AQA

SPECIMEN MATERIAL

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

GCSE STATISTICS

F

Foundation tier Paper 1

Date of Exam Morning Time allowed: 1 hour 45 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.
- Fill in the boxes at the top of the page.
- 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 out any work 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 and graph paper. These must be tagged securely to this answer booklet.

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

1 Tom wants to find out about the number of brothers the children in his tutor group have.

1 (a) Which of the following is a type of average that Tom could use to represent the data?
Circle your answer.

[1 mark]

Median Range Lower Quartile Interquartile range

1 (b) What type of data is number of brothers?
Circle your answer.

[1 mark]

Discrete Qualitative Categorical Continuous

1 (c) He asks children in his tutor group to tell him how many brothers they have.

What type of data has Tom collected?
Circle **two** answers.

[2 marks]

Secondary Raw Bivariate Primary

2 (a) The table shows the numbers of each type of cake a shop sells in one day.

Type of cake	Frequency
Lemon	4
Chocolate	10
Vanilla	5
Fruit	1

Complete the pictogram below to show this information.

Lemon has been done for you.

Remember to complete the key.

[4 marks]

Key: ○ represents _____ cakes

Lemon	○ ○
Chocolate	
Vanilla	
Fruit	

2 (b) Rocco says,

"$\frac{1}{3}$ of the cakes are vanilla since $\frac{5}{4+10+1} = \frac{5}{15} = \frac{1}{3}$"

Why is he wrong?

[1 mark]

Turn over for the next question

Do not write outside the box

3 Packs of mini chocolate bars are labelled with the claim 'Contains at least 20 bars'.

James opens sixteen packs and counts the number of bars in each pack.

His results are

20	21	20	21	20	20	21	19
23	22	20	22	21	20	20	23

3 (a) Work out the median number of bars.

[2 marks]

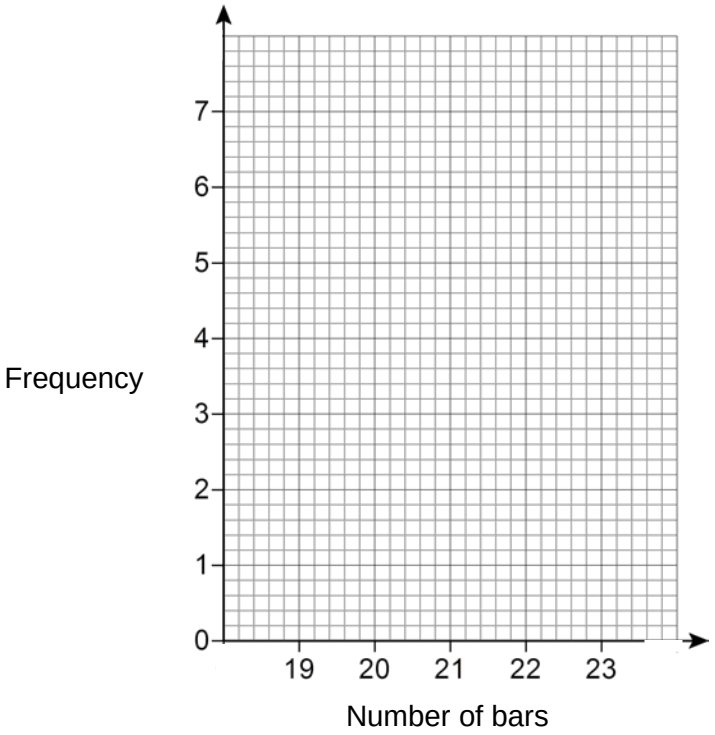
Answer _____

3 (b) Give **one** reason James might think the claim 'Contains at least 20 bars' is reasonable.

[1 mark]

3 (c) Draw a vertical line graph to show the number of bars in each pack.

[2 marks]



3 (d) How can you tell from a vertical line graph which is the mode?

[1 mark]

Turn over for the next question

4 (a) Circle the **three** values that could be probabilities.

[2 marks]

1.9 0.2 1 −0.3 0.95

4 (b) A fair, ordinary, six-sided dice is rolled.

Write down the probability it lands on a 3.

[1 mark]

Answer _____

4 (c) A weather forecaster says,

"There is a 50% chance it will snow today."

Charlie says,

"It can snow or not snow so there is a 50% chance that it will snow tomorrow."

Is Charlie correct?

Tick a box.

[1 mark]

Yes ☐ No ☐ Not sure ☐

Give a reason for your answer.

Reason _____

_____

_____

5 (a) In a game of bowling you have to knock down pins.

Clare plays the game 8 times.

The number of pins she knocks down each time is

6 4 9 9 5 4 6 9

Work out the mean number of pins she knocks down.

