

Write your name here

Surname	Other names
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Pearson Edexcel
Level 1/Level 2 GCSE (9 - 1)

Centre Number

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Candidate Number

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Statistics

Paper 2

Foundation Tier

Sample assessment material for first teaching September 2017

Paper Reference

Time: 1 hour 30 minutes

1ST0/2F

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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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Jenny wants to find out what students at her school think about the after-school clubs.

Jenny is going to use a questionnaire.

Here is one of the questions she wants to put on the questionnaire.

It is great that we have a range of clubs at school, isn't it?		
Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>

- (a) This is not a suitable question.
Explain why.

(1)

Here is another of the questions that Jenny wants to put on the questionnaire.

How many times a week do you go to an after-school club?		
1-2 <input type="checkbox"/>	2-3 <input type="checkbox"/>	4-5 <input type="checkbox"/>

- (b) Discuss whether or not this is a suitable question for the questionnaire.

(2)

(Total for Question 1 is 3 marks)

2 Tom and Samira want to collect data on the numbers of hours students at their school spend on homework.

There are 1100 students at their school.

Tom is planning to use a random sample of 50 students.

(a) Explain what is meant by a random sample.

.....
.....
.....

(1)

(b) Describe how Tom could use random numbers to take a random sample of the students at his school.

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.....
.....

(3)

Samira is planning to use a stratified sample that is stratified by school year.

(c) Comment on whether Samira’s plan is appropriate.

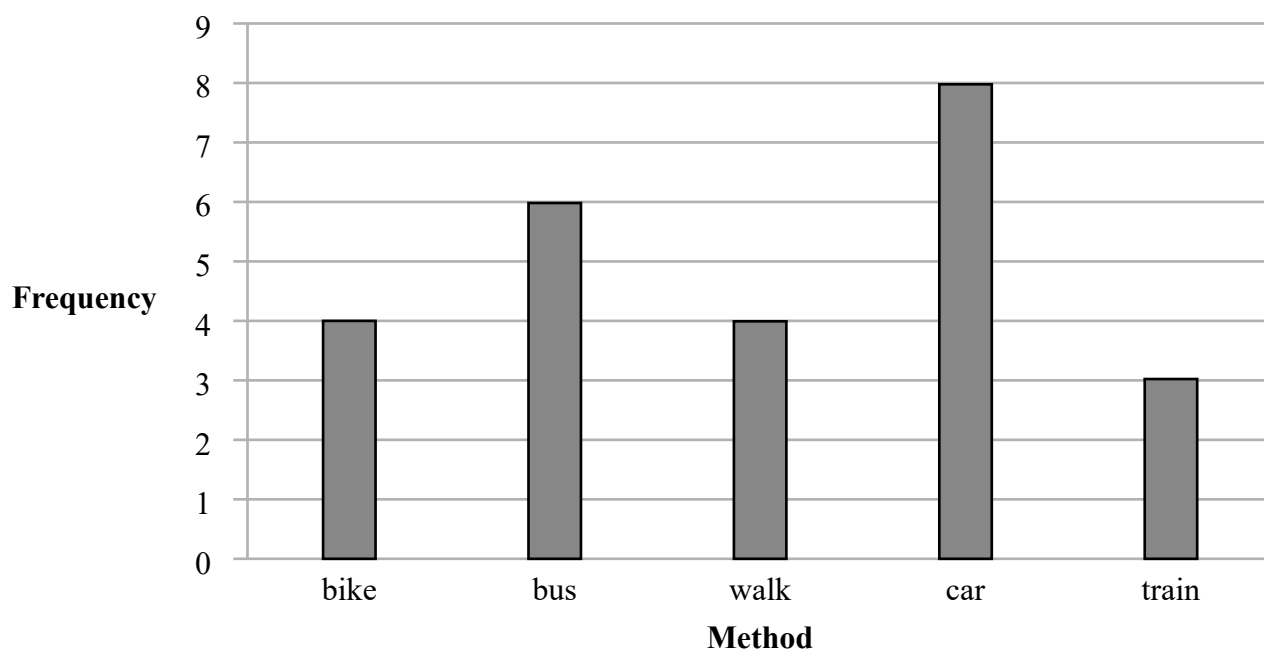
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(2)

(Total for Question 2 is 6 marks)

- 3 Razwan collected data about the methods used to get to work that morning by the 25 people who work at his company.

