



Rewarding Learning

General Certificate of Secondary Education

Centre Number

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Candidate Number

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# Statistics

Unit 1  
Foundation Tier



\*GST11\*

## [GST11] Assessment

### TIME

1 hour 30 minutes.

### Assessment Level of Control:

Tick the relevant box (✓)

Controlled Conditions	
Other	

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Answer **all nine** questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and protractor.

There is no formula sheet for this examination.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
<b>Total Marks</b>	

Answer **all** questions

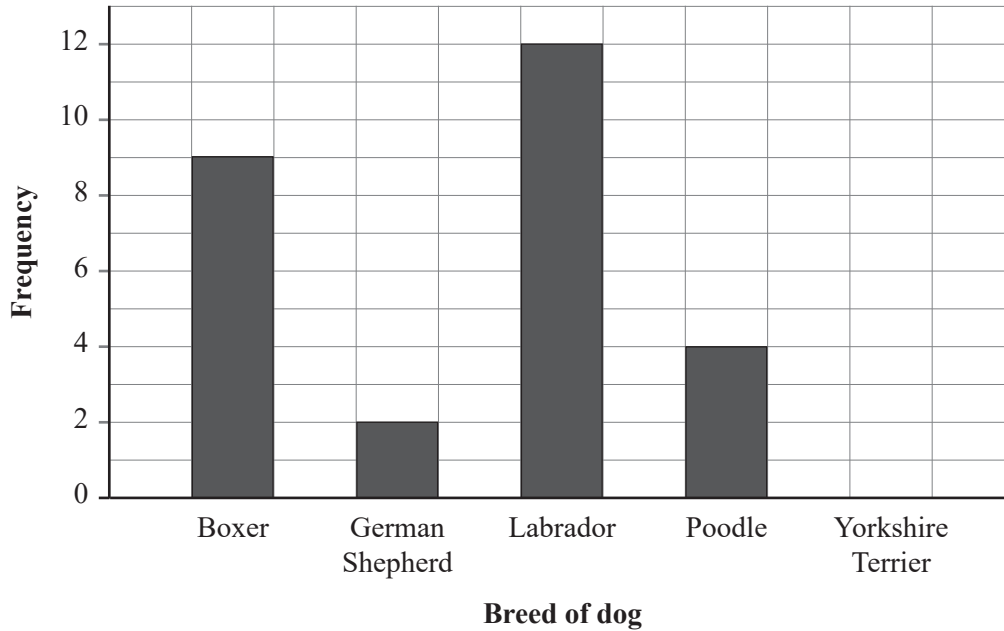
Examiner Only

Marks Remark

1 Maeve works as a vet.

She recorded the breed of each dog she treated during February.

Maeve's results are shown in the bar chart below.



Maeve treated six Yorkshire Terrier dogs during February.

(a) Use this information to complete the bar chart. [1]

(b) How many dogs did Maeve treat during February?

Answer \_\_\_\_\_ [2]

(c) How many more Poodles than German Shepherds were treated by Maeve during February?

Answer \_\_\_\_\_ [1]

Maeve decides to use the mode to summarise her results.

Examiner Only

Marks Remark

**(d) (i)** What was the modal breed of dog treated during February?

Answer \_\_\_\_\_ [1]

**(ii)** Why is the mode an appropriate average to use for these results?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

Maeve thinks that, according to the chart, she will treat more Poodles than German Shepherds in March.

**(e)** Give a reason why Maeve may not be correct.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

**2** Stuart is a youth leader.

He is interested in finding out which charitable groups young people in his local area have been involved with over the past year.

Stuart plans to take a sample of 30 young people from the area, and either carry out an interview with each person, or give each one a questionnaire to complete.

**(a)** Give one advantage of using an interview instead of a questionnaire.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

**(b)** Give one advantage of using a questionnaire instead of an interview.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

Stuart decides to use a questionnaire consisting of closed questions.

**(c)** Explain what is meant by a closed question.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

Stuart considers carrying out a pilot survey.

**(d)** Give a reason for using a pilot survey.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

For his survey, Stuart gave out the questionnaire to the first 30 young people who arrived at a youth club one Friday evening.

(e) Write down the name of this method of sampling.

\_\_\_\_\_ [1]

(f) (i) Give an advantage of this method of sampling.

