

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

GCSE STATISTICS

F

Foundation Tier Unit 1 Written Paper

Monday 27 June 2016

Morning

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments.



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.
- You are expected to use a calculator where appropriate.

Advice

- In all calculations, show clearly how you work out your answer.



You may need to use the following formulae:

$$\text{Mean of a frequency distribution} = \frac{\sum fx}{\sum f}$$

$$\text{Mean of a grouped frequency distribution} = \frac{\sum fx}{\sum f},$$

where x is the mid-interval value.



Answer **all** questions in the spaces provided.

1 Here is a list of probability words.

Impossible Unlikely Evens Likely Certain

Write down the word from the list above that **best** matches the chance of each event. **[4 marks]**

A 5 is rolled on a fair, ordinary, six-sided dice _____

A fair coin lands heads up when it is flipped _____

It will rain in London sometime in 2017 _____

A student will get 200 marks on this paper _____

A person will live to be at least 20 years old _____

4

Turn over for the next question

Turn over ►



2 Ben has three sisters and one brother.

The ages, in years, of the five children are shown below.

10

5

17

8

15

2 (a) Work out the range of the ages.

[1 mark]

Answer _____ years

2 (b) Calculate the mean age.

[2 marks]

Answer _____ years

Ben's mum and dad have another baby.

2 (c) What effect will this have on the **range** of the ages of the children?
Circle your answer.

[1 mark]

Decreases

Stays the same

Increases

2 (d) What effect will this have on the **mean** of the ages of the children?
Circle your answer.

[1 mark]

Decreases

Stays the same

Increases



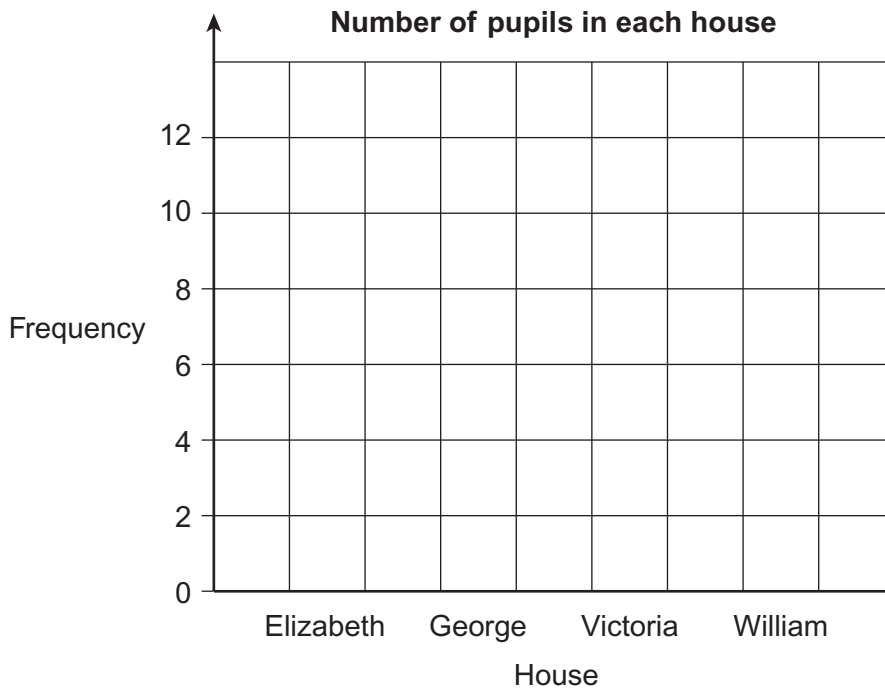
3 A school has a house system based on kings and queens of England.
The following data shows the house that each pupil in a tutor group belongs to.