The bar chart shows information about the methods used.



- (a) Which method was used by the greatest number of people?

.....
(1)

- (b) Which method was used by half as many of the people who got to work by bus?

.....
(1)

Razwan concludes that travelling to work by car is the most popular method used to get to work in his city.

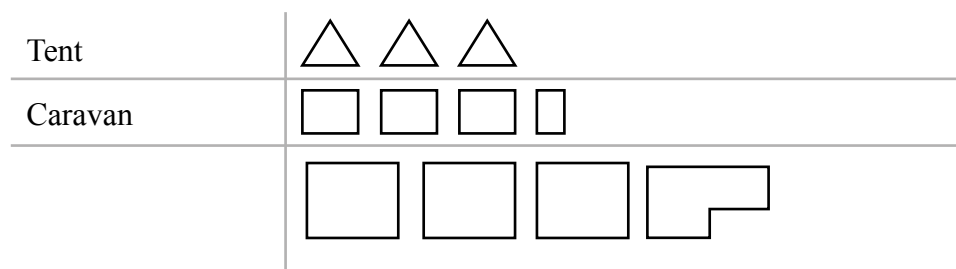
- (c) Give one limitation of Razwan's conclusion.

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

(Total for Question 3 is 3 marks)

- 4 Rebecca collected information about the type of accommodation that 30 people stayed in the last time they went on holiday.

She drew this diagram to show her results.



Write down three things that could be misleading or that are wrong in Rebecca's diagram.

- 1
- 2
- 3

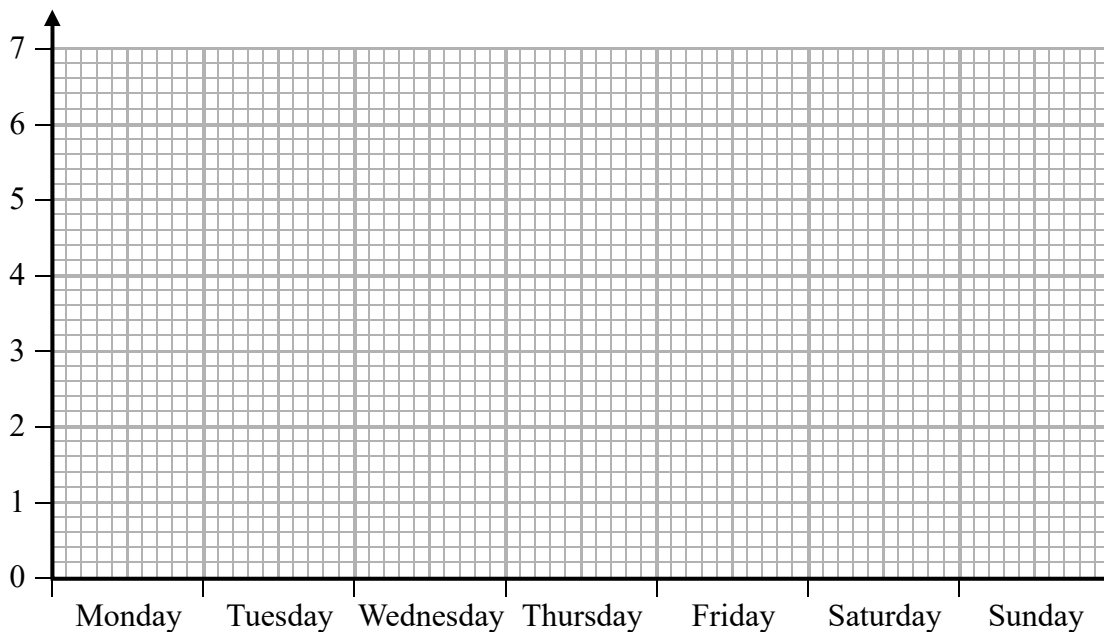
(Total for Question 4 is 3 marks)

5 Diane recorded the number of hours that she watched television each day last week.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of hours	2	1	2	0	4	6	6

(a) Draw a line graph for this data.

