

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

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Candidate Number

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Time 1 hour 30 minutes

**Paper
reference**

1ST0/1F

Statistics
PAPER 1
Foundation Tier

You must have:

Ruler graduated in centimetres and millimetres, protractor,
pair of compasses, 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.
- Good luck with your examination.

Turn over ►

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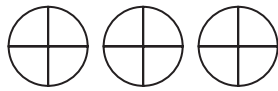


Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 The pictogram shows information about the number of rugby balls sold in a shop each day from Monday to Wednesday last week.

Monday	
Tuesday	
Wednesday	
Thursday	

Key:

 represents 4 rugby balls

- (a) How many rugby balls were sold on Monday?

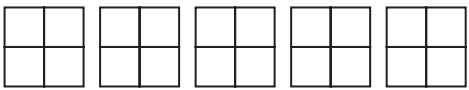
.....
(1)

On Thursday, the number of rugby balls sold was 8

- (b) Show this information on the pictogram.

(1)

Brian begins to draw the pictogram below to show the number of tennis rackets sold in the shop on Friday and on Saturday last week.

Friday	
Saturday	

Key:

 represents 5 tennis rackets

On Saturday, the number of tennis rackets sold was 22

- (c) Explain why the key for the pictogram is **not** suitable.

.....
.....
(1)

(Total for Question 1 is 3 marks)

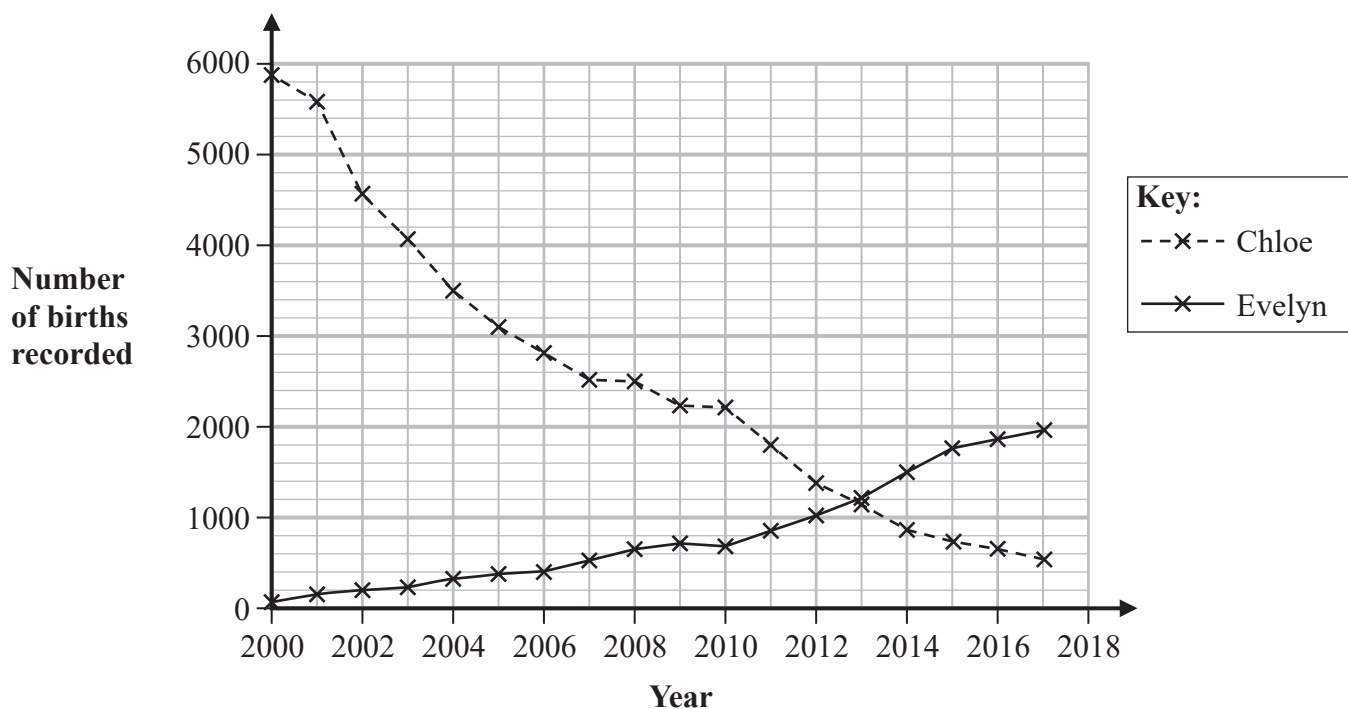


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2 The time series graphs show information about the numbers of births recorded in England and Wales for girls named Chloe and for girls named Evelyn in the years 2000 to 2017



(Source: Office for National Statistics)

(a) For the year 2017, write down the number of births recorded for girls named Evelyn.

