used in the United Kingdom in the year 2013



The amount of natural gas used, in Mtoe, was the greatest in both 2000 and 2013

(c) Explain how the bar chart and the pie chart show this.

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(1)

Juanita says that more diesel was used in 2013 than in 2000

(d) Explain whether or not the information given in the two diagrams can be used to support this statement.

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(2)

(Total for Question 8 is 5 marks)

9 The directors of a company want to make changes to the company's pension scheme.

The directors want to find out what the employees think about the proposed changes to the pension scheme.

The directors will collect the information by using one of two data collection methods.

Method 1: each employee will be interviewed by one of the directors.

Method 2: each employee will complete a questionnaire without filling in their name.

There are 100 employees in the company.

Discuss how appropriate each of these two data collection methods are.

(Total for Question 9 is 4 marks)

10 The table shows information about the ages, when elected, of French presidents and UK prime ministers for the years 1850 to 2015

	Lowest value	Lower quartile	Median	Upper quartile	Highest value
French presidents	40	53	60.5	65	74
UK prime ministers	43	53	56.5	63	70

(Source: *Wikipedia*)

Compare and interpret the spread of ages of French presidents with UK prime ministers for the years 1850 to 2015

(Total for Question 10 is 5 marks)

11 Kerry is investigating whether there is a difference in the lengths of the text messages sent by boys and sent by girls at her school.

She writes the following hypothesis for the investigation.

"The length of text messages sent by girls is greater than the length of text messages sent by boys".

Kerry decides to use a census of the 800 students in her school.
She is going to ask each student to record the number of characters in their last text message.

Kerry then collects this information from each student through an online database.

Part of the database is shown below.

	Gender	**Length of text message**
1	male	73
2	F	68
3	girl	thirty five
4	boy	114,
5	boy	85
6	girl	
7	M	56
8	48	boy
9	girl	5
10	G	75
11	B	41
12	girl	28

(a) Give **two** reasons why Kerry must clean the data before processing it.

Reason 1: .....

.....

Reason 2: .....

.....

(2)

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(b) Discuss how Kerry's data collection plan could affect the reliability of her conclusions.

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(2)

(Total for Question 11 is 4 marks)

12 The table shows information about houses for sale in Oxford.

Number of bedrooms	1	2	3	4	5 or more	Total
Number of houses for sale	140	300	420	240	100	1200

(Source: *adapted from rightmove.co.uk*)

An estate agent says the mode of the number of bedrooms for these houses is 3

(a) Explain how she knows this.

.....

.....

(1)

The estate agent wants to investigate the prices of these houses.

She takes a stratified sample of 60 houses according to the number of bedrooms.

(b) Work out the number of houses in her sample for each number of bedrooms.

Number of bedrooms	1	2	3	4	5 or more
Number of houses in the sample					

(3)

(c) Describe how to select the 60 houses in the sample.

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(3)

(Total for Question 12 is 7 marks)

13 Morgan is investigating the 180 Year 11 students in his school.

He collected information from the 30 students in his class.

Part of the spreadsheet he used to collect the information is shown below.

Student number	Name	Left-handed (1 = yes, 0 = no)	Height (cm)
1	Jason	0	169
2	Rami	1	165
29	Youen	0	164
30	Elena	0	162
Total		4	5031

Morgan uses these results to find estimates for all Year 11 students.

(a) Find his estimate for the number of left-handed students in Year 11

.....

(2)

(b) Explain how Morgan can use the information in the spreadsheet to estimate the mean height of all the students in Year 11

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.....

.....

(1)

(Total for Question 13 is 3 marks)

14 The table shows information about the retail price index (RPI) and the price of a second-class stamp (in pence) in the United Kingdom for January 1996, January 2006 and January 2016

	Jan 1996	**Jan 2006**	**Jan 2016**
Retail price index (RPI)	100	129	172
Price of second-class stamp (pence)	20	23	54

(Sources: *ons.gov.uk and royalmail.com*)

Describe how the increase in the price of a second-class stamp compares with the RPI over the ten years to January 2006 **and** over the twenty years to January 2016

(Total for Question 14 is 5 marks)

15 The table and the time series graph give some information about the numbers of visits abroad (in millions) made by UK residents for the years 2013 to 2015