Label each axis.



(3)

(b) Calculate the mean number of hours.

..... hours
(2)

(c) Find the median.

..... hours
(2)

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Noah recorded the number of hours that he watched television each day last week.

He calculated the mean and the median of his results.

	Mean	Median
Number of hours	4	1

(d) Use your answers to part (b) and part (c) to compare the average amount of television watched by Diane and by Noah last week.

.....

.....

.....

(2)

(Total for Question 5 is 9 marks)

- 6 Claire collected data on the weights of the England football team and the weights of the England rugby team from the internet.

She calculated the mean and range of the weights of each team.
Her results are shown in this table.

	Mean	Range
Football team	77.0 kg	30 kg
Rugby team	104.6 kg	42 kg

(Sources: *thefa.com* and *englandrugby.com*)

- (a) State **two** possible problems with obtaining data from the internet.

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(2)

- (b) Use the information in the table to compare the distribution of weights of the England football team with the weights of the England rugby team.
Interpret your comparison.

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(3)

- (c) Suggest a possible problem with collecting primary data in this situation.

.....

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(1)

(Total for Question 6 is 6 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 ☒.

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7 Raina has been watching the judging of a cake baking competition.

Two judges ranked the 10 bakers for their sponge cakes.

Raina calculated the Spearman's rank correlation coefficient for the ranks given by the judges.

She got a value of 0.8

(a) (i) What type of correlation is shown by the value 0.8?
Put a cross in one of the boxes below.

Negative correlation No correlation Positive correlation

(ii) Interpret Raina's value.

.....
.....

(2)

The same two judges will also be judging a flower-arranging competition.

(b) Is it possible to say anything about the ranks they are likely to give for
flower arranging based on the value of Spearman's rank correlation coefficient that
Raina calculated?

Give a reason for your answer.

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.....
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(1)

(Total for Question 7 is 3 marks)

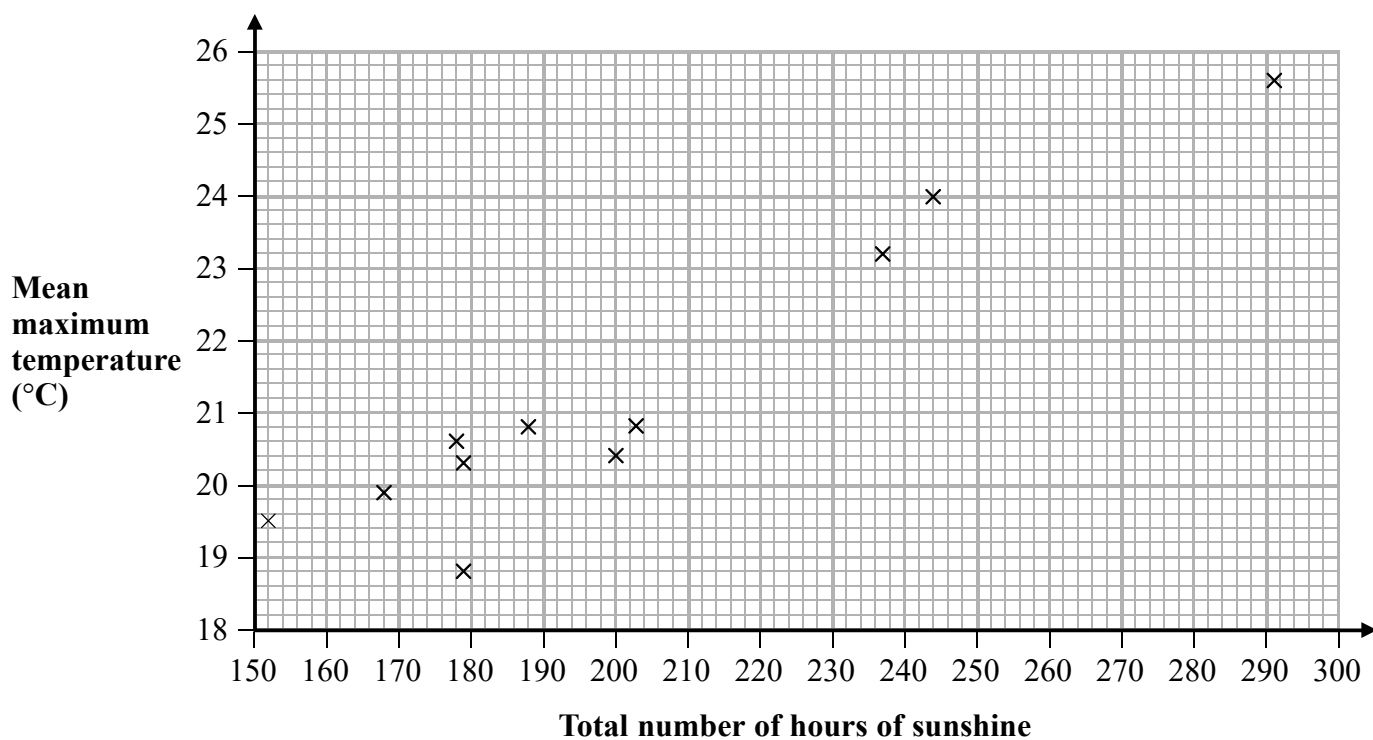
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- 8 The maximum temperature ($^{\circ}\text{C}$) and the number of hours of sunshine were recorded in Sheffield each day in July for 11 successive years.

