AQA

Please write clearly in block capitals.

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

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE
STATISTICS

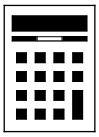
F

Foundation tier Paper 1

Time allowed: 1 hour 45 minutes

Materials

For this paper you must have:



- a copy of the Data Sheet
- 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 this 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.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- 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.

For Examiner's Use	
Question	Mark
1-4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
TOTAL	

Do not write outside the box

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

1 An ordinary fair dice is rolled.

Circle the probability of rolling a 4.

[1 mark]

$\frac{1}{6}$ $\frac{1}{4}$ $\frac{1}{2}$ $\frac{4}{6}$

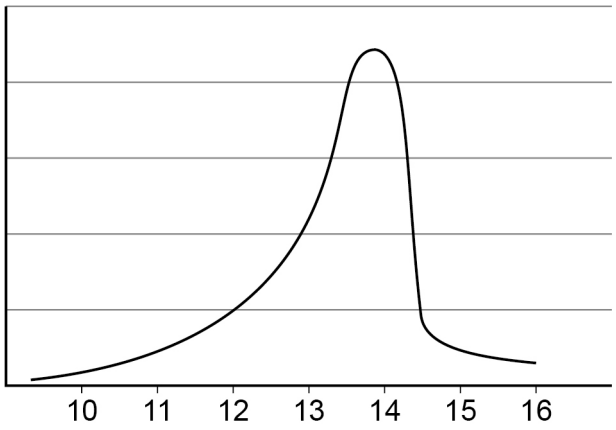
2 What is the statistical name given to the removal or correction of apparently incorrect values from a table or spreadsheet?

Circle your answer.

[1 mark]

sampling convenience cleaning biased

3



Circle the word that completes this sentence correctly.

This diagram shows data with a negative _____ .

[1 mark]

median skew range mode

4 Which of these sample sizes from a large population gives the most reliable sample?

Circle your answer.

[1 mark]

10 20 100 500

4

Do not write outside the box

5 Antonio makes and sells flower displays.

He keeps a record of each display he makes.

Below is one of his completed records.

Order reference:	57ah		**Customer name:**	Mrs Howe
Flowers:	Rose		**Colour:**	Red
Base used:	Teapot		**Number of flowers used:**	9
Cost to make (£):	4·20			
Selling price (£):	8·50			

5 (a) Write down **one** qualitative variable from the record.

[1 mark]

5 (b) (i) Write down **one** quantitative variable from the record.

[1 mark]

5 (b) (ii) Is your quantitative variable discrete or continuous?

Tick (✓) a box.

[1 mark]

Discrete ☐ Continuous ☐

Question 5 continues on the next page

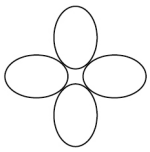
Do not write outside the box

5 (c) The table shows the number of flowers in Antonio's most recent display.

Flower	Number used
Rose	12
Daisy	9
Lily	8
Carnation	15

Represent the data in a pictogram in the space below.

[4 marks]

Key:  represents 4 flowers

Do not write outside the box

5 (d) The tally chart shows the number of flowers in a different display.

Flower	Tally
Rose	𝍸 ||||
Daisy	||||
Lily	𝍸 |
Carnation	|||

Antonio says there are exactly twice as many roses as daisies.

Is he correct?

Tick (✓) a box.

Yes ☐ No ☐

Show your working.

[2 marks]

9

Turn over for the next question

Do not write outside the box

6 Miss Wardle records information about homework completion for her class.

	Homework complete	Homework not complete
Male	11	4
Female	12	2

6 (a) How many males did **not** complete this piece of homework?

[1 mark]

Answer _____

6 (b) What is the probability that a student, chosen at random, completed this piece of homework?

[2 marks]

Answer _____

6 (c) Miss Wardle says that males are nearly twice as likely to **not** complete homework compared to females.

6 (c) (i) Show that the data in the table supports Miss Wardle's view.

[3 marks]

Do not write outside the box

6 (c) (ii) Despite the support of the data, Miss Wardle might not be correct.

Why not?

[1 mark]

7

7 The number of lambs born on each of the first 10 days in April are given.

8 11 9 14 12 14 10 15 14 13

Circle the first 4-point moving average.