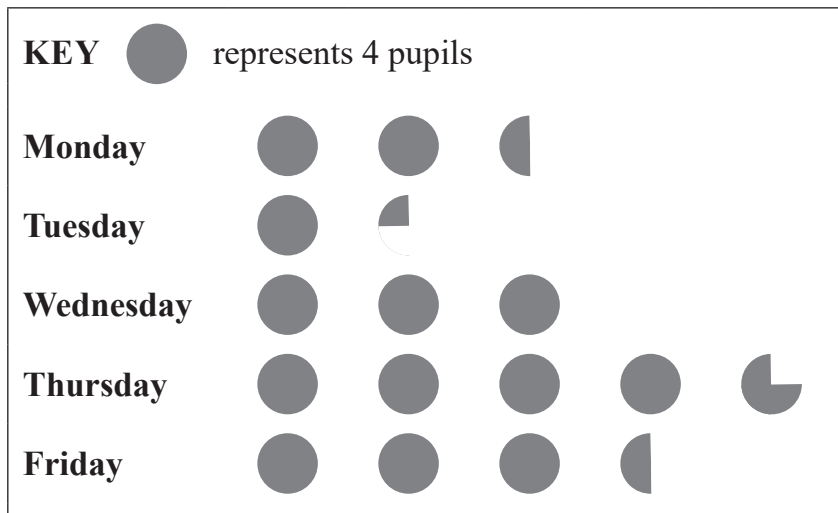
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [1]

(ii) Explain how this method of sampling might give biased results.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

- 3 The pictogram below shows the number of pupils who were absent from a school each day over a period of five days.



- (a) On which day were the fewest pupils absent?

Answer \_\_\_\_\_ [1]

- (b) On which day were 12 pupils absent?

Answer \_\_\_\_\_ [1]

- (c) Complete the frequency table below.

Day	Number of pupil absences
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
<b>TOTAL</b>	60

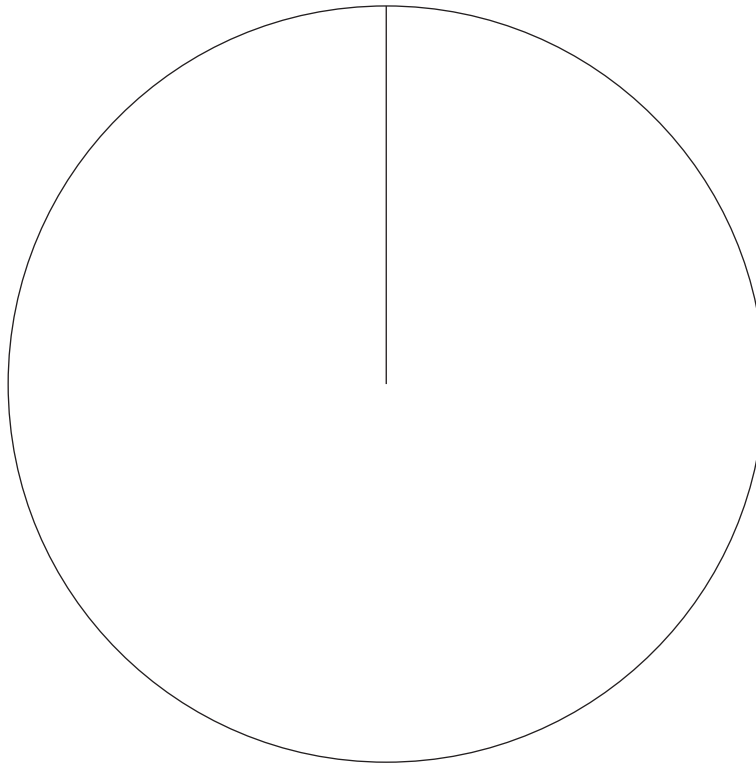
[2]

Examiner Only

Marks Remark

(d) Draw a pie chart to illustrate the data in the pictogram.

**Pupil absences**



[4]

(e) Give one advantage of using a pictogram to display the data instead of a pie chart.

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[1]

Thomas says, "Over those five days, 60 pupils were absent."

(f) Give a reason why Thomas may not be correct.

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[1]

Examiner Only

Marks Remark

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- 4 Lara has collected data from pupils in her school about their favourite subjects.

She recorded her results in a spreadsheet.

Part of Lara's spreadsheet is shown below.