For each July, the mean maximum temperature and the total number of hours of sunshine were calculated.

The scatter diagram shows this information.



(Source: Metoffice)

In one of these years there was a total of 244 hours of sunshine in July.

- (a) For this year, write down the mean maximum temperature.

..... $^{\circ}\text{C}$
(1)

- (b) For the year with the lowest total number of hours of sunshine in July, write down the mean maximum temperature.

..... $^{\circ}\text{C}$
(1)

- (c) Draw a line of best fit on the scatter diagram.

(1)

(d) Describe and interpret the type of correlation shown by the scatter diagram.

.....
.....
.....
.....

(3)

For a different year in Sheffield, there was a total of 220 hours of sunshine in July.

(e) (i) Estimate the mean maximum temperature for July that year.

..... °C

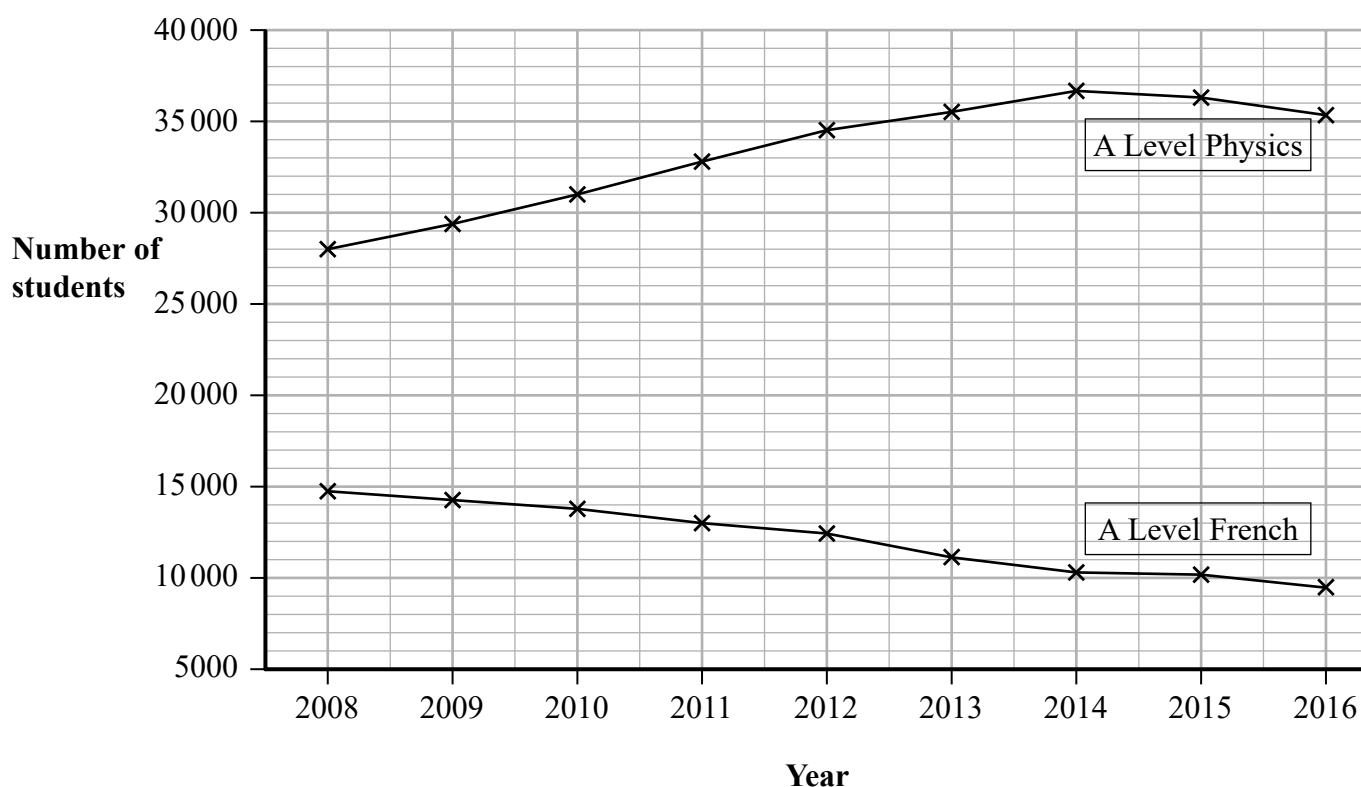
(ii) Give a reason why your answer to part (e)(i) should be reliable.

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(2)

(Total for Question 8 is 8 marks)

- 9 The time series graphs show information about the numbers of students taking A Level Physics and A Level French in each of the years from 2008 to 2016



(Source: JCQ)

- (a) Work out an estimate for the difference in the number of students taking A Level Physics and the number of students taking A Level French in the year 2008

.....
(2)

- (b) Explain why the answer to part (a) is an estimate.

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

- (c) Describe the trend in the number of students taking A Level French from 2008 to 2016