[1 mark]

1

9.5 10.5 11 12

Turn over for the next question

Do not write outside the box

8 The data show donations to a charity shop and the number of shoppers visiting the shop for each of 12 months in 2019.

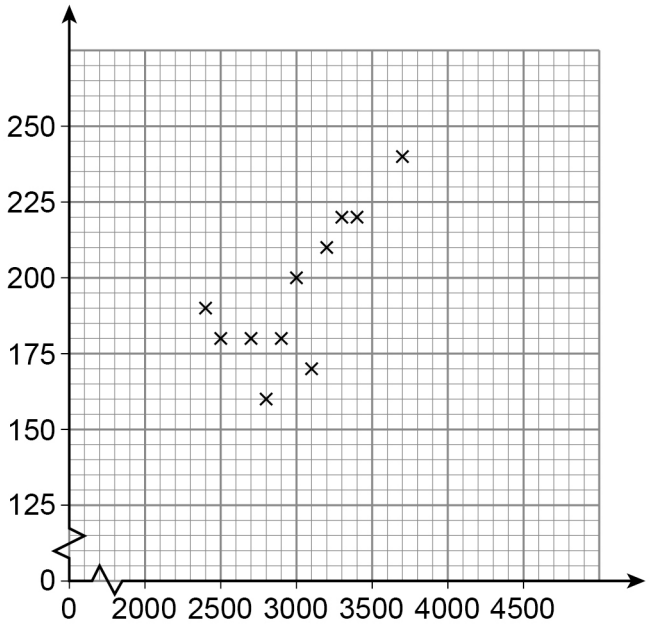
Both sets of data are rounded.

Month	Jan	Feb	Mar	Apr	May	Jun
Donations (nearest 100)	3200	2900	2700	3000	2800	3100
Shoppers (nearest 10)	210	180	180	200	160	170

Month	Jul	Aug	Sep	Oct	Nov	Dec
Donations (nearest 100)	2500	2400	3300	3400	3700	4200
Shoppers (nearest 10)	180	190	220	220	240	250

Jorja uses the data in the table to draw the following statistical diagram.

Graph to show donations to, and shoppers visiting, a charity shop



Do not write outside the box

8 (a) Complete the diagram by inserting the **three** things that are currently missing.

[3 marks]

8 (b) Jorja is investigating **only** the **number of shoppers** visiting the shop each month.

Comment on the appropriateness, for her investigation, of the **type** of diagram she has drawn.

[1 mark]

4

9 Danni records the number of bedrooms and the number of televisions in 11 houses.

She has these data that she needs to show as a graph or chart.

Number of bedrooms	1	2	3	2	3	4	3	4	4	5	4
Number of televisions	2	3	3	1	4	4	3	5	5	7	4

Which single graph or chart would be best to represent the data?

Circle your answer.

[1 mark]

pie chart scatter diagram

bar line graph choropleth map

1

Turn over for the next question

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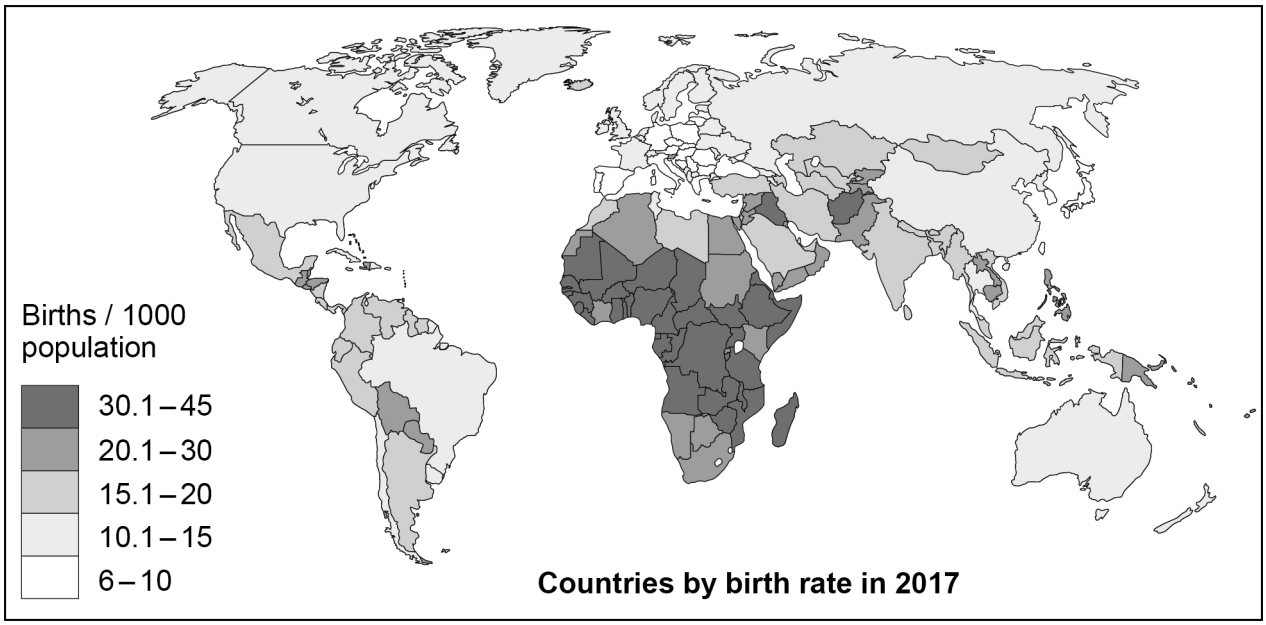
10 Sol is investigating birth rates in different countries.