George Elizabeth George William George Victoria
George Victoria Elizabeth George George William
William George George Victoria George Victoria
Elizabeth Victoria William George Victoria Victoria

3 (a) Complete the tally column and the frequency column for the data. **[3 marks]**

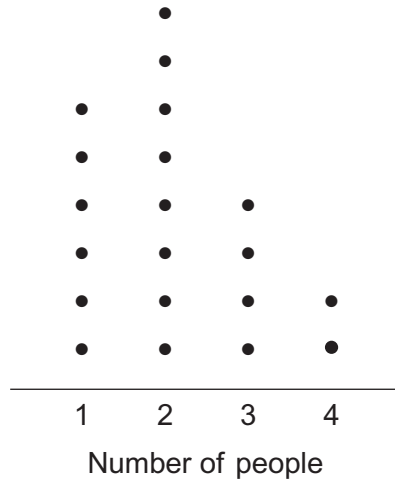
House	Tally	Frequency
Elizabeth		
George		
Victoria		
William		

3 (b) Draw a bar chart to show this information. **[3 marks]**



- 4** Sid is doing a traffic survey.
He records the number of people in each car that passes him.

The dot plot shows the results for 20 cars.



- 4 (a)** Write down the modal number of people in the cars.

[1 mark]

Answer _____

- 4 (b)** How many cars had only the driver?

[1 mark]

Answer _____

- 4 (c)** Work out the percentage of cars that had 3 or more people in them.

[3 marks]

Answer _____ %



4 (d) The table shows the type of each of the cars.

Type	Frequency
Estate	6
Hatchback	10
Saloon	3
Sports	1

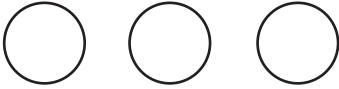
Complete the pictogram below to show this information.

Estate has been done for you.

Remember to complete the key.

[4 marks]

Key:  represents _____ cars

Estate	
Hatchback	
Saloon	
Sports	

4 (e) Give a reason why you cannot work out the mean type of car.

[1 mark]



- 5** Sally is a primary school teacher.
She records the heights, in centimetres, of the 16 children in her class.
Her results are shown below.

108	121	136	105	116	106	123	134
115	117	128	107	115	119	125	133

- 5 (a)** Draw an ordered stem-and-leaf diagram to show the data.
The key is given for you.

[3 marks]

Key 12 | 3 represents 123 cm

—	—
—	—
—	—
—	—



5 (b) Work out the median height of the children.

[2 marks]

Answer _____ cm

5 (c) Sally claims that one quarter of the class are over 130 cm tall.

Is Sally correct?
Tick a box.

Yes

No

Explain your answer.

[2 marks]

7

Turn over for the next question

Turn over ►



6 Mary wants to find out how much money people spend in supermarkets. She decides to ask 20 people as they leave her local supermarket one Monday morning.

6 (a) Give **two** reasons why this would not give a representative sample.

[2 marks]

Reason 1 _____

Reason 2 _____

6 (b) Write a suitable question that Mary can ask to find out how much money people spend in supermarkets.

You should include a response section.

[3 marks]

6 (c) Write down **one** factor that may affect how much money a person spends in supermarkets.

[1 mark]



Turn over for the next question

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ANSWER IN THE SPACES PROVIDED**

Turn over ►



- 7 The table shows the percentage of boys and girls who play different musical instruments.

Instrument	Boys	Girls
Keyboard	29%	31%
Piano	27%	30%
Recorder	22%	34%
Classical guitar	19%	21%
Drum kit	20%	8%
Electric guitar	16%	11%
Violin	8%	15%
Flute	4%	10%

- 7 (a) Write down the most popular instrument played by boys and by girls.

[1 mark]

Boys _____ Girls _____

- 7 (b) Write down one different comparison of the instruments played by boys and by girls.

[1 mark]

- 7 (c) Hannah says

“61% of girls play either the Keyboard or the Piano.”

Is she likely to be correct?

Tick a box.

Yes

No

Give a reason for your answer.

[1 mark]



7 (d) This table shows the percentages of children of different ages who play instruments.

