



Rewarding Learning

General Certificate of Secondary Education
2019

Centre Number

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Candidate Number

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Statistics

Unit 1
Foundation Tier



GST11

[GST11]

THURSDAY 13 JUNE, AFTERNOON

TIME

1 hour 30 minutes.

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 ten** 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	
10	
Total Marks	

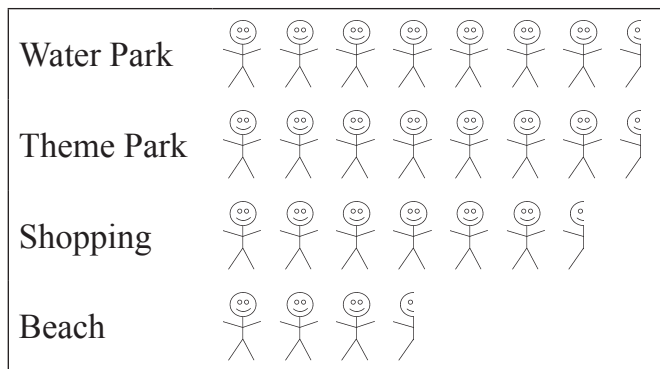
Answer **all** questions

Examiner Only	
Marks	Remark

- 1 Some pupils are going on a school trip. Their teacher wants to find out which activity they would like to take part in during their free afternoon.

The pictogram and table below show the choices made by all of the pupils.

KEY  represents 2 pupils



Choice	Boys	Girls
Water Park	12	3
Theme Park	7	8
Shopping	2	11
Beach	5	2
TOTAL	26	24

- (a) How many pupils are going on the trip?

Answer _____ [1]

- (b) What percentage of the pupils chose shopping?

Answer _____ [2]

(c) Give one advantage and one disadvantage of using a pictogram to display the choices.

Advantage _____

_____ [1]

Disadvantage _____

_____ [1]

Examiner Only	
Marks	Remark

2 Liam works in a library.

He collected the following information about the people who visited the library one Tuesday morning.

	Children	Adults
Male	10	11
Female	9	
TOTAL		31

(a) On this Tuesday morning:

(i) how many children visited the library?

Answer _____ [1]

(ii) how many females visited the library?

Answer _____ [1]

(iii) how many people visited the library?

Answer _____ [1]

Examiner Only	
Marks	Remark

Liam draws two conclusions from the information in the table.

(b) For each of Liam’s conclusions, tick one box to indicate whether you agree or disagree with him and give a reason for your choice.

(i) “The library is more popular with adults than with children.”

Agree **Disagree**

Reason _____

 _____ [2]

(ii) “The library is less popular with males than with females.”

Agree **Disagree**

Reason _____

 _____ [2]

(c) Liam decides to continue his investigation and collects more data the next week.

(i) Will Liam’s conclusions be the same?

Yes **No** **Maybe** [1]

(ii) Explain your choice.

 _____ [2]

Examiner Only	
Marks	Remark

- 3 A journalist is carrying out a survey about the average number of children in a family.

Here is a list of the number of children in a sample of families from Newtownards.

2 2 0 1 1 1 4 2
 3 1 3 2 6 1 0 1

- (a) Complete the frequency table below to show this data.

Number of children	Tally	Frequency
0		
1		
2		
3		
4		
5		
6		

[2]

- (b) (i) Would a bar chart be appropriate to represent this data?

Yes

No

[1]

- (ii) Give a reason for your answer.

Reason _____

_____ [1]

Examiner Only	
Marks	Remark

(c) For this data,

(i) calculate the mean;

Answer _____ [2]

(ii) work out the range.

Answer _____ [1]

A sample of families is also taken from Magherafelt.

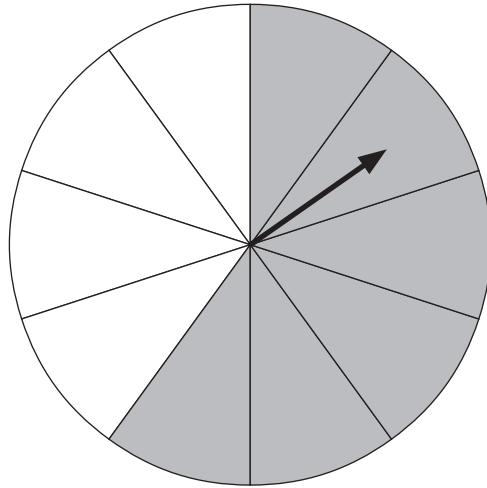
The mean number of children in this sample is 2.45 and the range is 4

(d) Compare the findings for the two towns.

