



Rewarding Learning

Centre Number

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Candidate Number

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General Certificate of Secondary Education
2019

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.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

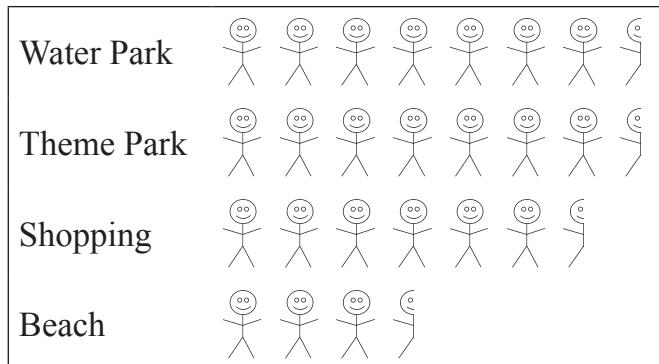
Total Marks	
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Answer **all** questions

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]

(c) For this data,

(i) calculate the mean;

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Marks	Remark

Answer _____ [2]

(ii) work out the range.

Answer _____ [1]

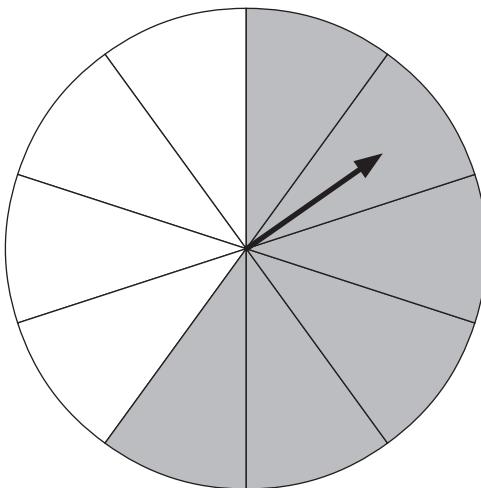
A sample of families is also taken from Magherafelt.

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]

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



Examiner Only	
Marks	Remark

(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]

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(Questions continue overleaf)

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

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Marks	Remark

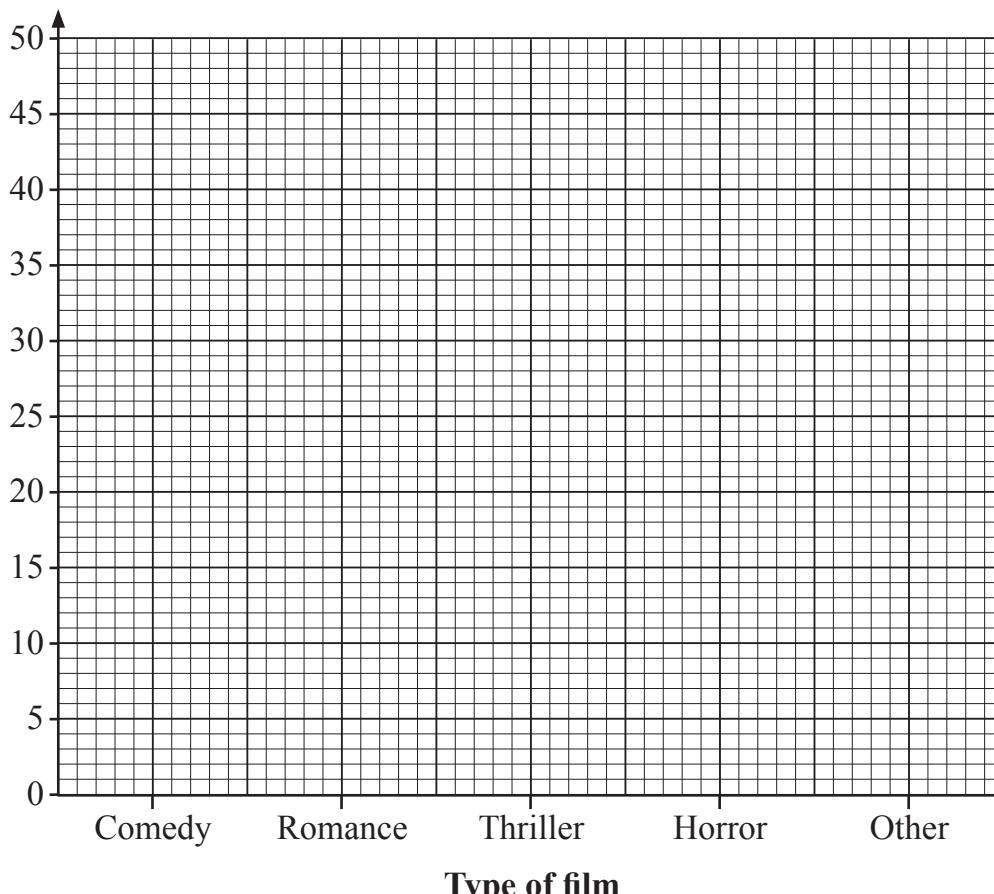
Sarah asked 50 pupils in her year group the same question.