He thinks that European countries have the lowest birth rates.

10 (a) Write a possible hypothesis for Sol to use in his investigation.

[1 mark]

10 (b) Sol sees this map on Wikipedia.



10 (b) (i) What is the name of this type of map?

[1 mark]

Answer _____

10 (b) (ii) Nearly all of the countries on the map with a birth rate of 6 – 10 are in Europe.

Given this, comment on whether the hypothesis you wrote in **part (a)** may be correct.

[1 mark]

Do not write outside the box

10 (c) Sol decides to find the actual birth rates for a selection of European and non-European countries.

10 (c) (i) He says, "This is primary data as it is me who is going on the Internet to find it."

Is Sol correct?

Tick (✓) a box.

Yes ☐ No ☐

Give a reason for your answer.

[1 mark]

10 (c) (ii) Here is the list of countries and their birth rates found by Sol.

Country	In Europe?	Birth Rate (per 1000) (to 1 dp)
Argentina	N	17.0
Belgium	Y	11.4
Cameroon	N	34.5
Denmark	Y	10.4
Egypt	N	30.3
France	Y	12.3
Germany	Y	8.5
Honduras	N	55.8
Italy	Y	8.7
Japan	N	7.9

Source: CIA World Factbook 2017

He decides to check the value for Honduras as he thinks it must be wrong.

By referring to the map, how does he know this value is almost certainly wrong?

[1 mark]

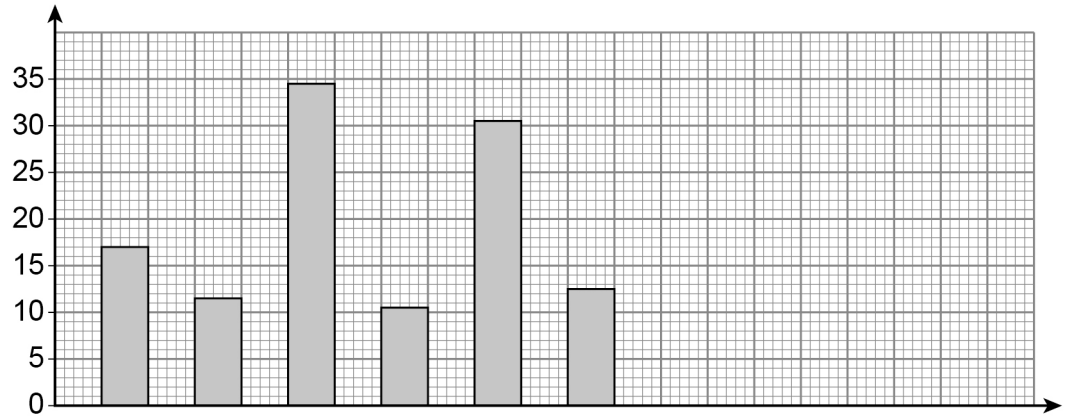
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10 (d) In fact, Sol had misread the Honduras value and it should have been 22.8

Use this value and the table to complete the bar chart for the data.

You will need to complete the labels for the axes.

[4 marks]



10 (e) Give **one** possible reason for the apparent huge differences between the birth rates for different countries.

[1 mark]

Do not write outside the box

10 (f) The formula used to calculate a birth rate is

$$\text{Birth rate} = \frac{\text{number of live births recorded}}{\text{total population}} \times 1000$$

The population of Germany in 2017 was approximately 80 000 000

10 (f) (i) Use the table on page 11 and this information to estimate the approximate number of live births recorded in Germany in 2017.