[4]

Examiner Only	
Marks	Remark

- 4 Ciara has a circular spinner. The spinner is split into equally-sized sectors. Some of the sectors on the spinner are shaded.



- (a) What is the probability that the spinner will land on a shaded sector?

Answer _____ [1]

Ciara spins the spinner 50 times.

The spinner lands on a shaded sector 25 times.

- (b) What fraction of the spins landed on a shaded sector?

Answer _____ [1]

- (c) How many times would Ciara have expected the spinner to land on:

- (i) a shaded sector?

Answer _____ [2]

- (ii) a non-shaded sector?

Answer _____ [1]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

5 David asked 45 pupils in his year group, “What is your favourite type of film?”

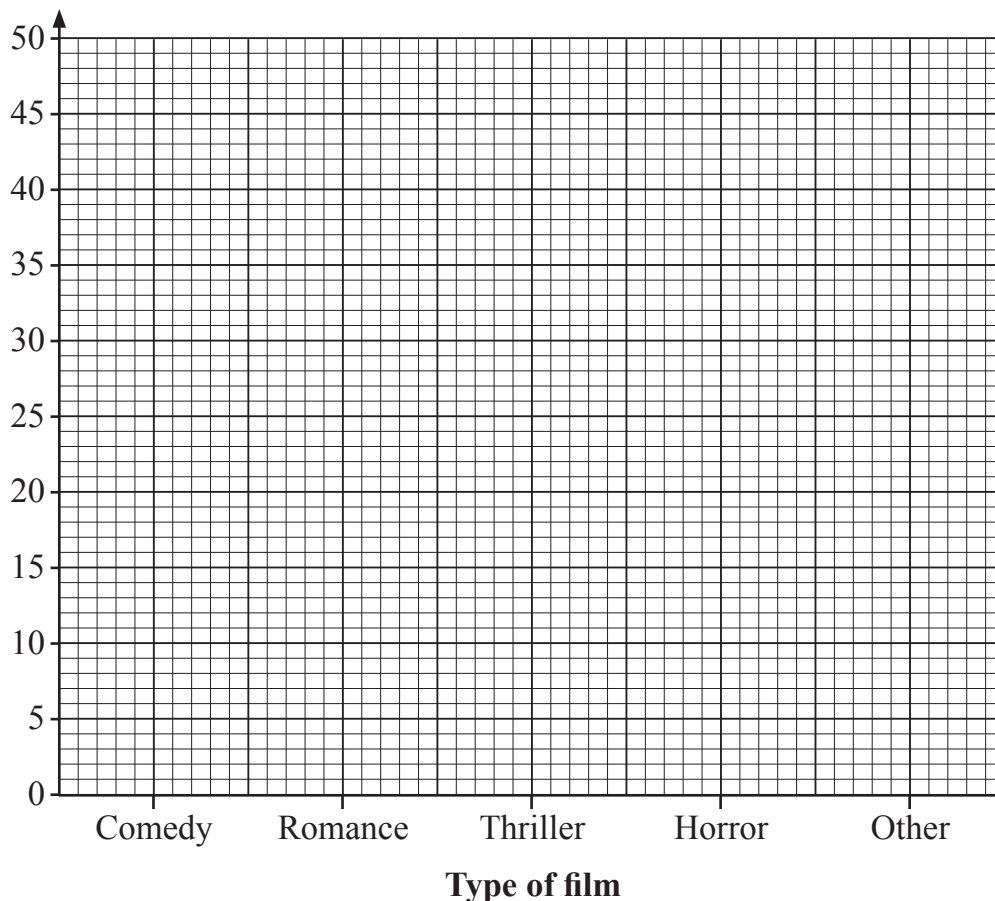
Sarah asked 50 pupils in her year group the same question.

Some of their results are shown in the table below.