	A	B
1	Year group	Favourite subject
2	8	Science
3	9	English
4		Maths
5	10	French
6	12	Science
7	11	Spanish
8	9	History
9	100	Art
10	12	Music
11	11	Subject
12	8	ICT
13	9	Geography

- (a) Identify three problems with the data in this part of the spreadsheet.

1. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [1]

2. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [1]

3. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark





5 Packets of Fruit Hoops contain flavoured sweets.

There are 8 lemon, 4 strawberry, 5 lime and 3 raspberry sweets in every packet.

Derek picks a sweet at random from a packet of Fruit Hoops.

(a) What is the probability that this sweet is

(i) lime flavoured;

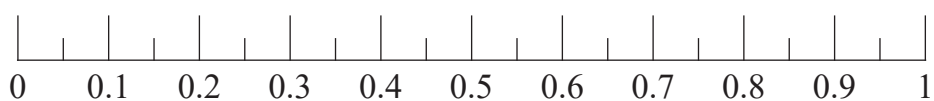
Answer \_\_\_\_\_ [1]

(ii) not strawberry flavoured?

Answer \_\_\_\_\_ [2]

(b) Calculate the probability that a sweet chosen at random from the packet is either lemon flavoured or lime flavoured.

Mark your answer with an arrow on the scale below.



[2]

Examiner Only	
Marks	Remark

Derek says that the most likely flavour of sweet to be taken from the packet is lemon.

(c) Is he correct? Give a reason for your answer.

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 [2]

Derek does not like raspberry flavoured Fruit Hoops.

(d) Calculate, as a percentage, the risk of Derek picking a raspberry flavoured sweet from a packet.

Answer \_\_\_\_\_ % [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

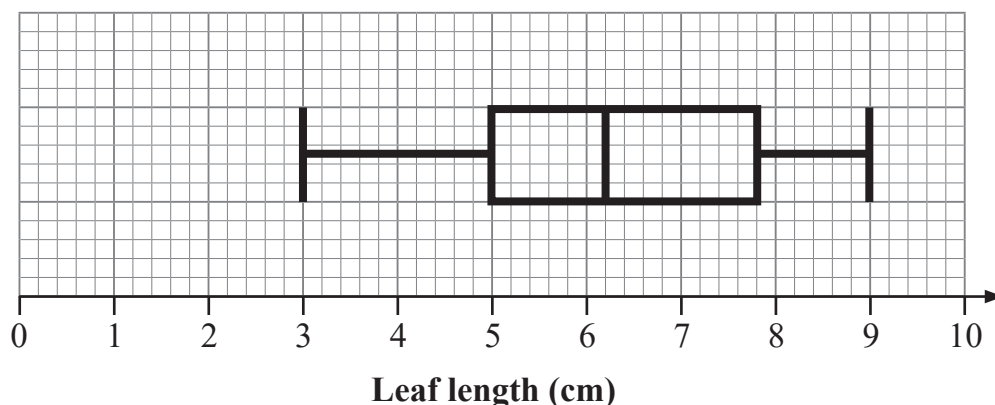
6 Carol is investigating the lengths of the leaves from two different plants, Plant A and Plant B.

She selects one branch from each plant and then measures the lengths of each leaf on this branch.

(a) This method of sampling is called:

Quota sampling  Cluster sampling  [1]

Carol summarised her findings for Plant A in the box plot below.



(b) From the list below, circle the median length of a leaf for Plant A.

3.0 cm    5.0 cm    6.2 cm    7.8 cm    9.0 cm

[1]

For Plant B, Carol found the median length of a leaf to be 5.6 cm.

(c) Compare this value with the median length of a leaf for Plant A.

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[2]

- (d) Calculate the interquartile range for the lengths of the leaves for Plant A.

Answer \_\_\_\_\_ cm [2]

For Plant B, Carol found the interquartile range to be 1.3 cm.

- (e) Which plant showed more variation among the lengths of its leaves?

Plant A       Plant B

Give a reason for your answer.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

- (f) Suggest one way in which Carol could improve the reliability of her results.

