

**Statistics GCSE****Paper 2**

2025

Edexcel Higher

Variant 2

1ST0/2H

**Instructions**

- Write all answers in the spaces provided.
- Answer all questions.
- You must show all your working.
- There may not be enough space to show all your working out.

**Information**

- This is a practise paper to aid your revision for your exams.
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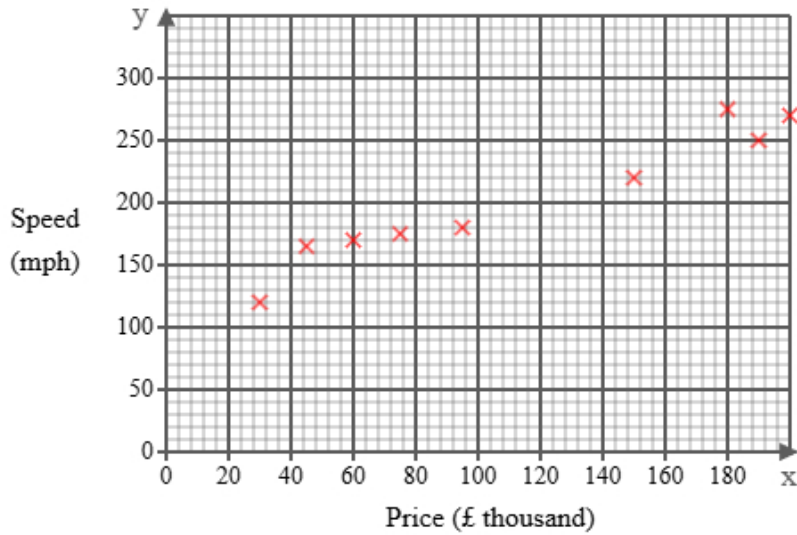
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**Advice**

- You can get support for all these questions at our website: [www.statsgcse.com](http://www.statsgcse.com)
- This paper and more are available on our site with questions that change subtly after each attempt.
- Good luck!

1 Emma recorded data on 11 cars, recording their top speed (in miles per hour) and their price (in thousands of pounds). She represented her findings in the scatter diagram below.



(a) One of the 11 cars has a top speed of 225 mph.  
For this car, write down its price.

(1 mark)

\_\_\_\_\_ mph

(b) Draw a line of best fit on the scatter diagram.

(1 mark)



A city council is considering adding more public transport routes.

Ethan wants to conduct a survey to learn what all the residents in the city think about the plan.

Ethan thinks that he should take a sample rather than a census.

- 2 Ethan has decided to use the electoral register as a sampling frame.

State one problem Ethan may have using the electoral register as a sampling frame.

(1 mark)

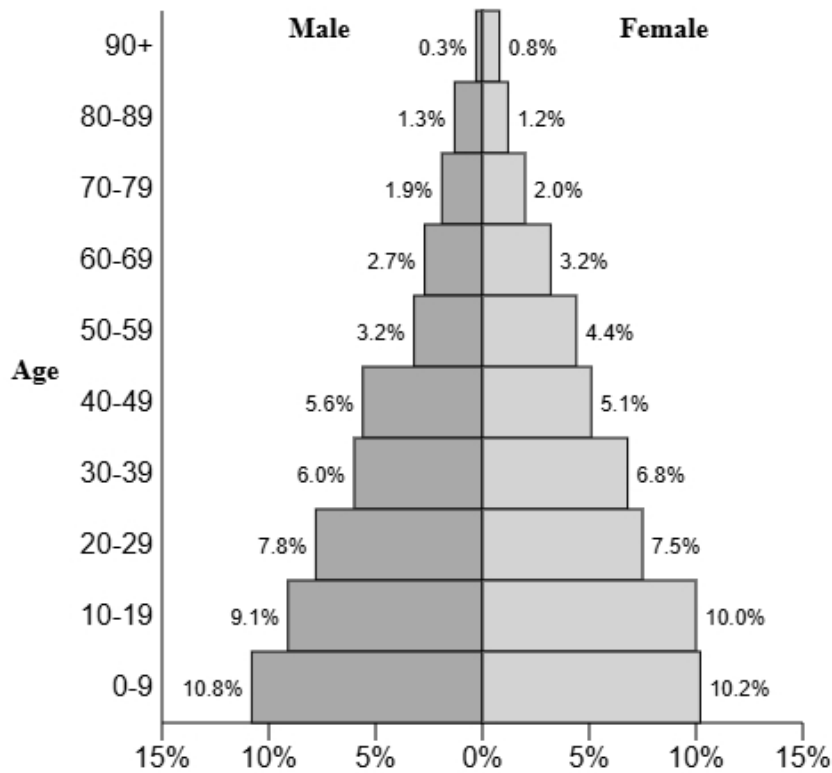
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3 The population pyramid below shows the percentage of males and females in each age group for the town Elderleigh.