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]



KEY David Sarah

(c) Draw one conclusion from these results.

[1]

Examiner Only	
Marks	Remark

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

Circle your answer.

Categorical

Continuous

Quantitative

[1]

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

Graduates 21–30	Employment rate	Unemployment rate	Continuing education	Median salary (nearest £500)	Examiner Only
				Marks	
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

(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?

[2]

Examiner Only	
Marks	Remark

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 Kilkeel	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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(Questions continue overleaf)

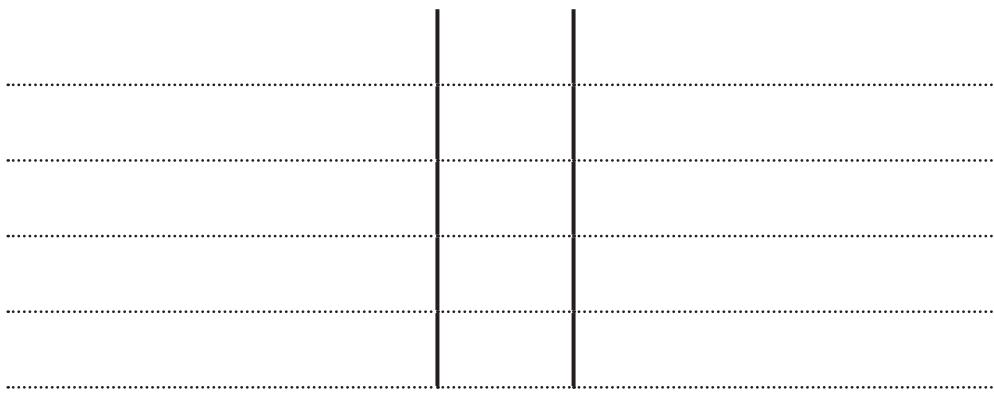
8 Jennifer wants to compare the number of people who go to her coffee shop on a Saturday with the number of people who go on a Sunday.

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]

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

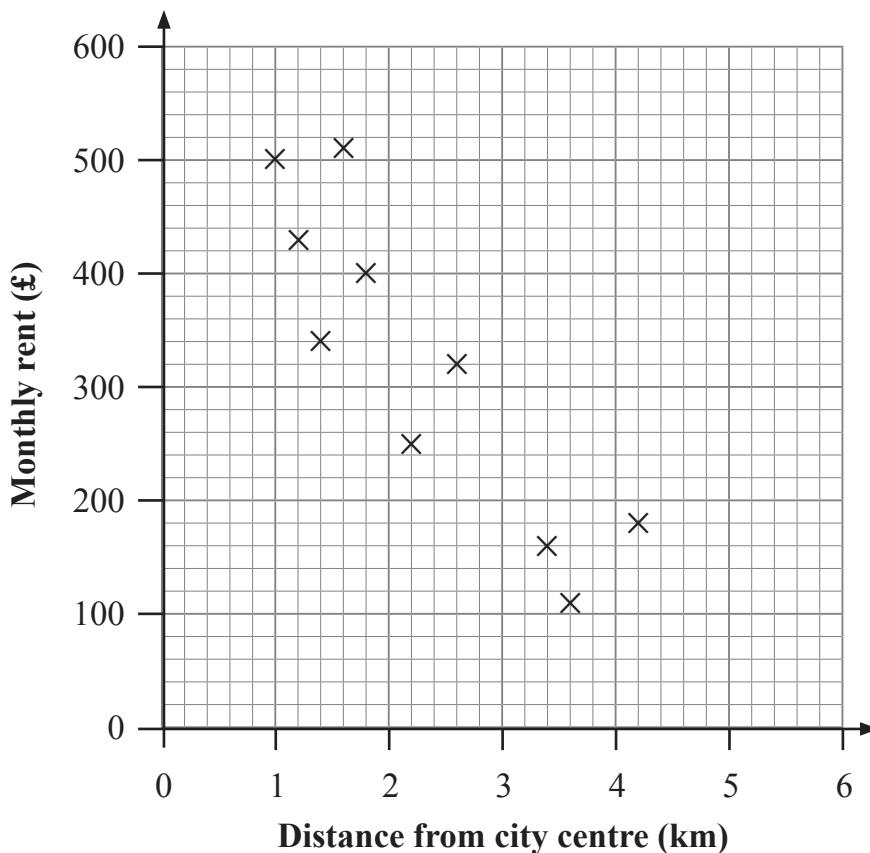
	Minimum	Lower quartile	Median	Upper quartile	Maximum
Saturday	87	89		113	128
Sunday	87		110		128

