

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Tuesday 2 June 2026

Afternoon (Time: 1 hour 30 minutes)

Paper reference	1ST0/1H
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Statistics
PAPER 1
Higher Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, scientific calculator.	Total Marks
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Instructions

- Use black ink or ball-point pen.
 - Fill in the boxes at the top of this page with your name, centre number and candidate number.
 - Answer all questions.
 - Answer the questions in the spaces provided
 - – *there may be more space than you need.*
 - Scientific calculators may be used.
- You must **show all your working out** with **your answer clearly identified** at the **end of your solution**.



Information

- The total mark for this paper is 80.
- The marks for each question are shown in brackets
- – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

Higher Tier Formulae

You must not write on this page.

Anything you write on this page will gain NO credit.

$$\text{Skew} = \frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$$

$$\text{Standard deviation} = \sqrt{\frac{1}{n} \sum (x - \bar{x})^2}$$

An alternative formula for standard deviation is

$$\text{standard deviation} = \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$$

Spearman's rank correlation coefficient

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

$$\text{Rates of change (e.g. Crude birth rate)} = \frac{\text{number of births} \times 1000}{\text{total population}}$$

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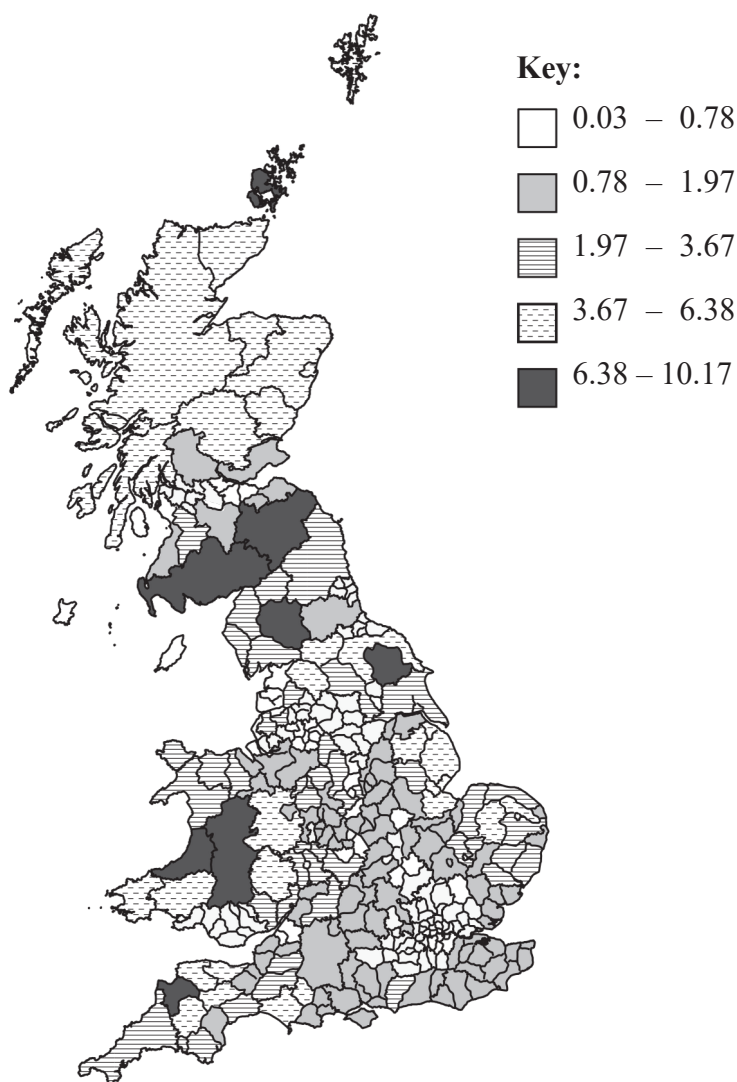
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Ali is investigating the percentage of people who are employed in Agriculture, Forestry and Fishery in the UK.

He finds the diagram below on the internet.



(Source: *ukdataservice.ac.uk*)

- (a) Give one advantage for Ali of using the internet to source the data.

(1)

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(b) Write down the statistical name for this type of diagram.

.....
(1)

(c) Suggest two improvements that could be made to the diagram.