[3 marks]

Answer _____

10 (f) (ii) Give **one** reason why the answer to **part (f)(i)** is an estimate.

[1 mark]

10 (g) Sol does more research and reads a few different articles.

He writes a conclusion about the data he has used and the articles he has read.

In his summary, he uses data from the articles.

What **must** his summary include?

[1 mark]

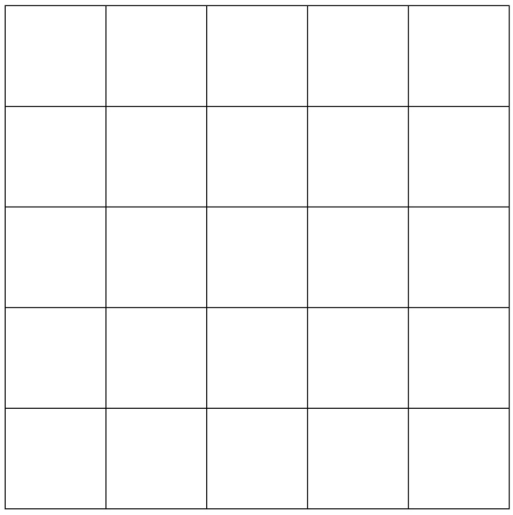
15

Turn over for the next question

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11 Tate is going to play a game at a fair.

The game has a 5 by 5 grid and behind some of the 25 squares are prizes.



Tate decides he wants to pick one square **at random**.

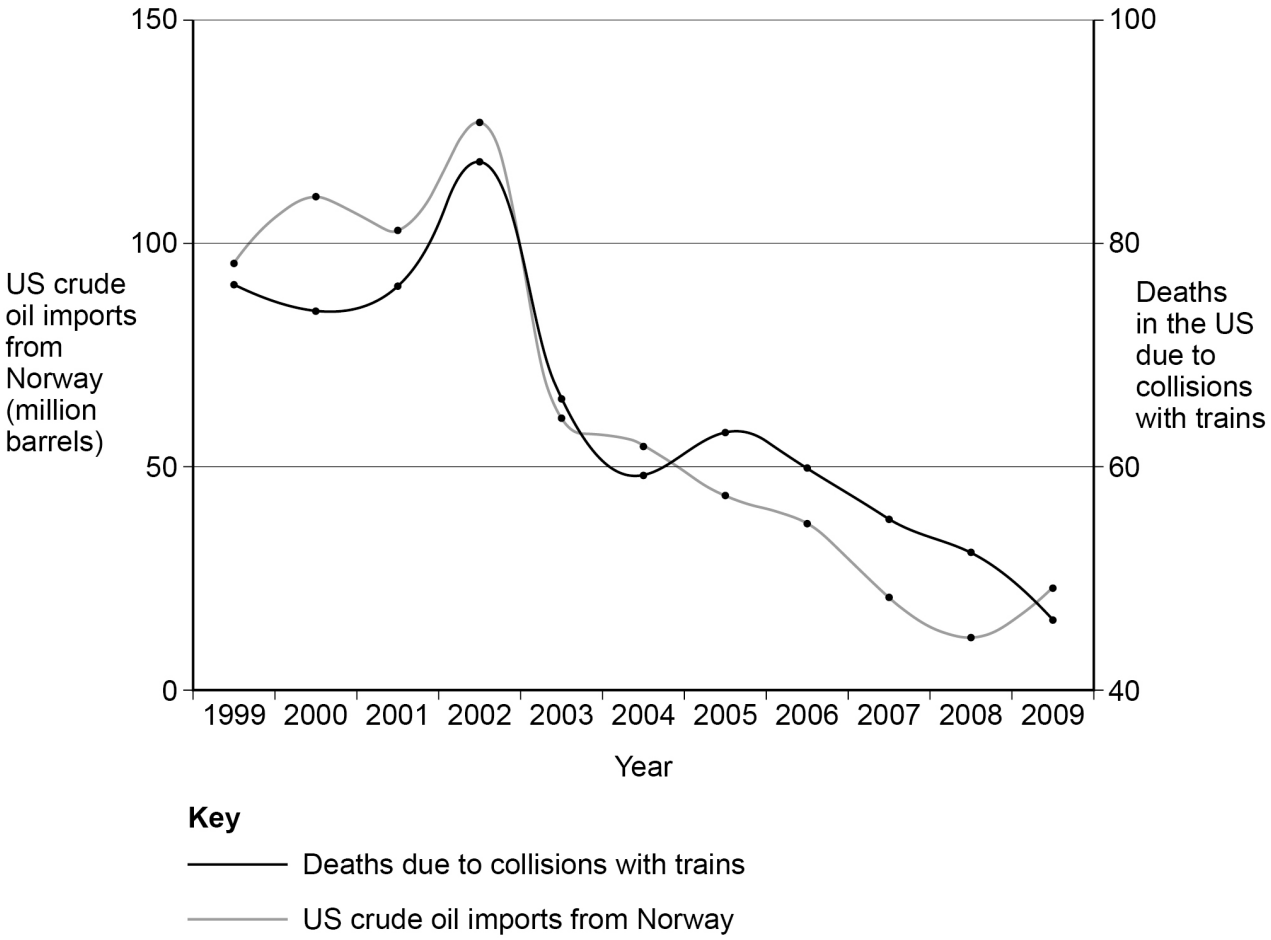
Describe how he could use cards numbered 1 to 25 to do this.