[3 marks]

Answer _____

5 (b) Paul also plays the game 8 times.

The mean number of pins he knocks down is 7

How many pins does Paul knock down altogether?

[2 marks]

Answer _____

5 (c) Look at the information in parts **(a)** and **(b)**.

Who do you think is the better player?

Give a reason for your answer.

[1 mark]

6 Josh records the colour of 20 phone cases of some of his friends.

black	red	blue	red	black
red	black	black	red	black
red	blue	blue	black	black
blue	black	red	black	red

6 (a) Fill in the tally column and the frequency column for the data.

[3 marks]

Cover Colour	**Tally**	**Frequency**
Blue		
Red		
Black		

6 (b) Write down a suitable average Josh could use with the data.
Give a reason for your answer.

[2 marks]

Average _____

Reason _____

_____

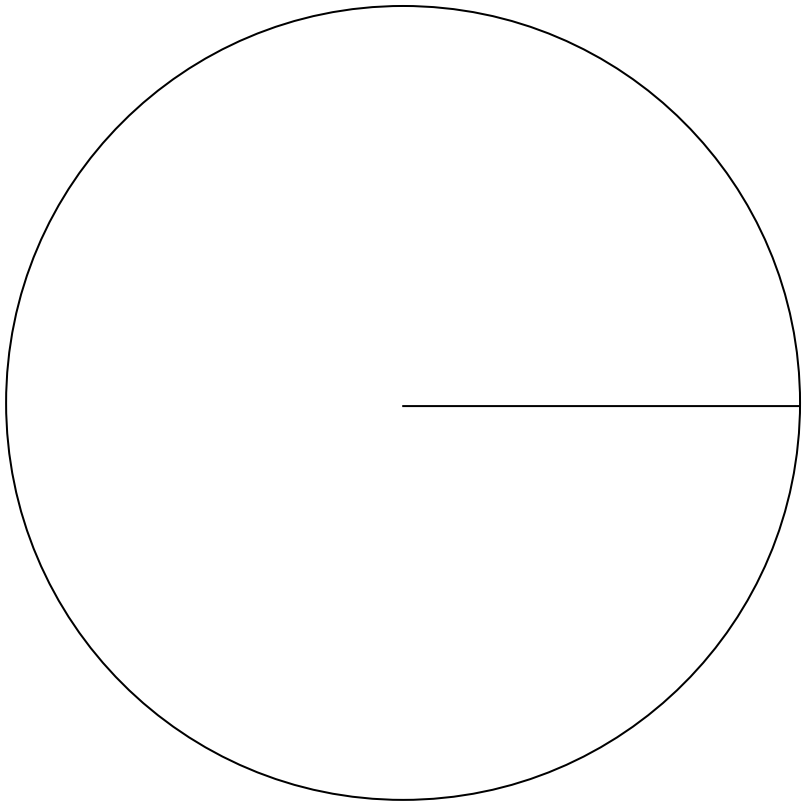
6 (c) A shop buys 80 packs of phone cases.

The pictogram shows the number of packs of each colour.

Cover Colour	Key: □ = 10 packs
White	□ □ □
Pink	□
Grey	□ □ □ □

Complete the pie chart to represent this information.

[3 marks]



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7 American paint manufacturer DuPont carry out annual surveys about the most popular car colours across the world.

Here is a spreadsheet of the results from 2012.

	A	B	C	D	E
1	Colour	North America (%)	Europe (%)	Asia-Pacific (%)	Worldwide (%)
2					
3	White	24	24	22	23
4	Black	19	23	21	21
5	Silver	16	14	14	18
6	Grey	15	115	20	14
7	Red	10	6	7	8
8	Blue	7	8	5	6
9	Brown	5	6	6	6
10	Other	2	3	4	3
11	Green	2	1	1	1

Source: Wikipedia

7 (a) Give one way you could check whether any data in this spreadsheet needs to be cleaned.

[1 mark]

_____

_____

7 (b) Circle the cell in the spreadsheet where the data needs cleaning.

What value do you think it should be?

[1 mark]

Answer _____

7 (c) Across the world, what percentage of cars are painted Silver?

[1 mark]

Answer _____ %

7 (d) Which car colour is more popular in **Asia-Pacific** than elsewhere?

[1 mark]

Answer _____

7 (e) The spreadsheet shows the number of cars made in each year, from 2008 to 2014, to the nearest 100 thousand.

	A	B
1	Year	Number of cars made (millions)
2	2008	70.5
3	2009	61.8
4	2010	77.9
5	2011	80.0
6	2012	84.1
7	2013	87.3
8	2014	89.7

Source: Wikipedia

Describe the pattern in the number of cars made from 2008 to 2014

[1 mark]

_____

_____

7 (f) Use **both** spreadsheets to calculate the approximate number of cars made worldwide in 2012 that were painted Red.