1
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2
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(2)

(Total for Question 1 is 4 marks)

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- 2 Diana collected information about the fuel type used by new cars sold in Germany in 2022 and the fuel type used by new cars sold in Great Britain in 2022

The percentage composite bar chart shows information about her data.



(Source: www.best-selling-cars.com)

- (a) Find the percentage of new cars in Germany in 2022 that had petrol as the fuel type.

.....0/0
(2)

- (b) Compare the percentages of each fuel type for new cars sold in Germany in 2022 with the percentages of each fuel type for new cars sold in Great Britain in 2022

- (c) Explain why it would not be appropriate to display the information shown in the percentage composite bar chart as a time series graph.

(Total for Question 2 is 5 marks)

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Turn over for next question

- 3 Grace finds the following statistics on the internet about the distance travelled and the time taken by students to get to school in 2014

Average distance travelled and average time taken



(Source: © Crown copyright)

Grace wants to investigate if the average distance and average time have increased since 2014

She plans to take a sample from the 1400 students at her school.

Here is Grace's plan for her investigation.

- Take a systematic sample of 10% of all the students at her school by picking every 14th student from a list of all the students in the school numbered 1 to 1400
- Ask the students in her sample face to face how long it takes them to get to school in minutes.
- Place the times that it takes these students into the grouped frequency table below.

Time taken to get to school (t minutes)	Frequency
$0 \leq t < 5$	
$5 \leq t < 10$	
$10 \leq t < 15$	
$t \geq 15$	

- Draw a cumulative frequency graph for these times and calculate the interquartile range.

Discuss whether Grace’s plans for collecting, processing and presenting data are appropriate.

Where necessary you should suggest improvements to the plan.

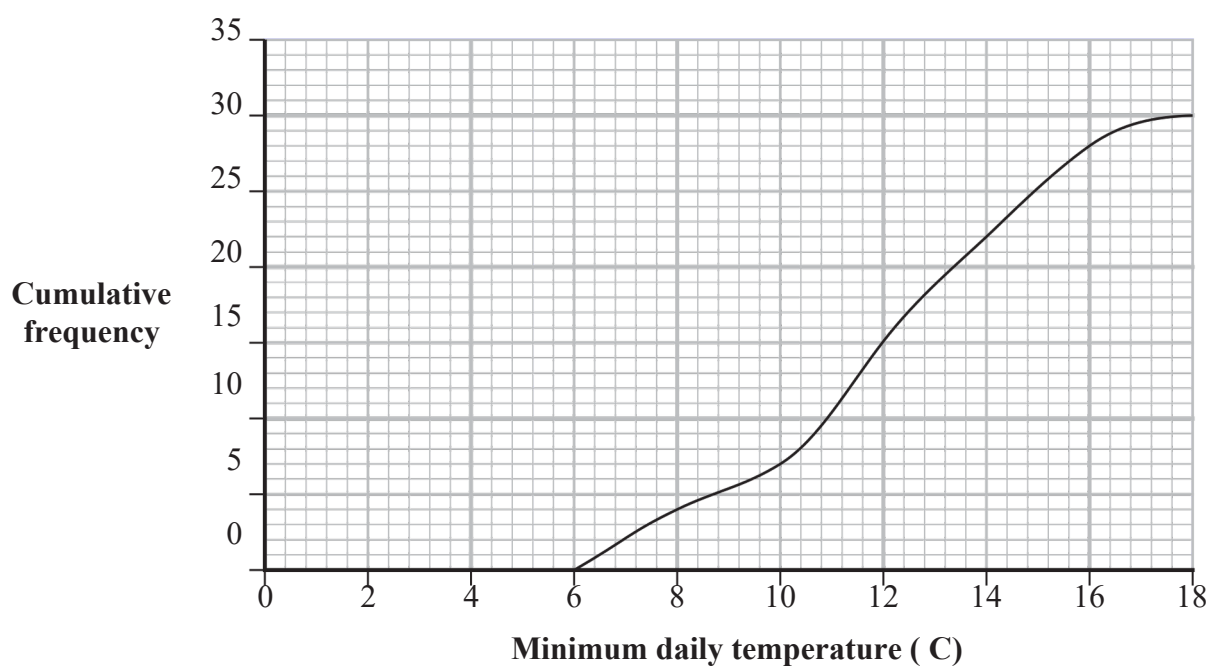
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(Total for Question 3 is 6 marks)