[3 marks]

3

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12



Jon sees the above graph on the Internet.

He correctly calculates that there is a strong positive correlation between the amount of oil imported to the US from Norway and the number of deaths in the US due to collisions with trains.

Circle the letter of the correct statement below.

A Increased oil imports cause more deaths by collision with trains.

B There is no causal link between the two variables despite the correlation.

C Increased deaths by collision with trains cause more oil to be imported.

D Increased oil imports cause more deaths by collision with trains **and** more deaths by collision with trains cause increased oil imports.

[1 mark]

1

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13 You will need the **Data Sheet** to answer this question.

In the UK, films shown in cinemas are given a certificate to reflect the age of the person they might be suitable for.

The certificates are shown in the Data Sheet.

13 (a) Look at **Table 1** in the Data Sheet.

Discuss the trends in the number of films given each **certificate** from 2008 to 2018.

Make **two** distinct comments on the trends.

[2 marks]

1 _____

_____

_____

2 _____

_____

_____

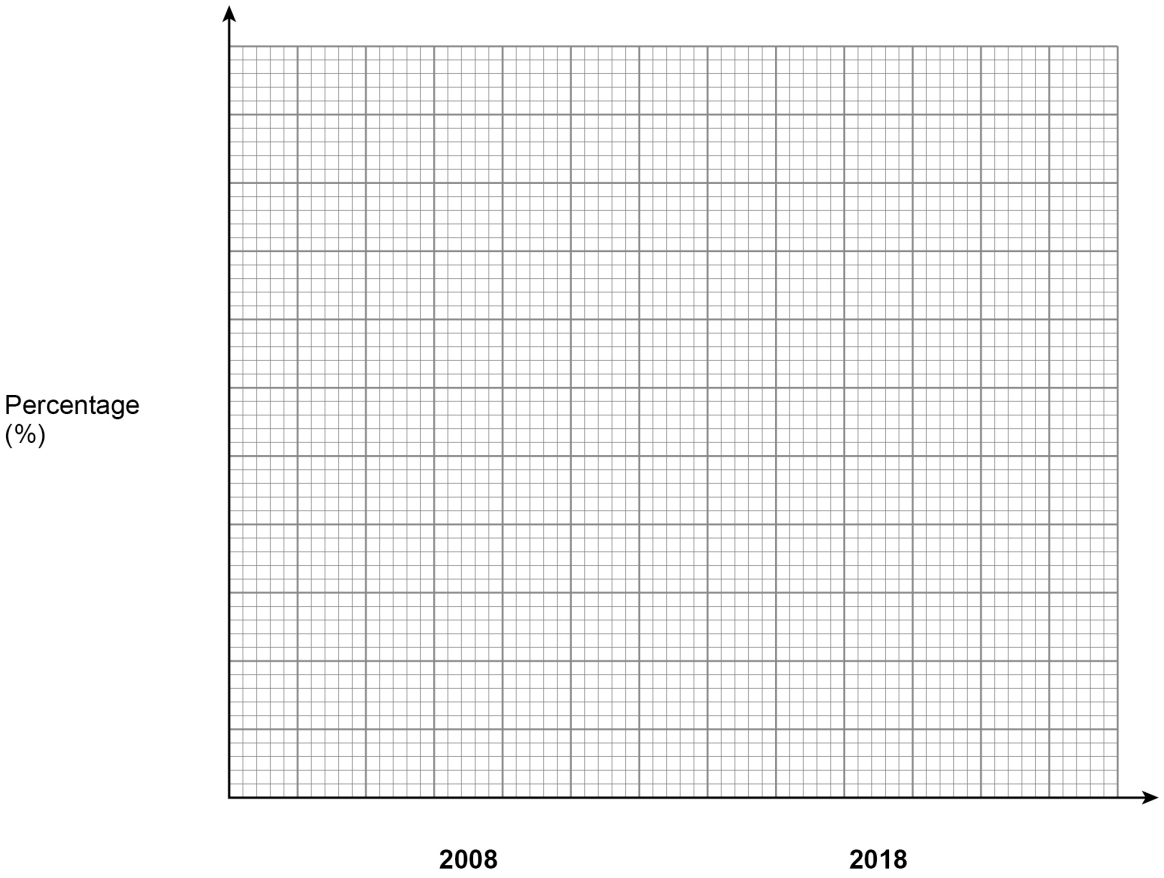
13 (b) Look at **Table 1** in the Data Sheet.