Give your answer to a suitable degree of accuracy.

[4 marks]

_____

_____

_____

_____

Answer _____ million

8 Samantha wants to investigate which is the most popular brand of mobile phone.
She decides to ask everybody in her Statistics class.
The frequency table shows Samantha's results.

Brand	**Frequency**
Apple	6
Samsung	9
LG	4
Sony	2
Nokia	1
HTC	5
Other	3
	30

8 (a) Write down a question that Samantha could ask.

[1 mark]

_____

_____

8 (b) Two new pupils to the school join Samantha's Statistics class.

Could their results change the mode?
Tick a box.

[2 marks]

Yes ☐ No ☐ Cannot tell ☐

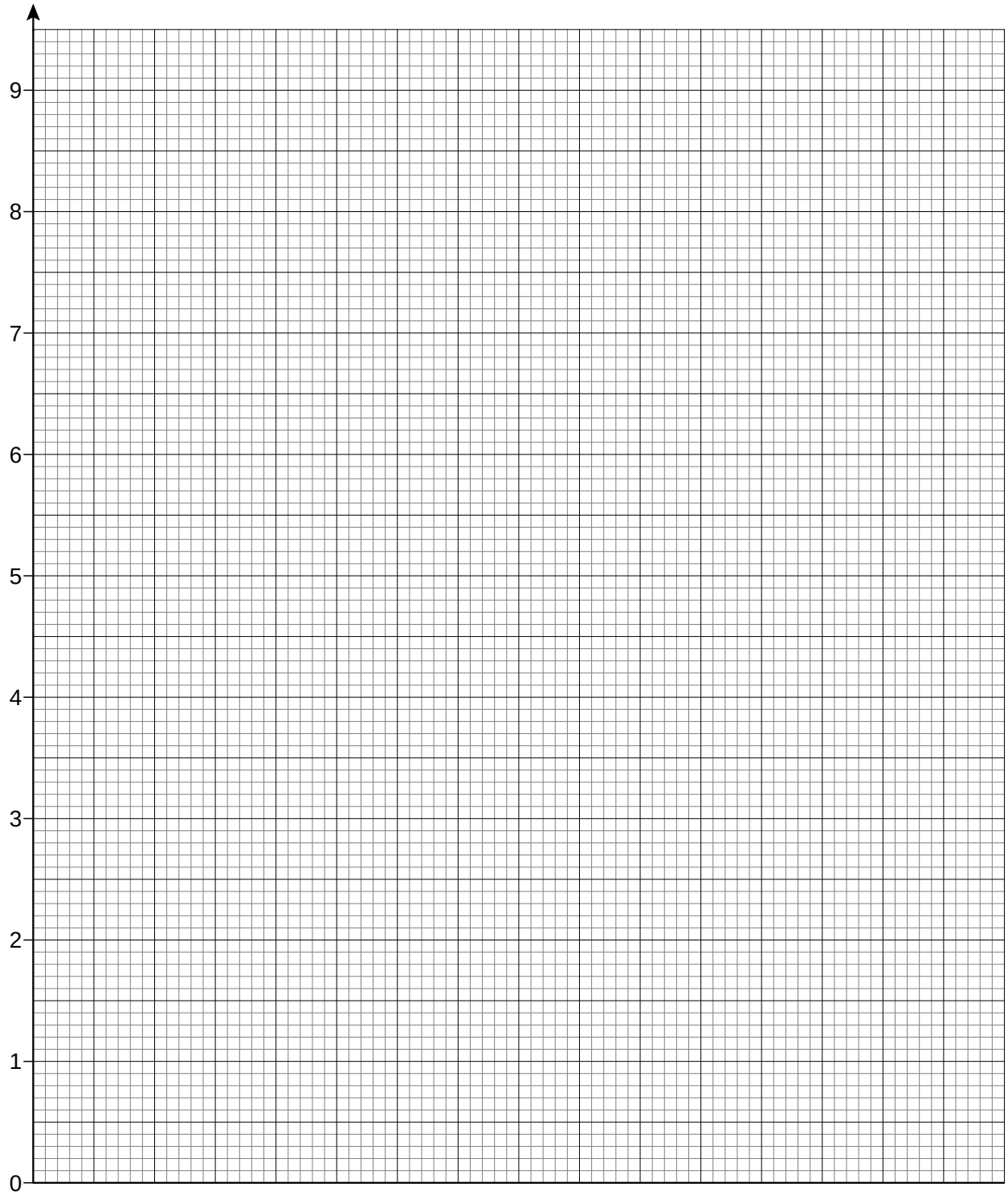
Give a reason to explain your answer.