(a) Find the age group that has 19.1% of the population.

(1 mark)

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(b) Compare the percentage of the population aged 20-49 between males and females.

(1 mark)

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(c) Give a reason why the sum of all the percentages is 99.9% and not 100%.

(1 mark)

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A scientist is conducting an experiment to investigate how caffeine affects concentration.

She plans to use a matched pairs design.

Layla is one of the participants in the study.

As part of the experiment, she takes four concentration tests.

Each test has a different weighting.

The table below shows the weightings and Layla's scores for each test.

Test	Weighting	Score
A	1	15
B	2	20
C	3	18
D	4	25

4 Calculate the weighted mean score for Layla's four tests.

(3 marks)

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**5** Luca works for a public health institute. He has been tasked with investigating noise levels in urban parks.

Below is a section of the spreadsheet he used to record his findings.

Noise dB(A)	Percentage of parks
$30 < n \leq 35$	8
$35 < n \leq 40$	six
$40 < n \leq 45$	8
$45 < n \leq 50$	111
$50 < n \leq 55$	57
$55 < n \leq 60$	10
<b>Total</b>	100

Luca cleans the data to create the table below.

Noise dB(A)	Percentage of parks
$30 < n \leq 35$	8
$35 < n \leq 40$	6
$40 < n \leq 45$	8
$45 < n \leq 50$	11
$50 < n \leq 55$	57
$55 < n \leq 60$	10
<b>Total</b>	100

**(a)** Give a reason Luca cleaned the data.

(1 mark)

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**(b)** Luca realised that the value of 111 in the original table was incorrect.  
Explain how Luca knew this.

(1 mark)

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**(c)** Use linear interpolation to work out an estimate of the median noise level.  
Round your answer to one decimal place.

(3 marks)

\_\_\_\_\_ dB(A)



7 In a library, 60% of members are adults and 40% are children.  
Priya and Thomas plan to conduct a feedback survey.

Priya decides to use simple random sampling to select 100 participants.  
She uses the library membership database as a sampling frame, assigning a number to each participant.  
She then generates 100 random numbers and selects her sample accordingly.

Thomas decides to use quota sampling to collect a sample of 100 participants.  
He plans to sit at the library's exit until 60 adults and 40 children have been interviewed.

(a) Give two reasons why Priya's method may **not** produce a sample of 100 participants.

(2 marks)

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(b) Give **two** advantages of quota sampling.

(2 marks)

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(c) Explain why the quota sample used by Thomas is not a random sample.

(1 mark)