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

Alizee is going to give a presentation to students at a school. She wants to show her target audience that Physics is the most popular subject at A Level.

- (d) Explain whether or not it would be appropriate for Alizee to use the time series graph to show this.

(1)

Ivan is going to give a presentation to students at a school. He wants to show his target audience that the number of students taking A Level Physics is decreasing.

- (e) Explain how Ivan can use information from the time series graph to show this.

(1)

Lionel wants to use the time series graphs to predict the number of students taking A Level Physics and the number of students taking A Level French in 2020

- (f) Discuss whether or not it would be appropriate to do so.

(2)

(Total for Question 9 is 8 marks)

10 27 adults were each asked to count the number of times they could bounce a ball on a bat.

Here are the results.

5 8 13 5 7 23 30 6 21
 24 23 22 13 9 12 6 12 34
 22 20 35 22 12 16 24 13 12

(a) Complete the stem and leaf diagram for this information.

0	
1	
2	
3	

Key: 0 | 5 represents 5 bounces

(2)

(b) Work out the interquartile range of the results.

.....
(2)

The median of the results for 27 children is 9

The interquartile range of the results for these children is 6

Alex thinks these results show that adults are better than children at bouncing a ball on a bat.

- (c) Do you agree with Alex?
You must give reasons for your answer.