..... (1)

For the year 2017, there were more births recorded for girls named Evelyn than for girls named Chloe.

(b) How many more?

..... (2)

(c) For the years 2000 to 2017, describe the trend for

(i) girls named Chloe,

..... (1)

(ii) girls named Evelyn.

..... (1)

(Total for Question 2 is 5 marks)



This question must be answered with a cross in a box . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

- 3 Julie asked 20 of her friends how many days last week they each played a sport.

Here are her results.

3	4	5	3	2
2	3	3	2	5
1	0	1	0	2
3	3	2	5	3

- (a) Which word from the list below best describes Julie's data **before it is processed**?

categorical **raw** **grouped** **ordinal** **qualitative**

(1)

Julie draws the following tally chart for her results.

Number of days	Tally
0	
1	
2	
3	
4	
5	

- (b) Write down **two** things that could be misleading or are wrong with Julie's tally chart.

.....

.....

.....

.....

(2)



The median for Julie's results is 3

(c) Interpret this value in context.

(1)

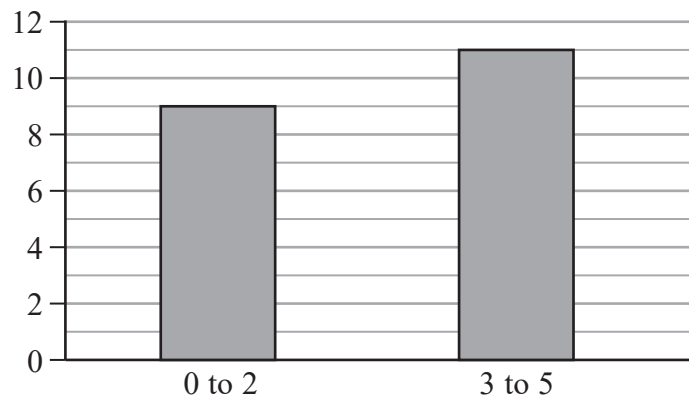
Julie says the mode of her results is 7

(d) Is Julie correct?

Give a reason for your answer.

(1)

Albert groups Julie's results and then draws the following bar chart.



(e) Assess whether or not Albert's way of presenting Julie's results is appropriate.

Give **two** reasons for your answer.

(2)

(Total for Question 3 is 7 marks)



- 4 Bryce and Mary have a spinner that can land on yellow or on blue or on red. They want to estimate the probability that when the spinner is spun it will land on red.

Bryce spins the spinner 5 times and the spinner lands on red exactly 1 time.

Bryce used his results to find an estimate for the probability that the next time the spinner is spun it will land on red.

- (a) Write down Bryce's estimate.

.....
(1)

Mary spins the spinner 30 times.

She records the colour the spinner lands on each time.

The table shows the number of times that the spinner landed on each colour.

Colour	Frequency
yellow	13
blue	10
red	7

Mary used her results to find an estimate for the probability that the next time the spinner is spun it will land on red.

- (b) Write down Mary's estimate.

.....
(1)

- (c) Whose estimate is more reliable, Bryce's or Mary's?
Give a reason for your answer.

.....
(2)



Chantal claims that the spinner has the same probability of landing on each colour when spun and so is a fair spinner.

(d) Compare Mary's results with the expected results if Chantal's claim is true.

.....

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.....

.....

(3)

(Total for Question 4 is 7 marks)

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- 5 Bethany is the union representative at the large company where she works. She is investigating the salaries of the employees at the company.

Bethany takes a simple random sample of 8 employees at the company and asks each of them to tell her their salary.

- (a) Describe what you understand by the term ‘simple random sample’.

.....
.....
(1)

The salaries of the 8 employees are listed below.

£16 000	£3 000	£23 000	£31 000
£21 000	£24 000	£17 000	£25 000

- (b) Work out the mean.

£.....
(2)

- (c) Show that the range is £28 000

(1)

Bethany believes that one of the salaries is an outlier.

- (d) (i) Write down the salary that is most likely to be an outlier.

£.....
(1)

- (ii) Explain why you think this value is an outlier.

.....
.....
(1)



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Bethany removes the outlier and calculates the mean of the remaining seven salaries.