\_\_\_\_\_

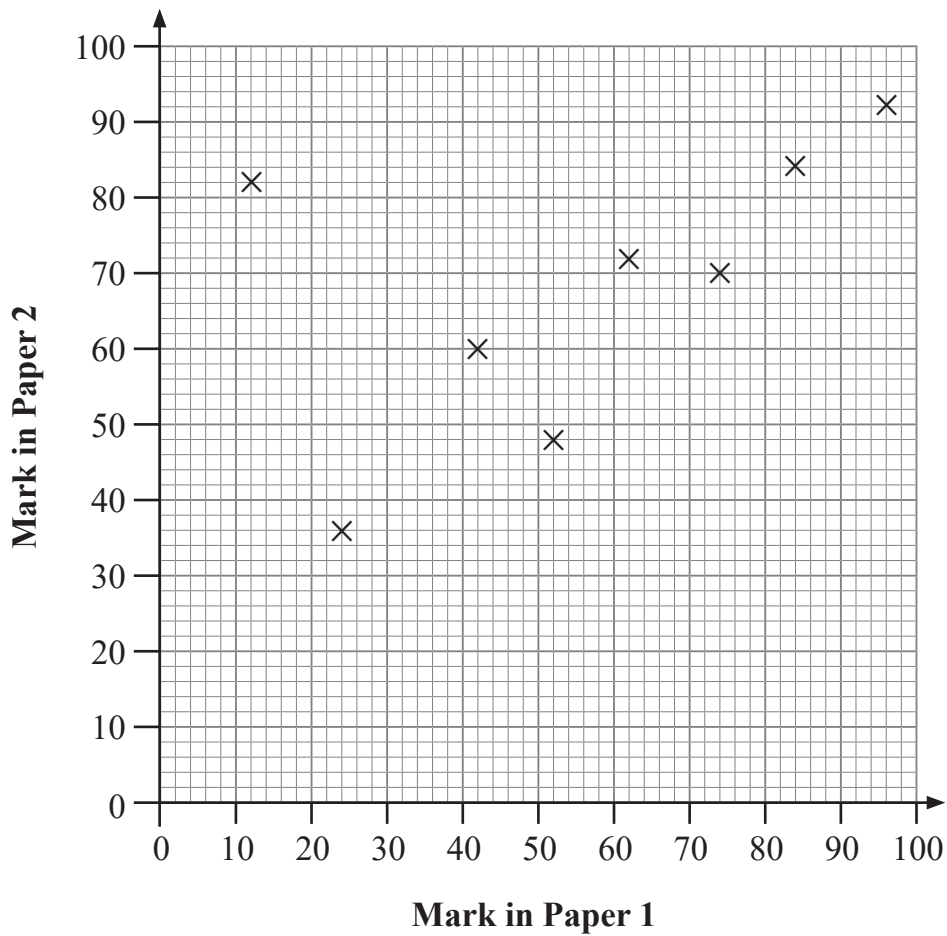
\_\_\_\_\_

\_\_\_\_\_ [1]

Examiner Only

Marks Remark

- 7 The marks of some students who took two History papers are shown in the scatter diagram below.



Another student scored 30 marks in Paper 1 and 50 marks in Paper 2

- (a) Plot this student's marks on the scatter diagram. [1]

One of the students' marks is an outlier.

- (b) Circle the point on the scatter diagram representing this student's marks. [1]

The outlier is now removed.

- (c) Describe the correlation between the marks in the two History papers. [1]
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Examiner Only	
Marks	Remark



8 A manufacturing company uses a machine which is programmed to fill bags with flour.

Every hour, a sample of five bags of flour is taken and the mean weight of the five bags of flour is calculated.

(a) Explain why the mean weight is calculated and not the median.

\_\_\_\_\_

\_\_\_\_\_ [2]

(b) Give one consequence to the company of overfilling the bags with flour.

\_\_\_\_\_

\_\_\_\_\_ [1]

(c) Give one consequence to the company of underfilling the bags with flour.