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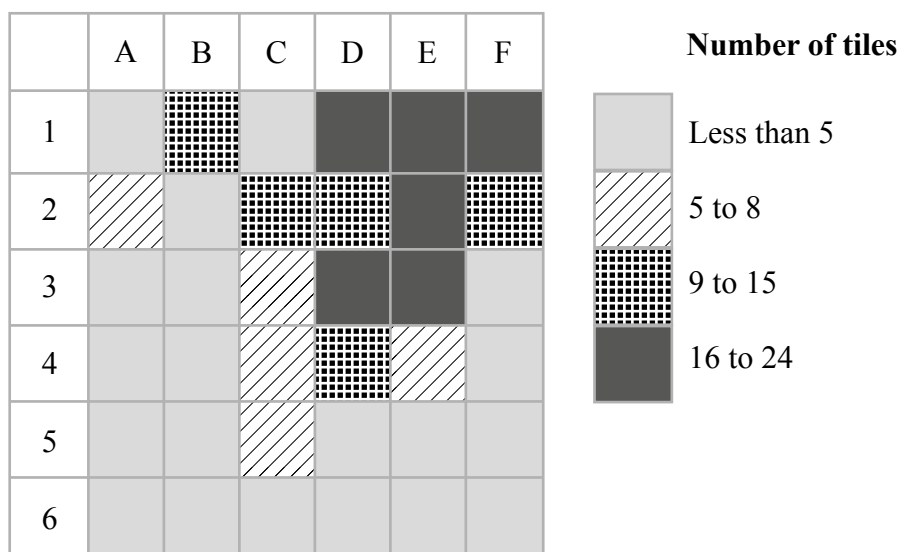
(3)

(Total for Question 10 is 7 marks)

11 Archaeologists divided a field into 36 squares of equal size.

The number of Roman roof tiles found in each square was recorded.

The choropleth map below was drawn using this information.



Use the choropleth map to describe where in the field the greatest number of roof tiles was found.

Give a statistical reason for your answer.

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(Total for Question 11 is 2 marks)

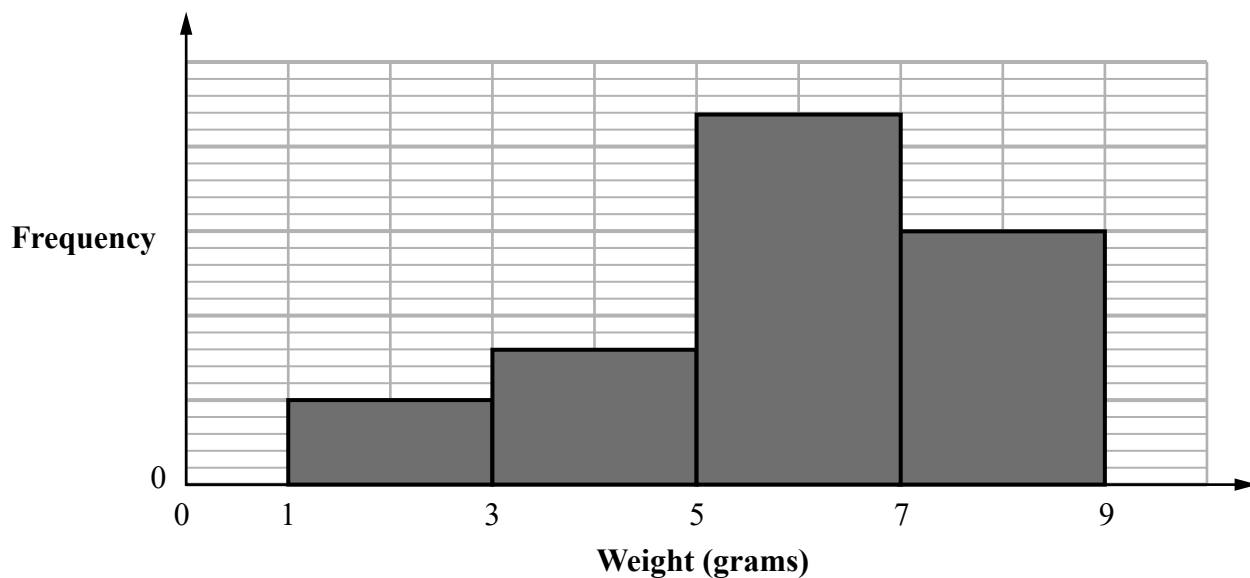
12 Tomoyo found the weight, in grams, of each of 100 cherries.