- (e) Without carrying out any further calculations, state whether the mean of the remaining seven salaries is greater than, is equal to or is less than the mean of all eight salaries.
Give a reason for your answer.

(2)

Bethany uses the mean of the remaining seven salaries to draw conclusions about the salaries of **all** of the employees at her company.

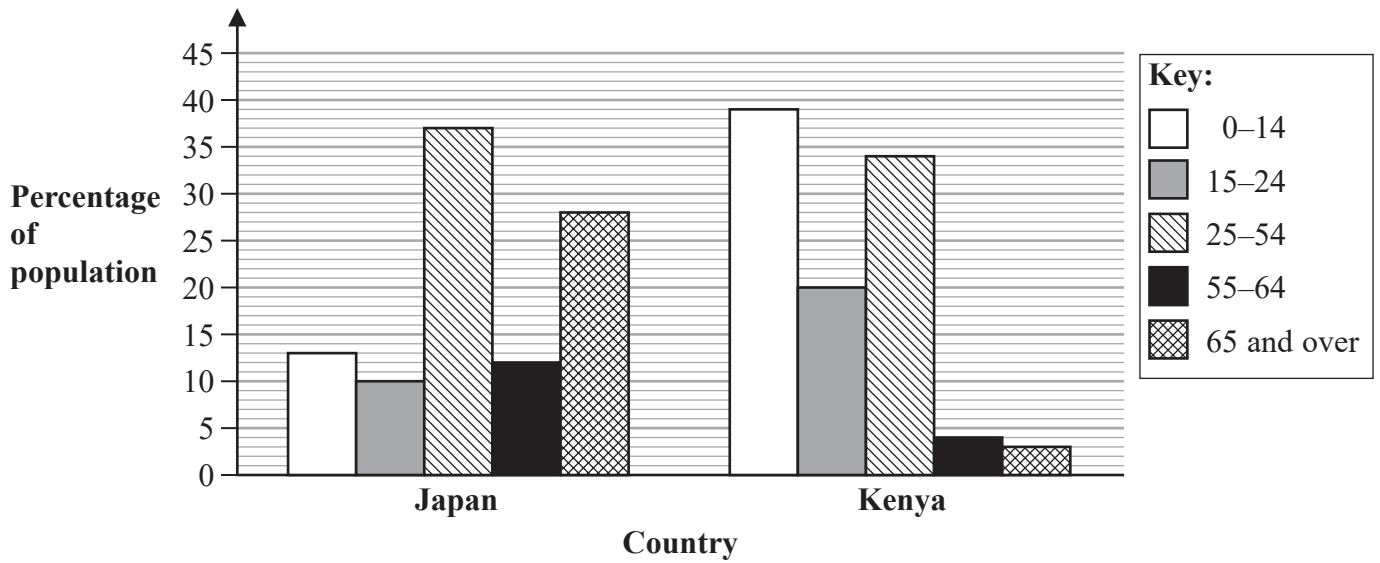
- (f) Describe **two** things that could affect the reliability of her conclusions.

(2)

(Total for Question 5 is 10 marks)



6 The multiple bar charts show information about the percentages of the population in each of Japan and of Kenya that are in each of five different age groups.



(Source: <https://www.cia.gov/library/publications/the-world-factbook>)

One person is selected at random from the population of Japan.

(a) Work out the probability that this person is **not** in the age group 15–24

.....%

(2)

(b) Compare the percentage of the population of Japan aged 0–14 with the percentage of the population of Kenya aged 0–14

Justify your answer using values from the multiple bar charts.

.....

.....

(2)

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There are two statements below.

(c) Decide whether each statement is true for Japan only or for Kenya only or for both countries or for neither country.

Justify each answer using information from the multiple bar charts.

(i) “The age group 55–64 has more than 10% of the population.”

The statement is true for

(2)

(ii) “There is only one age group with a smaller population than the age group 55–64”

The statement is true for

(2)

Craig thinks that the information in the multiple bar charts could be represented using a population pyramid.

(d) Explain whether or not this would be a suitable diagram for Craig to use.

(1)

(Total for Question 6 is 9 marks)



7 Naomi wants to find out what opinions people in her town have about holidays.

She designed a questionnaire and gave it to each person in a sample of 30 people who live in her town to complete.

Her questionnaire, her results and her conclusions are shown below.