Use the grid on the next page to draw a **percentage composite bar chart** for the two years 2008 and 2018.

Show any calculations you make in the space below.

[7 marks]

Do not write outside the box



13 (c) In Northtown, there is a multiscreen cinema, mainly showing popular films.
Lopez is the manager of a new cinema about to open in the town.
He wants to know the popularity of films with different certificates.

Should Lopez use primary or secondary data to gather this information?
Tick (✓) a box.

Primary ☐ Secondary ☐

Give a reason for your answer.

[1 mark]

Do not write outside the box

13 (d) Look at **Table 2** on the Data Sheet.

How do you know that the percentages are not exact?

[1 mark]

13 (e) Lopez concludes that no 18-certificate films were shown by the multiscreen cinema.

13 (e) (i) Give **one** reason why Lopez might be correct.

[1 mark]

13 (e) (ii) Give **one** reason why Lopez might **not** be correct.

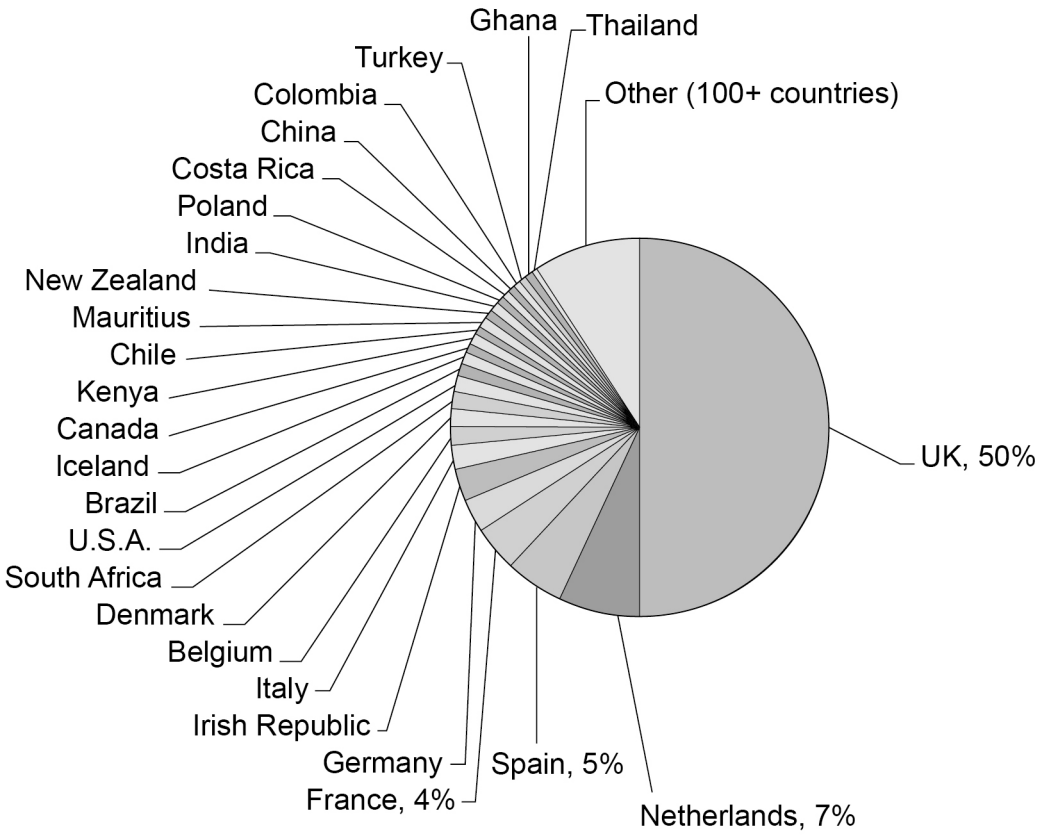
[1 mark]

13

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14 The pie chart shows information about the source of UK food in 2007.