	Age group	
	5 – 7 years	8 – 13 years
Currently play	65%	75%
No longer play	5%	13%
Never played	30%	12%

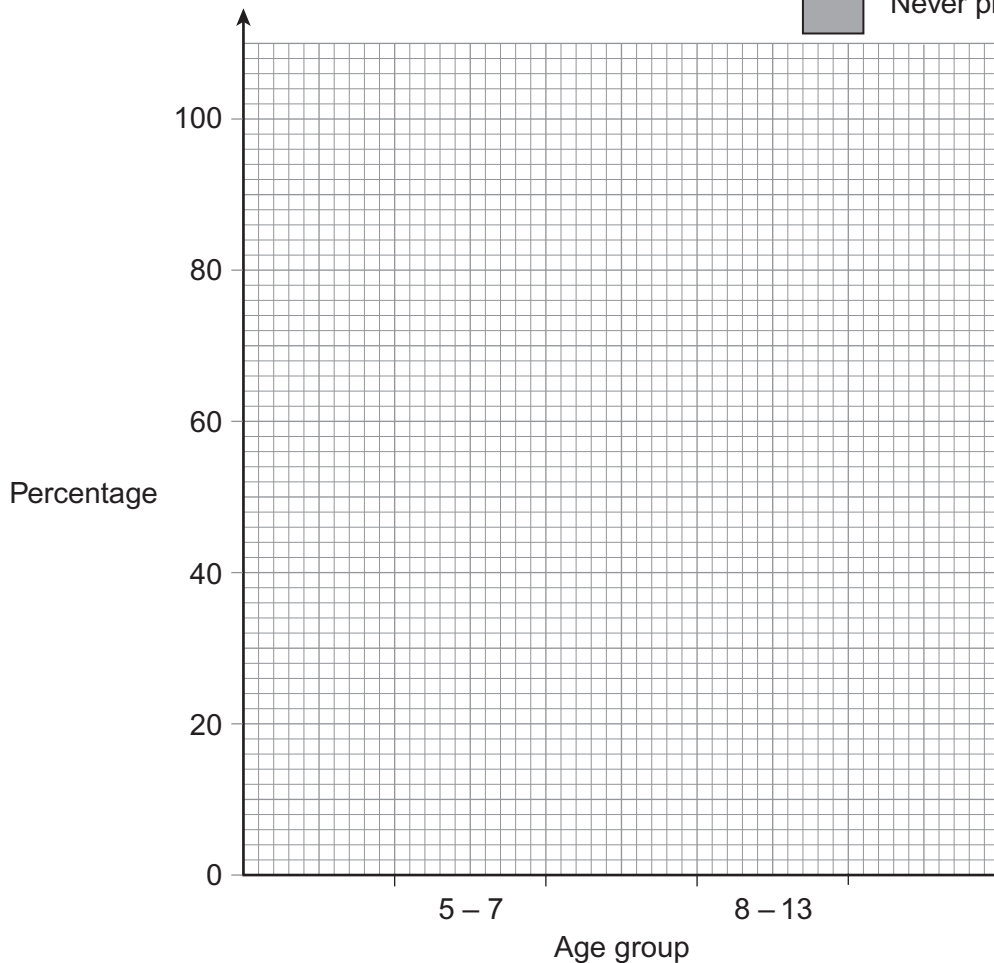
Draw a composite bar graph to show this information.