Questionnaire:

1. Do you agree that August is the best month to go on holiday?
2. Where is your favourite place to go on holiday?
3. How much do you spend on holiday? (Tick one box)

Less than £500

More than £800

Results:

1. 22 responded yes and 8 responded no.
2. 2 people said ‘beach’. The other 28 people each gave a different answer.
3. 6 ticked ‘less than £500’ and 24 ticked ‘more than £800’

Conclusions:

1. August is the favourite month to go on holiday.
2. The beach is the favourite place to go on holiday.
3. Most people spend more than £800 a week when on holiday.

Discuss whether or not the questions on Naomi’s questionnaire are appropriate and whether or not the results can be used to support Naomi’s conclusions.

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(Total for Question 7 is 6 marks)



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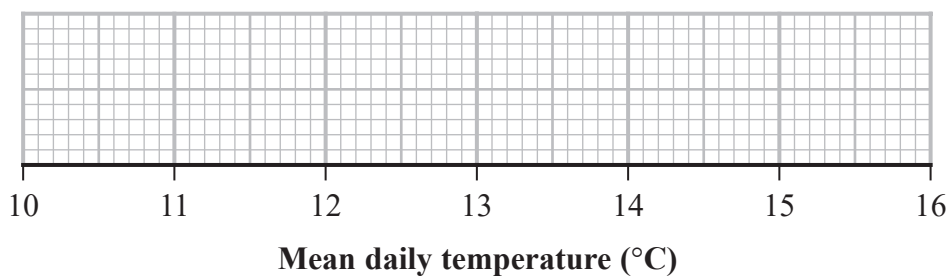
8 Aminah collected information about the mean daily temperature, in °C, in August in Scotland for the years 1910 to 2018

The table shows a summary of the data produced by statistical software.

n	109
Mean	12.7
Minimum	10.2
Lower quartile	12.1
Median	12.7
Upper quartile	13.3
Maximum	15.4

(Source: <https://www.metoffice.gov.uk/climate/uk/summaries/datasets>)

(a) On the grid below, draw a box plot for the information in the table.



(3)

(b) Calculate the interquartile range for the data in the table.
You must show your working.

.....
(2)

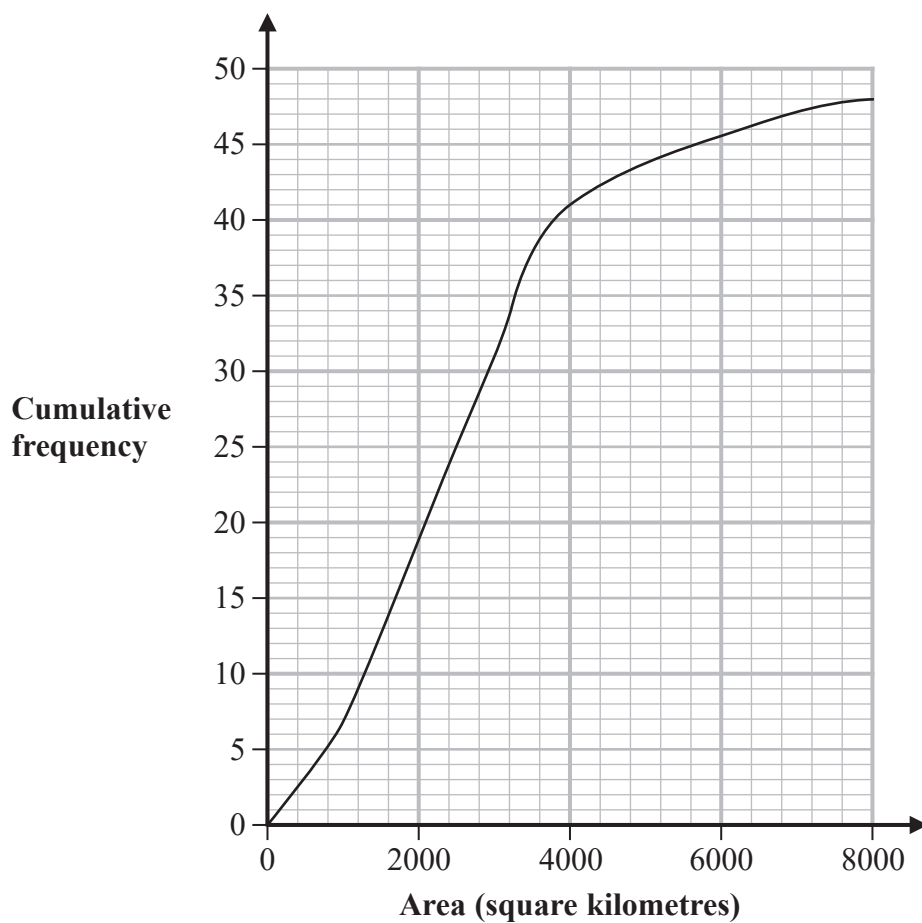
(c) Describe the skew of the distribution represented by the box plot.
Give a reason for your answer.