(a) Circle the **two** words from the list that best describe the data Tomoyo found.

quantitative qualitative discrete continuous bivariate ordinal categorical

(2)

Tomoyo grouped the weights and she then drew this diagram for her results.



The incomplete frequency table shows some information about her results.

Weight (w grams)	Frequency
$1 \leq w < 3$	10
$3 \leq w < 5$	
$5 \leq w < 7$	
$7 \leq w < 9$	

(b) (i) Complete the frequency column in the table.

(2)

(ii) Calculate an estimate of the mean weight of the 100 cherries.

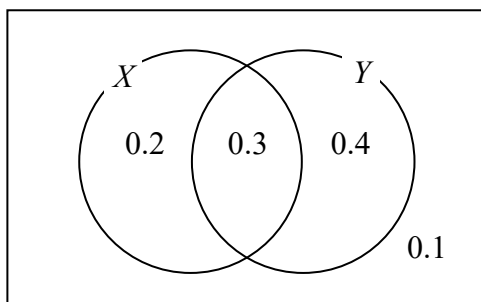
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(3)

(Total for Question 12 is 7 marks)

13 X and Y are two events.

The Venn diagram shows information about the probabilities of events related to X and Y happening.



(a) Find

(i) the probability of event Y happening

.....
(1)

(ii) $P(X \text{ and } Y)$

.....
(1)

(iii) $P(Y | X)$

.....
(2)

Two different events A and B are independent

$P(A) = 0.8$ and $P(B) = 0.5$

(b) Find $P(A \text{ and } B)$

.....
(2)

(Total for Question 13 is 6 marks)

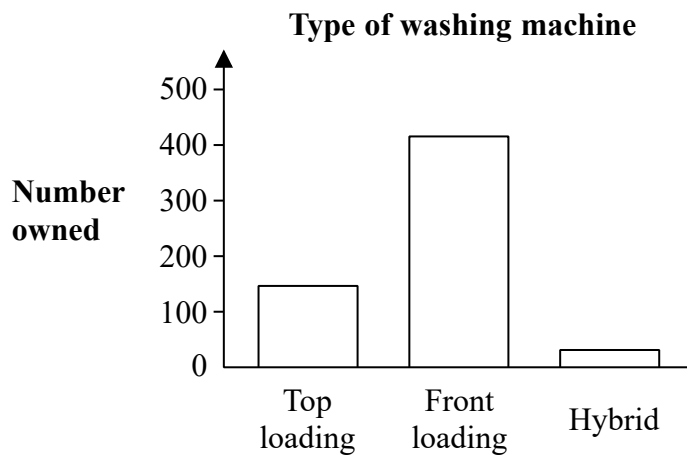
- 15 The editor of a home magazine collects information about the types of washing machines people use.

She uses statistical software to represent the results in three different ways.

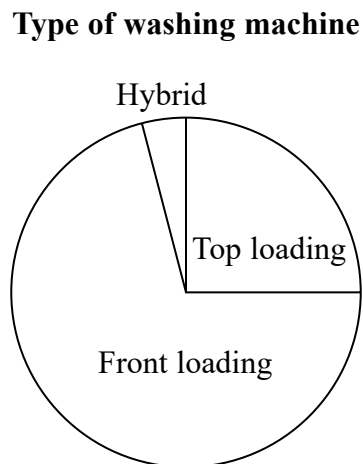
Way 1: Table.

Type of washing machine	Top loading	Front loading	Hybrid
Number owned	150	425	25

Way 2: Bar chart.



Way 3: Pie chart.



For each of the ways, comment on why the editor might choose this way to represent the results in the magazine.

Way 1

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Way 2

.....

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Way 3

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.....

(Total for Question 15 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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