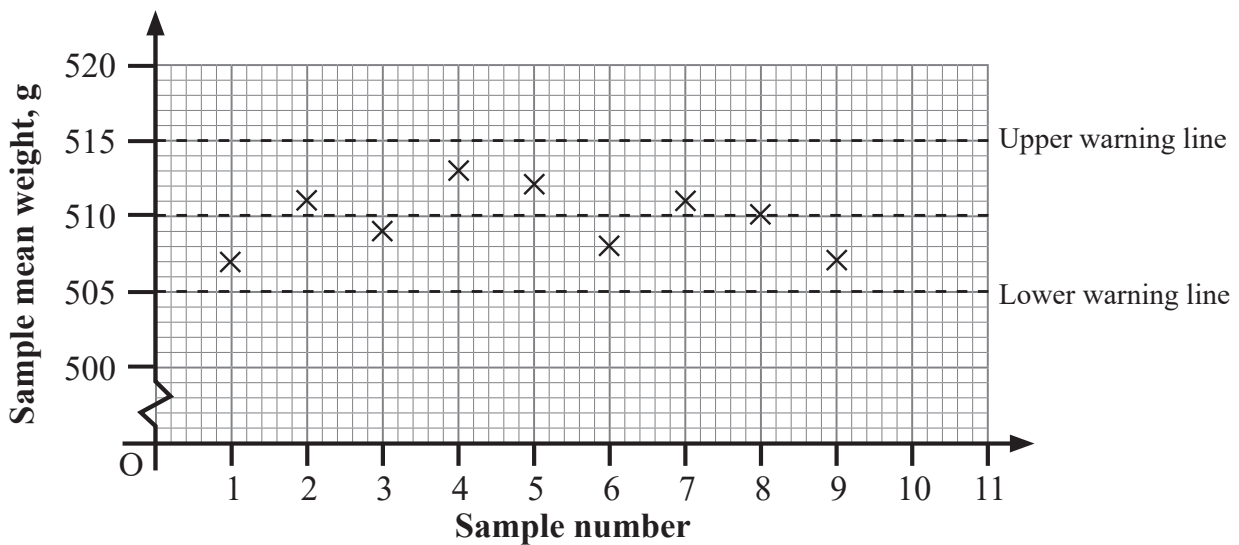
\_\_\_\_\_

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

Evelyn is responsible for monitoring the mean weight of each sample over time.

She has plotted the first nine sample means on a control chart.

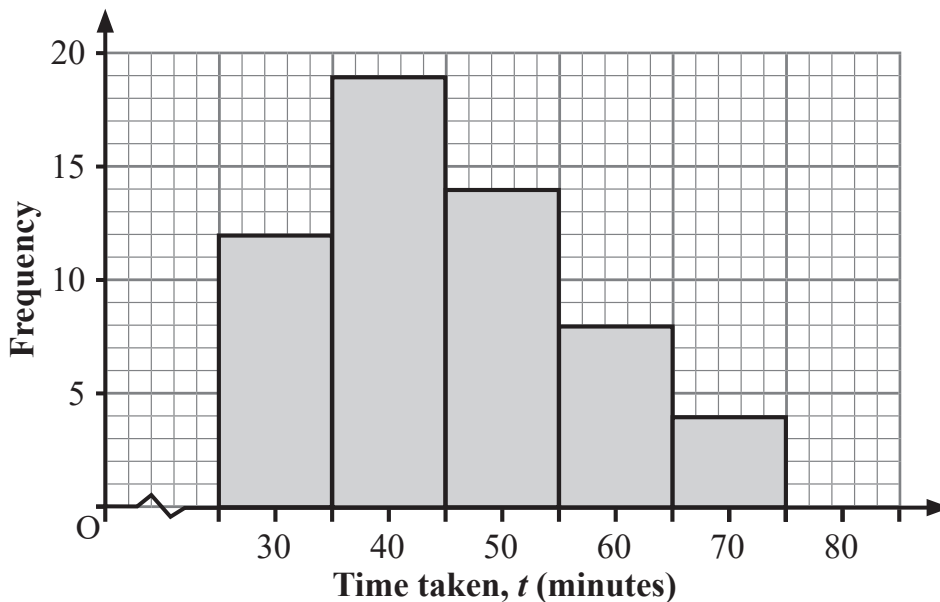






- 9 A sports coach recorded the times taken by a group of runners to complete a race.

He presented his results in the graph below.



- (a) What is the name of this type of graph?

\_\_\_\_\_ [1]

- (b) What type of skewness is shown in the graph?

\_\_\_\_\_ [1]

- (c) Explain why it is not possible to use the graph to find the range of times taken by the runners to complete the race.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [1]

- (d) How many runners completed the race?

Answer \_\_\_\_\_ [2]

Examiner Only

Marks Remark

- (e) Calculate an estimate of the mean time taken by these runners to complete the race.

Give your answer correct to one decimal place.

Answer \_\_\_\_\_ minutes [4]

In a previous race, the estimated mean time taken by the same group of runners to complete the same course was 54.5 minutes.

- (f) Comment on this mean time in relation to your answer to part (e).

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[2]

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**THIS IS THE END OF THE QUESTION PAPER**

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Examiner Only	
Marks	Remark

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