[3 marks]

Key:



Currently play
No longer play
Never played

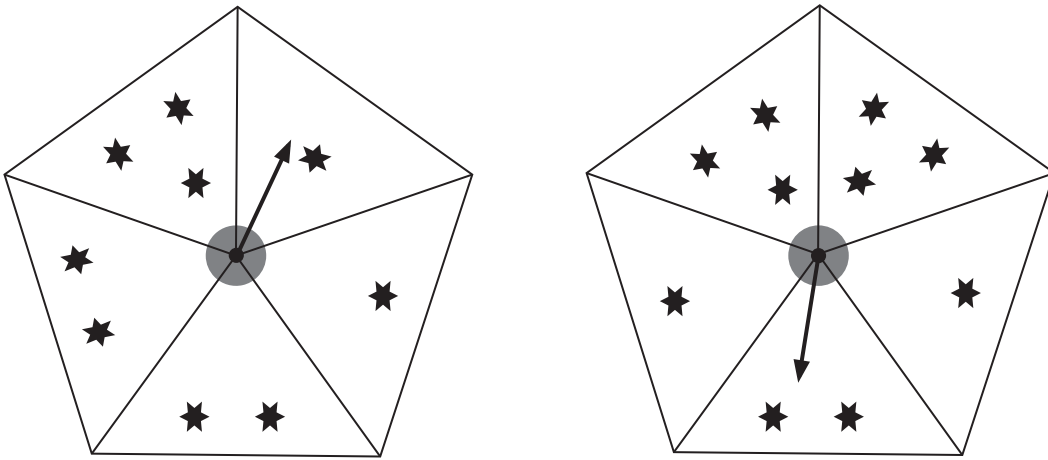


6

Turn over ►



8 Kira is organising a game at a school fair.
The game involves two fair spinners.



Each section on the spinners has one, two or three stars.

★ **Win a Bottle Game!** ★

Spin both spinners

Get a total of 5 stars... win a Small bottle

Get a total of 6 stars... win a Large bottle

8 (a) Complete the diagram to show the possible outcomes for the **total** number of stars. [2 marks]

		Second spinner				
		★	★	★ ★	★ ★ ★	★ ★ ★ ★
First spinner	★	2	2	3	4	4
	★	2	2	3		
	★ ★	3	3			
	★ ★	3	3			
	★ ★ ★	4				6



8 (b) Players win a bottle if they get a total of 5 or 6 stars.
Work out the probability of winning a bottle on one go of the game.

[2 marks]

Answer _____

8 (c) At the start of the fair Kira has 120 bottles as prizes.
Each bottle contains either Fruit juice or Cola or Lemonade.

Half of the bottles are Small.

One quarter of the bottles contain Cola.

The same number of bottles contain Fruit juice as Lemonade.

60% of the bottles of Lemonade are Small.

20 of the Large bottles contain Fruit juice.

Complete the table to show the number of bottles of each type and size.

[5 marks]

	Fruit juice	Cola	Lemonade	Total
Small				
Large				
Total				120



9 There are 31.3 million people in work in the UK.

The table below shows the highest qualification of each of these 31.3 million workers.

Highest qualification	Number of people (millions)
University degree	12.0
A-level	6.7
GCSE	6.6
Other	3.1
No qualifications	2.9

9 (a) How many workers have A-level as their highest qualification?

[1 mark]

Answer _____

9 (b) Work out how many workers have other or no qualifications.

[1 mark]

Answer _____

People who have university degrees are called graduates.

People who don't have university degrees are called non-graduates.

The table, on the next page, shows the percentage of the 31.3 million workers who are graduates and non-graduates who work in different types of job.



Type of job	Graduates (%)	Non-graduates (%)
Public administration, education and health	41	22
Banking and finance	21	14
Retail, distribution, hotels and restaurants	10	22
Transport and communication	9	10
Manufacturing	7	13
Services	5	5
Construction	5	10
Other	2	3

9 (c) Give a reason to explain why the non-graduates column does not add up to 100 [1 mark]

9 (d) Write down the type of job that employs 7% of **graduates**. [1 mark]

Answer _____

9 (e) Use both tables to calculate the number of graduates who work in Banking and finance. [3 marks]

Answer _____ million

7

Turn over ►



10 In a supermarket, people can choose a basket, a small trolley or a large trolley to put their shopping in.

Martin, the supermarket manager, knows that people are

equally likely to choose a small trolley or a large trolley

twice as likely to choose a small trolley as a basket.