Type of film	Number of pupils		Percentage of pupils (%)	
	David	Sarah	David	Sarah
Comedy	14	18	31	36
Romance			18	14
Thriller	6	21	13	42
Horror	9	3	20	6
Other	8	1	18	2

(a) Complete the missing values in the table. [2]

(b) Draw an appropriate multiple bar chart to display the information in the table above. [4]



(c) Draw one conclusion from these results.

[1]

(d) What type of data did Sarah and David collect?

Circle your answer.

Categorical

Continuous

Quantitative

[1]

Examiner Only

Marks Remark

- 6 The table below gives information about the employment rate and median starting salary for students graduating from university in 2017

Examiner Only

Marks Remark

Graduates 21–30	Employment rate	Unemployment rate	Continuing education	Median salary (nearest £500)
Gender				
Male	78.6%	4.7%	17.0%	£26,500
Female	78.8%	3.5%	18.0%	£23,000
Area of England				
East Midlands	79.0%	3.8%	17.3%	£22,000
East of England	77.9%	5.2%	17.2%	£26,000
London	78.8%	5.4%	16.0%	£29,500
North East	74.9%	12.1%	12.9%	£22,000
North West	79.1%	2.4%	18.5%	£23,500
South East	80.3%	2.9%	16.8%	£26,500
South West	77.7%	2.0%	20.3%	£24,000
West Midlands	77.7%	3.5%	18.8%	£22,000
Yorkshire and the Humber	79.8%	2.7%	17.5%	£23,000

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For one area of England, the unemployment rate is twice that of another.

- (a) Name these two areas.

_____ [1]

- (b) Does the area of England with the highest employment rate have the lowest unemployment rate?

Yes

No

[1]

The median starting salary for graduates in London was £29,500

Examiner Only	
Marks	Remark

(c) Give an interpretation, in context, of this value.

[2]

James is in his final year at university and he is looking at the table to see where he should look for a job next year.

(d) Which area of England would you recommend for James?

Give a reason for your answer.

[2]

7 Cathal is doing some research about dental services offered in a number of large towns in Northern Ireland.

He decides to do a survey among all dental surgeries in a sample of five towns in Northern Ireland.

(a) Name this method of sampling.

_____ [1]

Cathal gets a list of 35 towns in Northern Ireland.

- 01 Antrim 08 Bangor 15 Donaghadee 22 Larne 29 Omagh
- 02 Ballycastle 09 Carrickfergus 16 Downpatrick 23 Limavady 30 Portadown
- 03 Ballyclare 10 Carryduff 17 Dundonald 24 Lurgan 31 Portrush
- 04 Ballymena 11 Coalisland 18 Dungannon 25 Magherafelt 32 Portstewart
- 05 Ballymoney 12 Coleraine 19 Enniskillen 26 Newcastle 33 Randalstown
- 06 Ballynahinch 13 Comber 20 Holywood 27 Newtownabbey 34 Strabane
- 07 Banbridge 14 Cookstown 21 Killeel 28 Newtownards 35 Warrenpoint

(b) Using the random numbers below, starting at 72 and working to the right, write down the numbers and names of the five towns Cathal will include in his sample.

- 72 08 43 22 34 89 14 74 52 08
- 97 66 16 39 01 35 57 61 80 15

Number	Town

[4]

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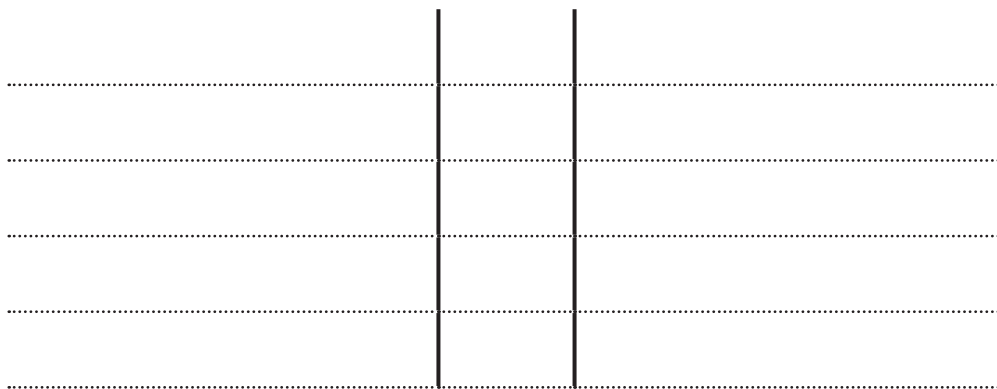
- 8 Jennifer wants to compare the number of people who go to her coffee shop on a Saturday with the number of people who go on a Sunday.