Year	Quarter	Number of visits (millions)	4-point moving average (millions)
2013	1	10.2	
	2	15.9	14.45
	3	20.1	14.55
	4	11.6	14.75
2014	1	10.6	14.85
	2	16.7	15.00
	3	20.5	15.225
	4	12.2	15.55
2015	1	11.5	16.00
	2	18.0	
	3	22.3	
	4	13.4	

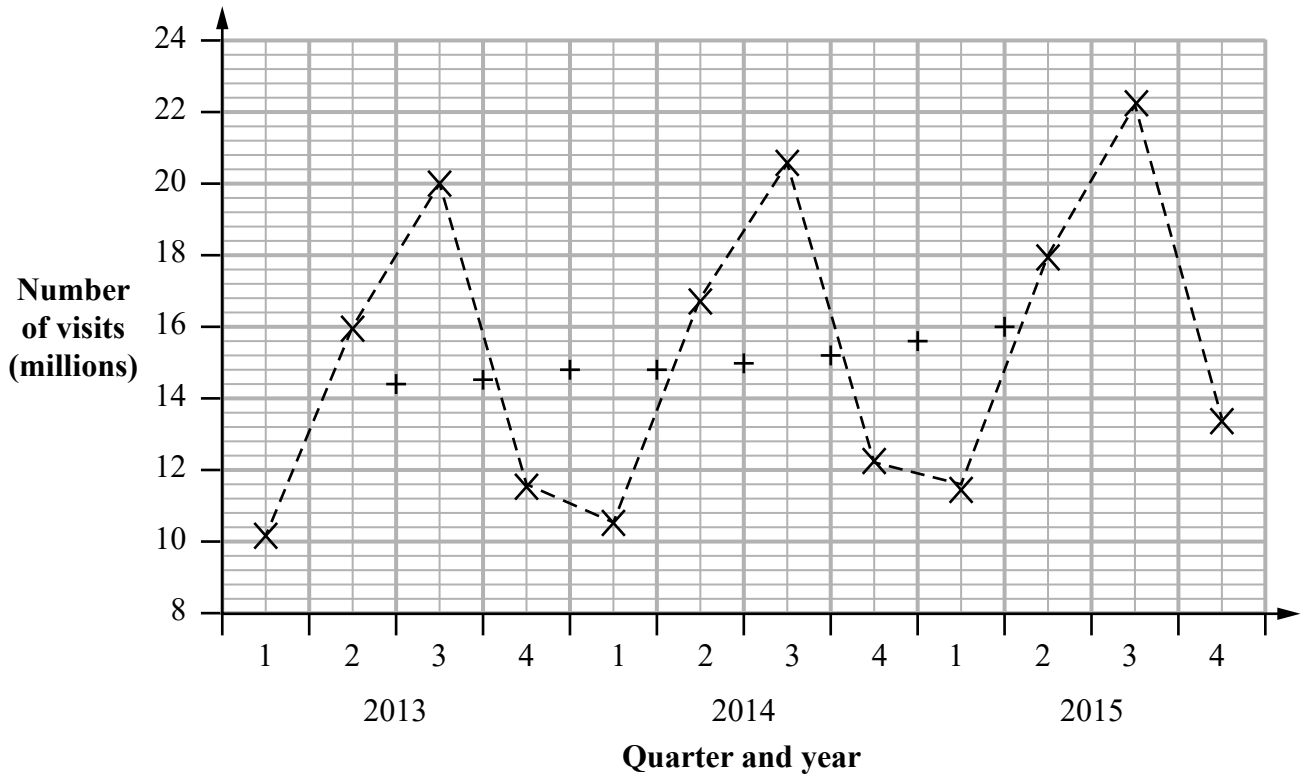
(Source: *Office for National Statistics*)

The last 4-point moving average is missing from the table and from the time series graph.

(a) (i) Calculate this 4-point moving average.
Write your answer in the table.

(ii) Plot this 4-point moving average on the time series graph.

(3)



(b) For which quarter was the number of visits abroad by UK residents the greatest?

.....

(1)

(c) Describe and interpret the trend in the number of visits abroad made by UK residents for the years 2013 to 2015

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(2)

(d) Compare and interpret the seasonal variation for each quarter in the number of visits abroad made by UK residents for the years 2013 to 2015

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(2)

(Total for Question 15 is 8 marks)

TOTAL FOR PAPER IS 80 MARKS

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