Martin wants to simulate what the next 15 people will choose to put their shopping in.

Martin allocates random numbers as follows.

Random number	Choice
0, 1, 2 or 3	S (small trolley)
4, 5, 6 or 7	L (large trolley)
8 or 9	B (basket)

10 (a) How many of the 15 people would he expect to choose a basket?

[2 marks]

Answer _____



Martin selects the following 15 random numbers.

6	2	1	4	9	6	7	5	0	2	3	1	7	4	0
L	S													

10 (b) Write the letters S, L and B in the table to show the results of the simulation. The first two have been done for you. **[2 marks]**

10 (c) Complete the frequency table below to show the 15 simulated results. **[1 mark]**

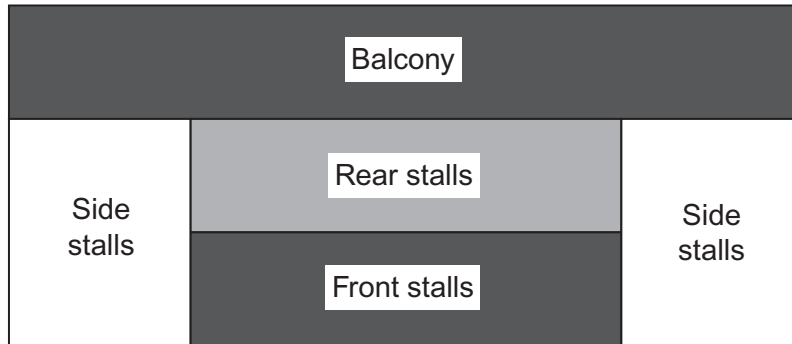
Choice	Number of people
S (small trolley)	
L (large trolley)	
B (basket)	

10 (d) Write down one difference between these simulated results and the results Martin would expect. **[1 mark]**

10 (e) Write down one similarity between these simulated results and the results Martin would expect. **[1 mark]**



- 11 The choropleth map shows the prices for concert tickets for different areas of a theatre.



£45



£55



£75

- 11 (a) How much more does it cost to sit in the balcony than in the side stalls?

[1 mark]

Answer £ _____

- 11 (b) Four friends buy the **last** four tickets for a concert.
One is in the front stalls and three are in the rear stalls.
They decide to share the total cost equally.

How much does each friend pay?

[2 marks]

Answer £ _____



All the seats for a concert have been sold.
The table gives details about the 800 people who will attend the concert.

Men	Women	Boys	Girls
321	360	72	47

The owner of the theatre wants to survey 40 of these people.

- 11 (c)** The manager suggests asking the first 40 people who arrive at the theatre.
Write down the name of the manager's sampling method.

[1 mark]

Answer _____

- 11 (d)** The owner of the theatre decides to use stratified sampling.

Work out the number of **men** that should be surveyed.

[3 marks]

Answer _____ men

7

Turn over ►



12 Rodney wants to open a market stall in his town.
He will sell fruit and vegetables.

For people in his town, he wants to find out information about

- A** which fruit and vegetables they like best
- B** the number of days in a week they usually buy fruit and vegetables
- C** where they usually buy fruit and vegetables
- D** how far they live from the market

12 (a) Which of these four variables is **discrete**?
Circle your answer.

[1 mark]

A B C D

He designs a questionnaire

12 (b) Give **one** reason why he should carry out a pilot study.

[1 mark]

12 (c) Rodney uses closed questions in his questionnaire.

12 (c) (i) What is the difference between a closed question and an open question?

[1 mark]



12 (c) (ii) Give **two** different advantages of using closed questions in a questionnaire.

[2 marks]

Advantage 1 _____

Advantage 2 _____

12 (d) Rodney delivers the questionnaire to all the houses in his town.
Only 5% of the questionnaires are posted back to him.

Write down **one** thing that Rodney could have done to get a better response rate.

[1 mark]

6

END OF QUESTIONS



There are no questions printed on this page

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