She collects data between 2 pm and 4 pm on Saturday and Sunday afternoons.

Here are her results for the last 15 Saturdays and Sundays.

Saturday					Sunday				
113	101	87	94	126	90	110	112	105	102
128	111	96	89	102	108	124	113	87	110
106	105	119	88	89	91	113	123	96	128

- (a) Show this data in a back-to-back ordered stem and leaf diagram.



[4]

Examiner Only	
Marks	Remark

(b) Complete the table below for Jennifer's results.

	Minimum	Lower quartile	Median	Upper quartile	Maximum
Saturday	87	89		113	128
Sunday	87		110		128

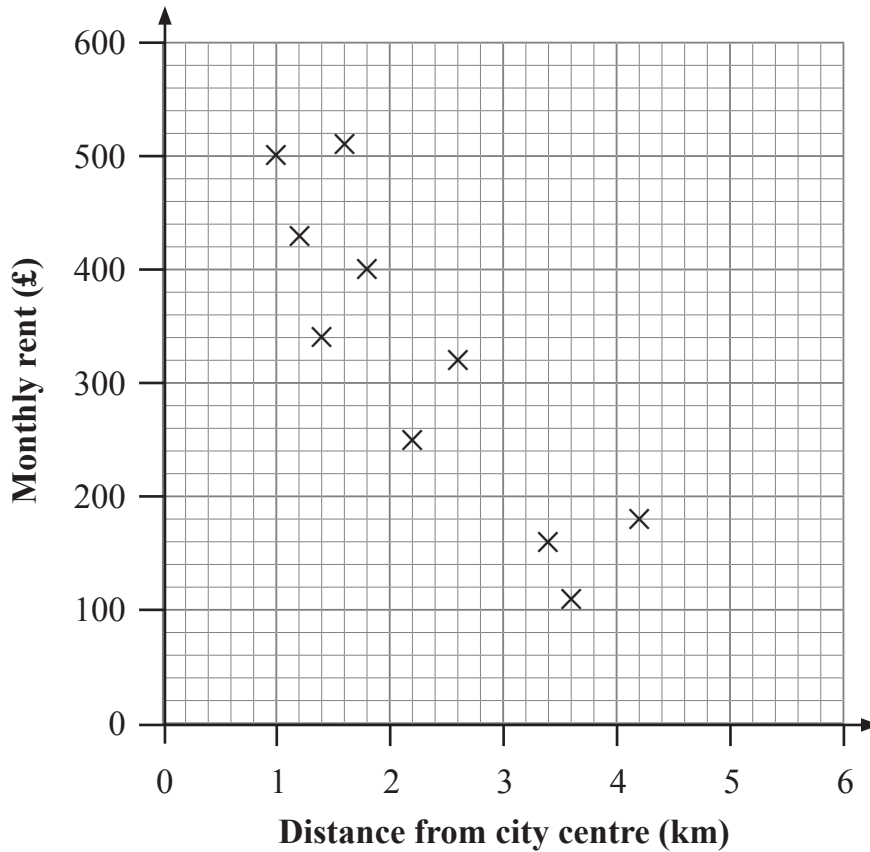
[3]

(c) Use the information in the table above to compare the number of customers on a Saturday with the number of customers on a Sunday.

[4]

Examiner Only	
Marks	Remark

- 9 The scatter diagram below shows some information about the monthly rent and distance from the city centre for 10 apartments in a city.



- (a) Show that the mean distance from the city centre is 2.3 km.

[2]

The mean monthly rent for the 10 apartments is £320

- (b) Plot the double mean point on the scatter diagram and draw a line of best fit.

[2]

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Marks	Remark

(c) (i) What type of correlation does the scatter diagram show?

Positive Correlation **Negative Correlation** [1]

(ii) What conclusion can you draw about the relationship between the distance from the city centre and the monthly rent of an apartment?

_____ [1]

(d) Ella lives 3.0 km from the city centre.

(i) Could Ella use the line of best fit on the scatter diagram to estimate a price for her monthly rent?

Yes **No** [1]

(ii) Give a reason for your answer.