Sources of food consumed in the UK by value: 2007



Source: Full Fact

Write down **two** criticisms of the diagram.

[2 marks]

Criticism 1 _____

_____

_____

Criticism 2 _____

_____

_____

2

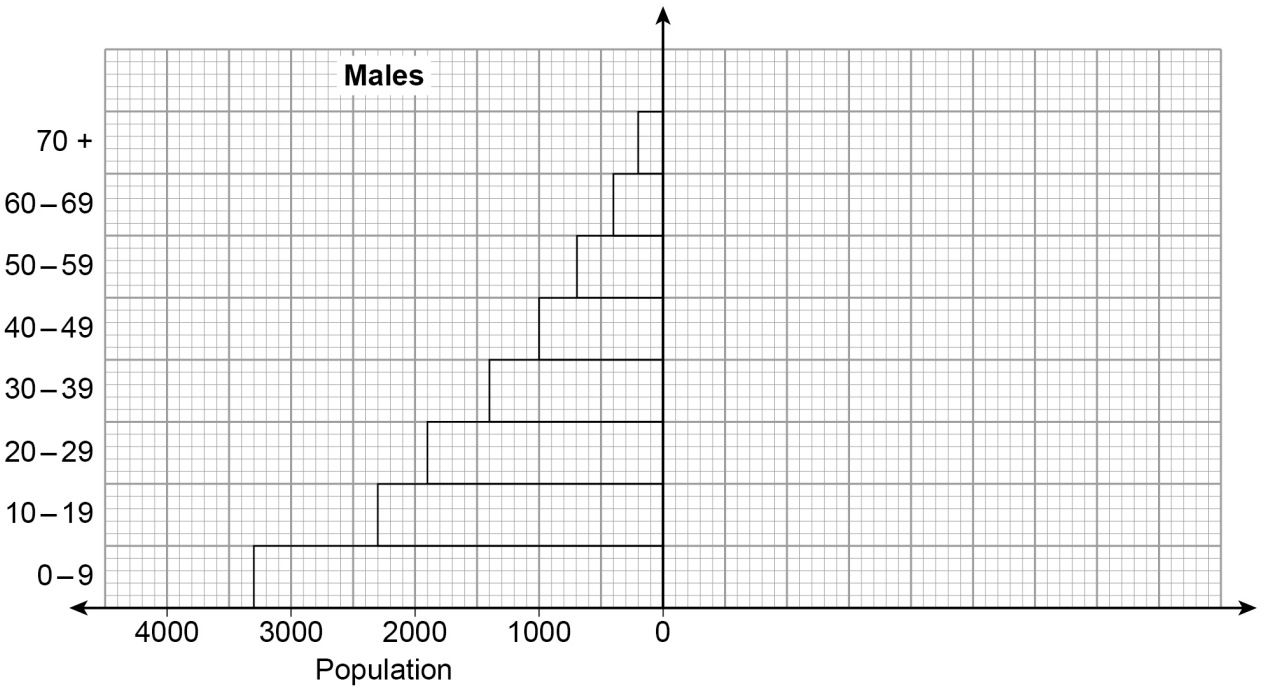
Turn over ►

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15 Luton is an industrial town.

The population pyramid shows the number of males living in Luton in **1851**.

The population values are rounded to the nearest hundred.



Source: Adapted from visionofbritain

The table shows the number of **females** living in Luton in 1851.

Age group	Population (to nearest hundred)
0 to 9	3200
10 to 19	3300
20 to 29	3000
30 to 39	1800
40 to 49	1100
50 to 59	800
60 to 69	500
70 +	300

15 (a) Complete the population pyramid to show the number of females living in Luton in 1851.

[3 marks]

Do not write outside the box

15 (b) The table shows the number of males and females in the **20 to 29** age group living in Luton in **1961**.

Number of males	Number of females
9497	8967

Source: Adapted from visionofbritain

Make **two** distinct comments on how the numbers of males and females in the 20 to 29 age group are different in 1961 compared with in 1851.