Reason _____

_____

8 (c) Draw a suitable diagram to represent the information given in the frequency table. Include a title.

[4 marks]



8 (d) In the UK in 2015 Apple's market share was 45%.

How does Samantha's results compare with those of the UK in 2015?

[2 marks]

8 (e) Samantha also wants to investigate the number of free minutes that people get.
She decides to ask 40 students out of the 600 students who attend her school.

Name a sampling method that Samantha could use.
Give **one** advantage of using this sampling method.

[2 marks]

Name of sampling method

Advantage

8 (f) Name a calculation that Samantha could use in her number of free minutes investigation.

[1 mark]

8 (g) Samantha concludes her investigation.

What should she check about her conclusion?

[1 mark]

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8 (h) Name **one** other variable to do with mobile phones that Samantha could investigate.

[1 mark]

Answer _____

Turn over for the next question

9 David wants to find out if people in the Scottish town where he lives want Scotland to leave the United Kingdom.

David decides to conduct door-to-door interviews.

9 (a) Give **one** advantage of using this data collection method.

[1 mark]

9 (b) Describe **one** problem with this data collection method.

[1 mark]

9 (c) David decides to ask people the following question.

Don't you think that it's a good idea for Scotland to leave the United Kingdom?

Write down **one** criticism of this question.

[1 mark]

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10 Imran drives, walks or cycles to work depending on the weather.

- If it is raining, he will always drive to work.
- If it is not raining, then he will cycle to work unless it is windy then he walks.

The probability it is raining on any particular day is 0.3

The probability it is not raining but it is windy is 0.18

10 (a) Write down the probability that Imran drives to work.

[1 mark]

Answer _____

10 (b) Work out the probability that Imran drives to work **two** days in a row.

[2 marks]

_____

Answer _____

10 (c) Work out the probability that Imran cycles to work.

[2 marks]

_____

_____

Answer _____

10 (d) From the information given, is it possible to work out the probability of it being windy on any particular day?

Tick a box.

[1 mark]

Yes ☐ No ☐

Give a reason for your answer.

Reason _____

_____

_____

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11 Blood pressure readings have a **Top Reading** and a **Bottom Reading**.

The table gives information about what a reading shows.

Top Reading	Type of Blood Pressure
Less than 90	Low
90 to 120	Ideal
121 to 140	Pre-high
More than 140	High

Bottom Reading	Type of Blood Pressure
Less than 60	Low
60 to 80	Ideal
81 to 90	Pre-high
More than 90	High

Adapted from Blood Pressure UK (http://www.bloodpressureuk.org)

11 (a) Write down a **Bottom Reading** that would be ideal.

[1 mark]

Answer _____

11 (b) Peter has a **Top Reading** of 135 and a **Bottom Reading** of 82

Write down the type of blood pressure that Peter has.

[1 mark]

Answer _____

11 (c) John has high blood pressure.

His **Bottom Reading** is 92

John says that the reading would need to fall by **at least** 22 for it to be ideal.

Assess fully John's conclusion.

[2 marks]

_____

_____

_____

Do not write outside the box

11 (d) Sarah has high blood pressure.

She has been taking tablets to reduce it.

Sarah's **Top Reading** falls by 17

Is it possible for Sarah's **Top Reading** to now be ideal?

Tick a box.

[1 mark]

Yes ☐ No ☐

Give a reason for your answer.

Reason _____

_____

_____

12 Two normal fair dice are rolled and their scores added.

Circle the probability of scoring a total score of 12

[1 mark]

$\frac{1}{6}$ $\frac{1}{12}$ $\frac{1}{18}$ $\frac{1}{36}$

Turn over for the next question

13 In a town in 2015 the death rate was 7.5 and the birth rate was 8.5

Quinlan says,

'In 2015 the population of the town will have increased from 2014.'

13 (a) Give **one** reason why Quinlan could be correct.

[1 mark]

13 (b) Give **one** reason why Quinlan could be wrong.

[1 mark]

14 A national chain of gyms employs 572 personal trainers in 30 gyms of different size.

A sample of 50 personal trainers is to be selected from this total and their views sought on changes to activities offered.

The following are suggested as alternative sampling methods to use.

Method A One personal trainer is selected from the 10 smallest gyms. Two personal trainers are selected from each of the remaining 20 gyms.

Management will then select the sample of personal trainers in any convenient way.

Method B All 572 personal trainers are numbered from 000 to 571. Start with number 010 and take every 11th personal trainer to be part of the sample.

Method C All 572 personal trainers are numbered from 000 to 571. Using random number tables 50 numbers within the range are chosen and the corresponding personal trainers included in the sample.

Name and compare each sampling method.

Make a reasoned choice of which method should be used.

[7 marks]

END OF QUESTIONS

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