_____ [1]

Examiner Only	
Marks	Remark

10 Peter and Helen want to collect information about how much time pupils at their school spend on homework every week. They attend a large post-primary school with 1400 pupils.

Peter is planning to use systematic sampling to select 50 pupils.

(a) Describe how Peter could select his sample.

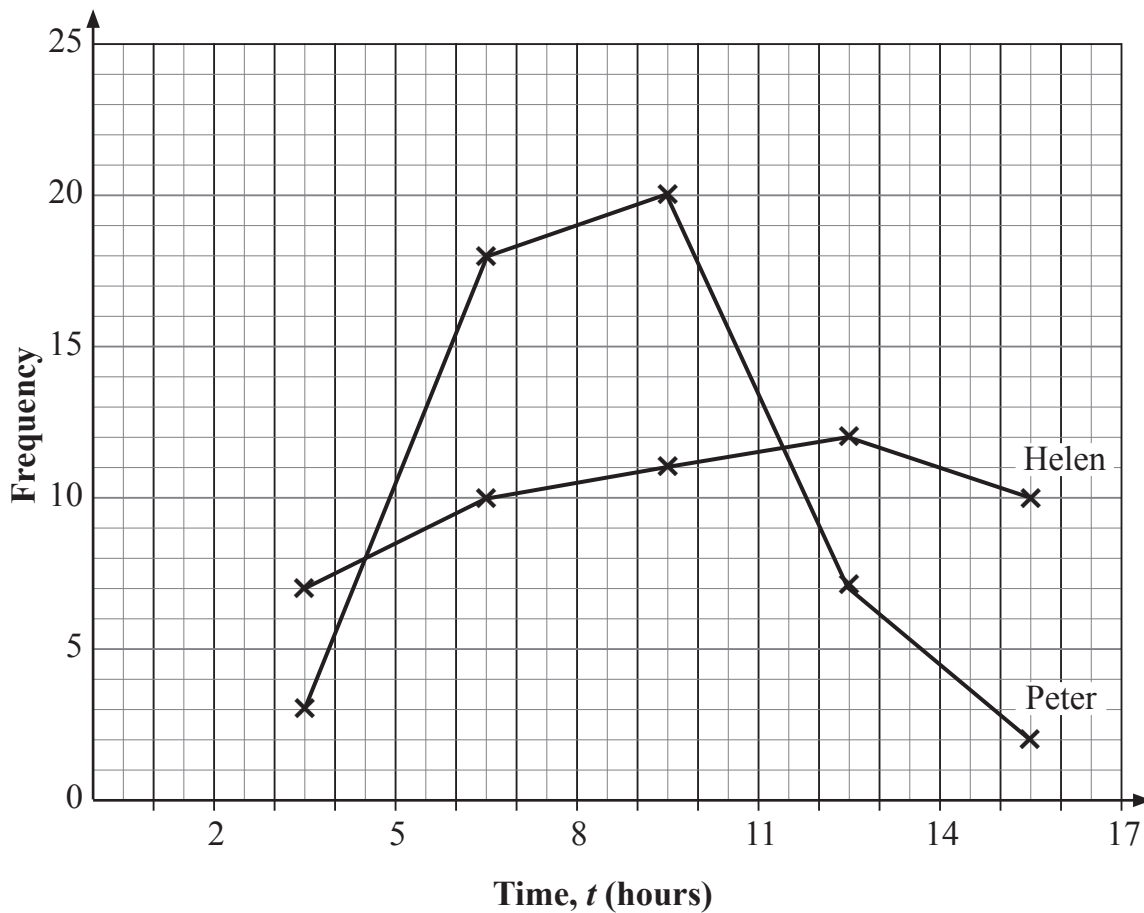
[3]

Helen is planning to select 50 pupils from outside the canteen.

(b) Name the method of sampling which Helen is planning to use.

[1]

Peter and Helen summarise their results in a frequency polygon.



(c) Use the frequency polygon to write down:

(i) the median class for Peter’s data;

Answer _____ [2]

(ii) the modal class for Helen’s data.

Answer _____ [1]

(d) Compare the results from both sample surveys.

_____ [2]

(e) (i) Who has collected a more reliable set of data?

_____ [1]

(ii) Give a reason for your answer.

_____ [1]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

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