[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]

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]

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

Positive Correlation

Negative Correlation

[1]

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Marks

Remark

(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]

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.

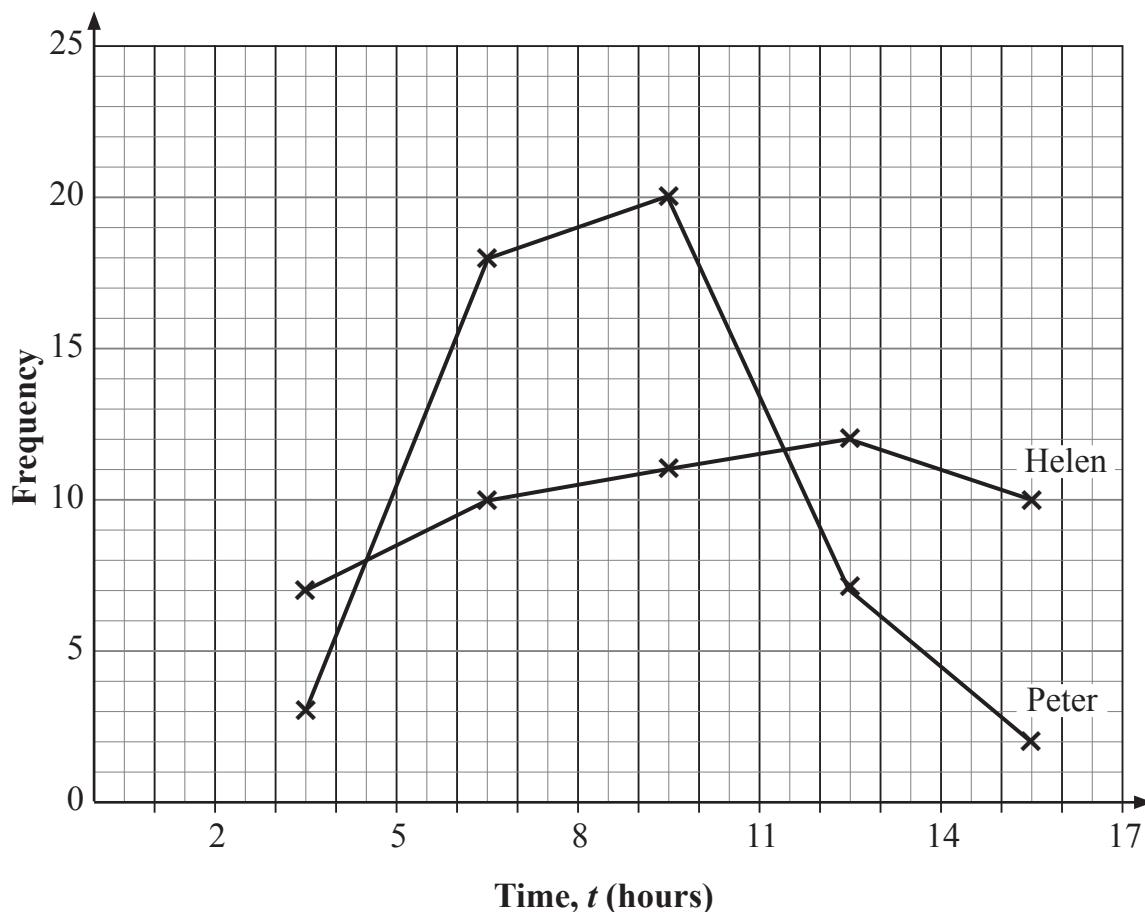
[3]

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

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