[2 marks]

Comment 1 _____

_____

_____

Comment 2 _____

_____

_____

5

Turn over for the next question

Do not write outside the box

16 Natalie is selling her house.

At an asking price of £135 000, she is advised that the house would definitely sell within one month.

For each additional £1000 on the asking price, the risk of **not** selling within any one month increases by 0.05

16 (a) Natalie wants £150 000 for her house.

16 (a) (i) At £150 000, what is the risk that she will **not** sell her house within one month?

[2 marks]

Answer _____

16 (a) (ii) At £150 000, what is the risk that she will **not** sell her house within two months?

[2 marks]

Answer _____

16 (a) (iii) What assumption did you have to make in answering **part (a)(ii)**?

[1 mark]

Do not write outside the box

16 (b) (i) Using the information given, what is the minimum price for which the house will apparently **never** sell?

[2 marks]

Answer £ _____

16 (b) (ii) Give a reason why the house may actually sell at this minimum price.

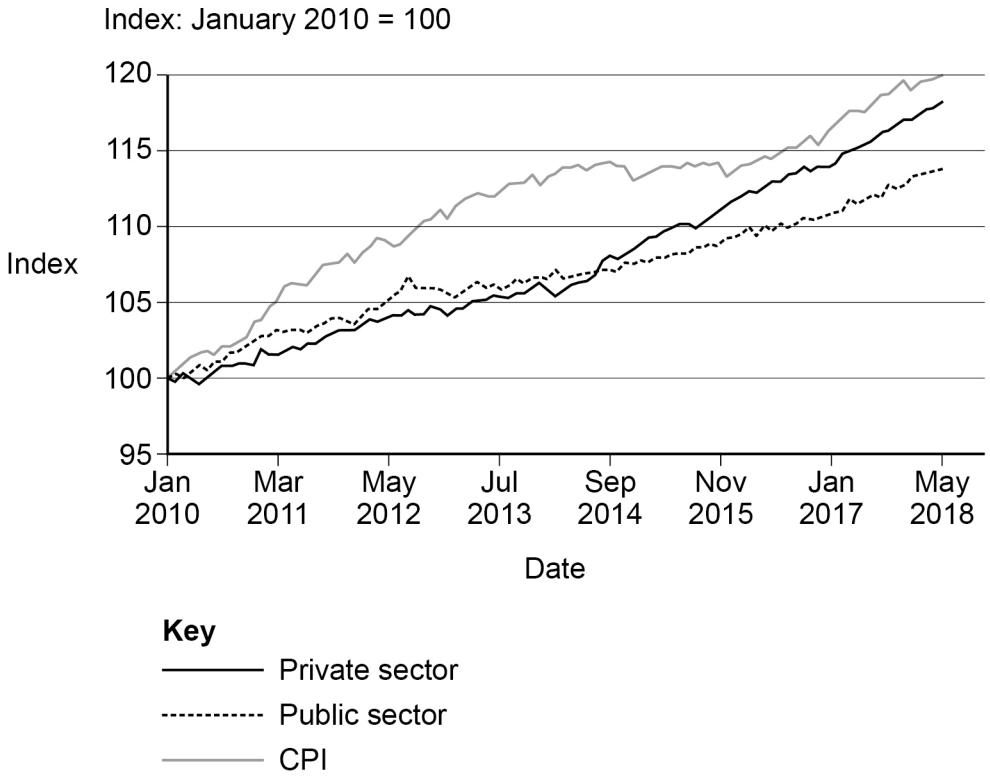
[1 mark]

8

Turn over for the next question

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17 The graph shows changes in private and public sector pay and the Consumer Price Index (CPI).



Source: ONS

17 (a) What does CPI measure?

[1 mark]

17 (b) By what percentage, approximately, did public sector pay increase between Jan 2010 and May 2012?

Circle your answer.

[1 mark]

4 5 104 105

Do not write outside the box

17 (c) Compare the changes in public sector and private sector pay between Jan 2010 and May 2018.

[2 marks]

17 (d) Jim says,

> "The index number for CPI is 120 to the nearest whole number for May 2018 with Jan 2010 as base.
>
> So the index number for CPI for Jan 2010 with May 2018 as base will be 80 to the nearest whole number."

Evaluate **all** of Jim's statement.

Use calculations, where necessary, to show if he is correct.

[3 marks]

7

END OF QUESTIONS

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ANSWER IN THE SPACES PROVIDED

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Question number	**Additional page, if required.** **Write the question numbers in the left-hand margin.**

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