.....
.....
.....
.....
(2)

(Total for Question 8 is 7 marks)



9 The cumulative frequency graph gives information about the area, in square kilometres, of the 48 counties in England.



(Source: https://en.wikipedia.org/wiki/List_of_ceremonial_counties_of_England)

(a) (i) Find an estimate of the 75th percentile of this information.

..... square kilometres
(2)

(ii) Interpret this value in context.

.....
.....
(1)



Half of the counties in England have an area between 2000 square kilometres and k square kilometres.

(b) Work out an estimate for the value of k .

.....
(3)

(Total for Question 9 is 6 marks)

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10 John and Susan are investigating films.

John wants to find out the favourite type of film of the students at his school.

Susan wants to find out which type of film made the most money in UK cinemas last year.

(a) State the population for

(i) John's investigation,

(1)

(ii) Susan's investigation.

(1)

Susan plans to collect the information for her investigation from the internet.

(b) Give advice to Susan so that she can ensure that the information she collects is reliable.

(1)

John is deciding between two different sampling methods for his investigation.

Method A: Quota sampling by sampling 20 students from each year group.

Method B: Opportunity sampling by selecting the first 50 students he sees one day.

(c) For each method, give one reason why the method is **not** random.

Method A:

Method B:

(2)



(d) Explain which of the two methods John should use in order to minimise bias.
Give a reason for your answer.

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(2)

(Total for Question 10 is 7 marks)

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- 11 The table shows the value of the gross domestic product (£ million) of the UK for each quarter from 2007 to 2009

Year	Quarter	Gross domestic product (£ million)
2007	1	444 292
	2	447 498
	3	451 288
	4	455 043
2008	1	456 663
	2	453 283
	3	445 818
	4	436 137
2009	1	428 886
	2	428 073
	3	428 682
	4	430 166

(Source: <https://www.ons.gov.uk/economy/grossdomesticproductgdp>)

A country is in recession when its gross domestic product falls in two or more consecutive quarters.

The UK went into recession in 2008 Quarter 3

A country comes out of recession in the quarter in which its gross domestic product rises.

- (a) According to the table, in which year and quarter did the UK come out of this recession?

.....
(1)

- (b) Using 2007 Quarter 1 as the base, work out the simple index number for the gross domestic product of the UK in 2008 Quarter 1

Give your answer correct to the nearest whole number.

.....
(2)



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The table below shows the simple index number for the gross domestic product of the UK for each quarter in 2010 using 2007 Quarter 1 as the base.

Year	Quarter	Gross domestic product simple index number
2010	1	97.3
	2	98.1
	3	98.7
	4	98.8

(c) Calculate the value of the gross domestic product of the UK in 2010 Quarter 1

£..... million
(2)

Marc says that the UK was in recession throughout 2010 because all of the simple index numbers are less than 100

(d) Explain whether or not Marc is correct.

.....

.....

.....

(2)

(Total for Question 11 is 7 marks)



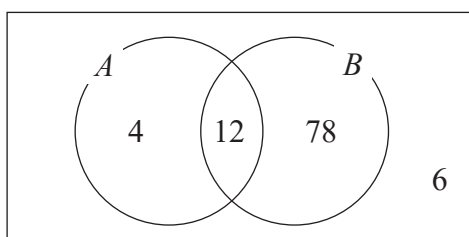
12 A census found out information about people in Europe who were aged 15 to 19 in 2017

The Venn diagram gives information about the employment status and the education status of each of these people.

A is the event that the person is employed.

B is the event that the person is in education.

The numbers in the Venn diagram are percentages of the total number of people in Europe who were aged 15 to 19 in 2017



(Source: <https://ec.europa.eu/eurostat/>)

(a) What percentage of these people were **not** employed and were **not** in education?

.....%

(1)

One person aged 15 to 19 in 2017 is to be chosen at random.

(b) Find $P(B)$.

.....

(1)

(c) Find $P(B|A)$.

.....

(2)

(d) Using your answers to part (b) and to part (c), describe the effect that being employed has on the likelihood of being in education for these people. Justify your answer.

.....

.....

.....

(2)

(Total for Question 12 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS