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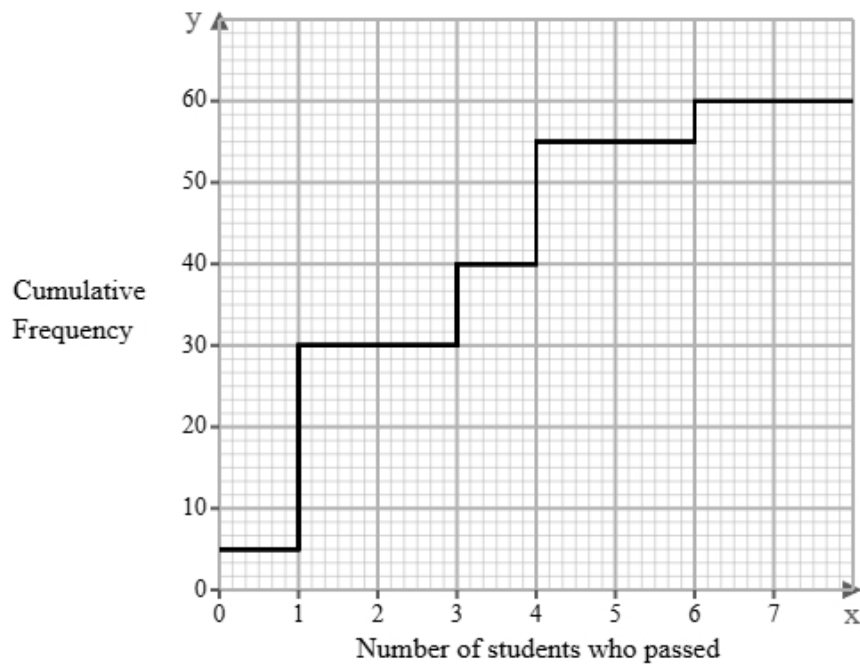
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- 9 The cumulative frequency step polygon shows information about the number of students who passed a daily maths quiz over 60 days.



- (a) Find the mode of the number of students who passed a daily maths quiz.

(1 mark)

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- (b) Find the number of days where there were:

- i) exactly 5 students who passed.
- ii) more than 5 students who passed.

(3 marks)

i) Exactly 5 students who passed: \_\_\_\_\_

ii) More than 5 students who passed: \_\_\_\_\_

(c) In 40 days fewer than  $x$  students passed.

Find the value of  $x$

(1 mark)

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(d) Peter believes the interquartile range of the number of students who passed is 8.

Explain why the interquartile range for this data cannot be 8.

(1 mark)

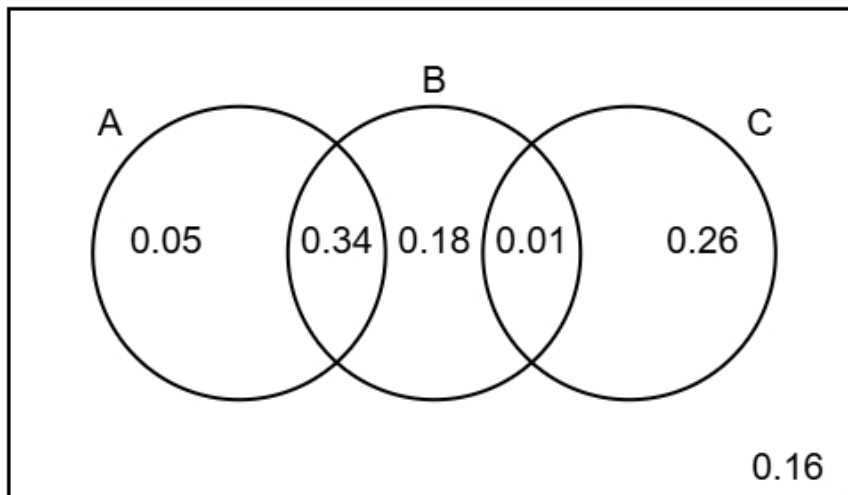
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10 The Venn diagram illustrates the probabilities associated with events A, B, and C.



(a) Identify the **two** events that are mutually exclusive, giving a reason for your answer.

(2 marks)

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(b) Find  $P(B)$

(1 mark)

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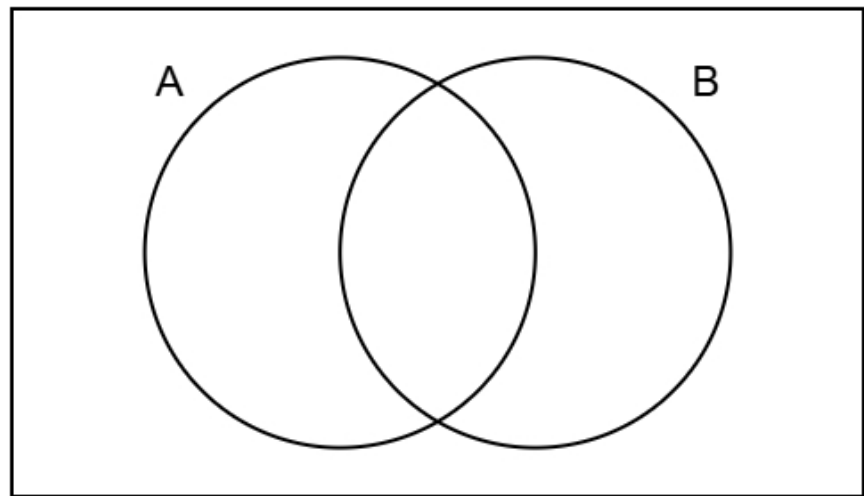
(c) Find  $P(A \text{ or } C)$

(2 marks)

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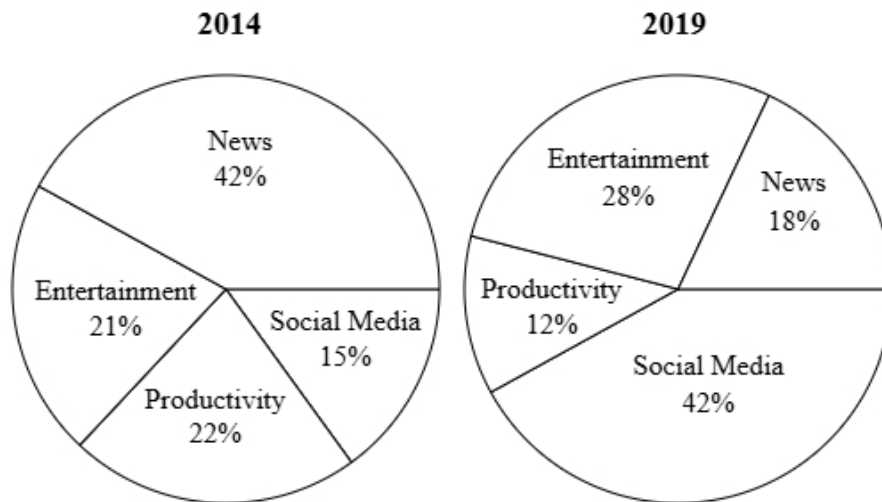
(d) Complete the Venn diagram to show **only** the probabilities for events A and B.

(2 marks)





12 The pie charts show a country's mobile phone app downloads in 2014 and 2019.



- (a) The number of news app downloads in 2014 was 1922130.  
Find the number of social media app downloads in 2014.

(2 marks)

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**13** Changes in the cost of living in the United Kingdom are measured by the Consumer Price Index (CPI).

The table below shows the index numbers for 2011, using 2005 as the base year, for the items that contribute to the CPI.

It also shows the weightings representing how the Williams family's spending is distributed among these items.

<b>Item</b>	<b>Index Number (2011)</b>	<b>Williams Family Weighting (%)</b>
Food, alcoholic beverages & tobacco	110.3	14
Clothing and footwear	107.6	8
Housing and household services	108.8	29
Transport	108.7	12
Recreation, culture and communication	108.2	26
Health, education and other	108.0	11

Using 2005 as base year, the national CPI for 2011 was 110.2.

Compare the total variation in the Jones family's cost of living from 2015 to 2011 with the change in the Consumer Price Index (CPI) over the same period and explain whether your calculations allow you to determine if the Jones family is financially better off or worse off in 2011 compared to 2015.

(5 marks)

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**14** A company produces chocolate chip cookies.

The cookies have a target mass of 60 g.

The company uses quality assurance to monitor the mass of each cookie.

Samples of the cookies are taken from the production line at regular intervals and the mean mass of the cookies in each sample is found.

The sample means should be normally distributed with a mean of 60 g and a standard deviation of 1.2 g.

**(a)** Find the upper action limit for the sample means for the cookies.

(2 marks)

\_\_\_\_\_ g

**(b)** The upper action limit will be set closer to the target mass of 60 g.

Describe the effect this will have on the frequency of production process stoppages.

(1 mark)

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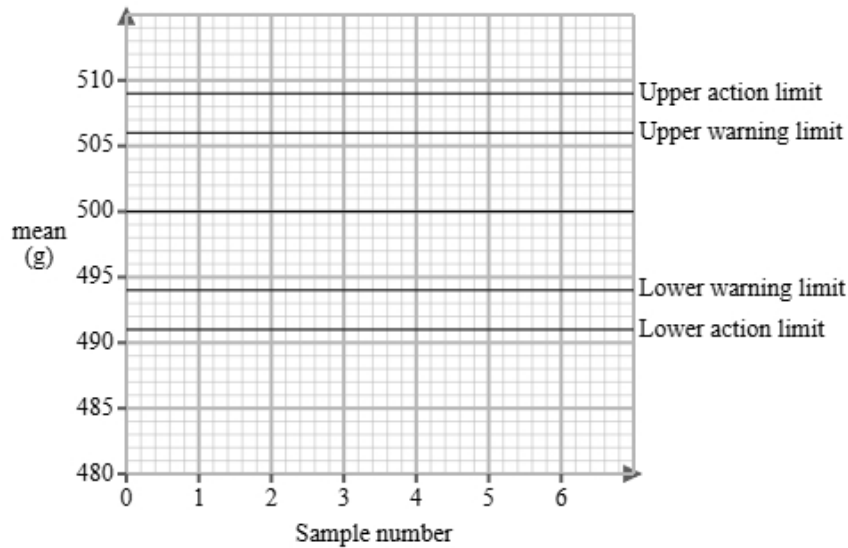
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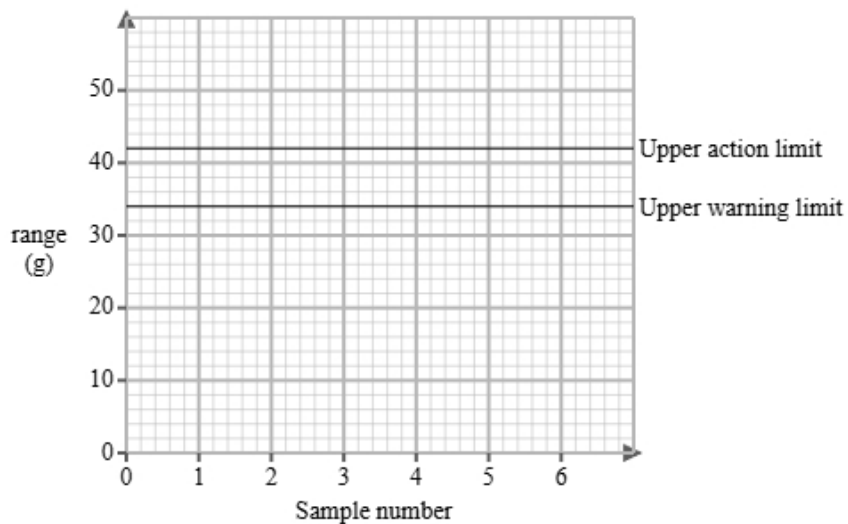
(c) The company also produces sponge cake and uses quality assurance to monitor the mass of each cake.

Here are the control charts for the sample means and for the sample ranges of the masses of the cakes.

**Control chart for means**



**Control chart for ranges**



A sample is taken and is found to have a mean of 496 g and a range of 31 g.

Use the sample mean and range to determine what action, if any, needs to be taken.

(2 marks)

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**16** A fair coin is tossed 4 times.

The number of heads obtained is recorded.

**(a)** Identify two conditions needed so that a binomial distribution is a suitable model for the number of heads recorded.

(2 marks)

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**(b)** Calculate the probability, as a fraction, that all 4 of the coins land on heads.

(2 marks)

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**(c)** Calculate the probability, as a fraction, that at least 2 of the coins land on heads.

(3 marks)

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