- 4 The cumulative frequency graph shows information about the minimum daily temperature, in $^{\circ}\text{C}$, in Bergen, Norway for each day in September 2023



(Source: *world-weather.info*)

- (a) Complete this table for the minimum daily temperatures for Bergen in September 2023

Lowest	Lower quartile	Median	Upper quartile	Highest
7		12		17

(2)

A box plot comparing the minimum daily temperatures in Bergen and Hammerfest. The x-axis represents the minimum daily temperature in degrees Celsius, ranging from 0 to 18 with major grid lines every 2 units and minor grid lines every 1 unit. The y-axis lists the two locations: Bergen and Hammerfest. Bergen's data is represented by a box from 4 to 6, with a median line at 5, and whiskers extending from 3 to 7. Hammerfest's data is represented by a box from 4 to 11, with a median line at 6, and whiskers extending from 3 to 17.

Location	Minimum	Q1	Median	Q3	Maximum
Bergen	3	4	5	6	7
Hammerfest	3	4	6	11	17

- (2)

- (5)

113

- 5 Amy wants to find out about the number of students attending after-school clubs in her city.

The city has five districts.

There are several schools in each district.

Amy randomly selects two districts and includes all of the students in all of the schools in these two districts.

- (a) Name this type of sampling method.

(1)

- (b) Give two advantages of using this type of sampling method.

1

2

(2)

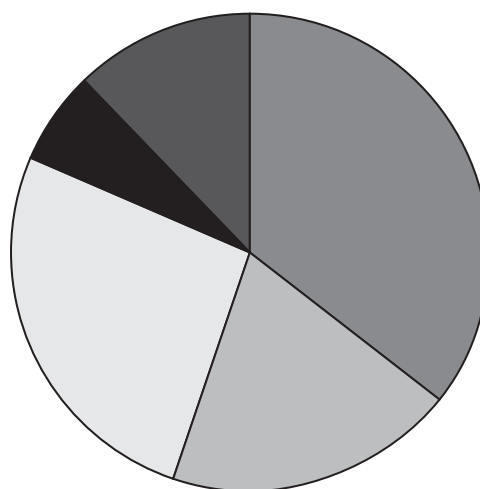
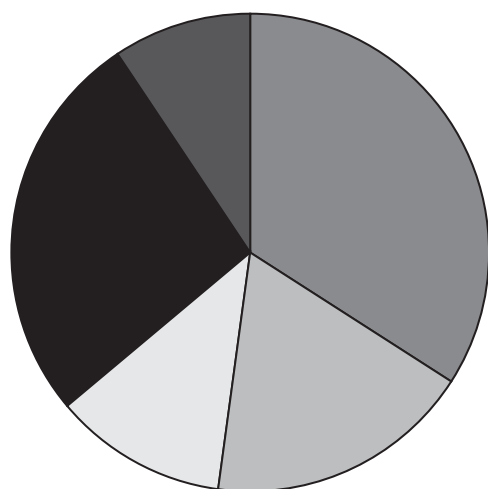
- (c) Explain why this sampling method will not produce a random sample.

(1)

The pie charts show information about the numbers of students attending after-school clubs in two of the schools in the sample.

School A

School B



Key:

- Football
- Netball
- Cricket
- Rugby
- Other

Based only on the two pie charts, Amy makes these two conclusions.

1. More students attend the rugby club in school A than attend the rugby club in school B.
2. In both schools, the club most students attended was football.

(d) Assess the validity of each of Amy's conclusions.

1

.....

2

.....

(2)

Amy decides to replace the pie charts with comparative pie charts.

School A has a total of 250 students.

The comparative pie chart for school A has a radius of 3 cm.

The comparative pie chart for school B has a radius of 3.6 cm.

(e) Calculate the total number of students in school B.

.....

(2)

(f) Explain why comparative pie charts are more appropriate than pie charts to compare the number of students attending after-school clubs in the two schools.

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(1)

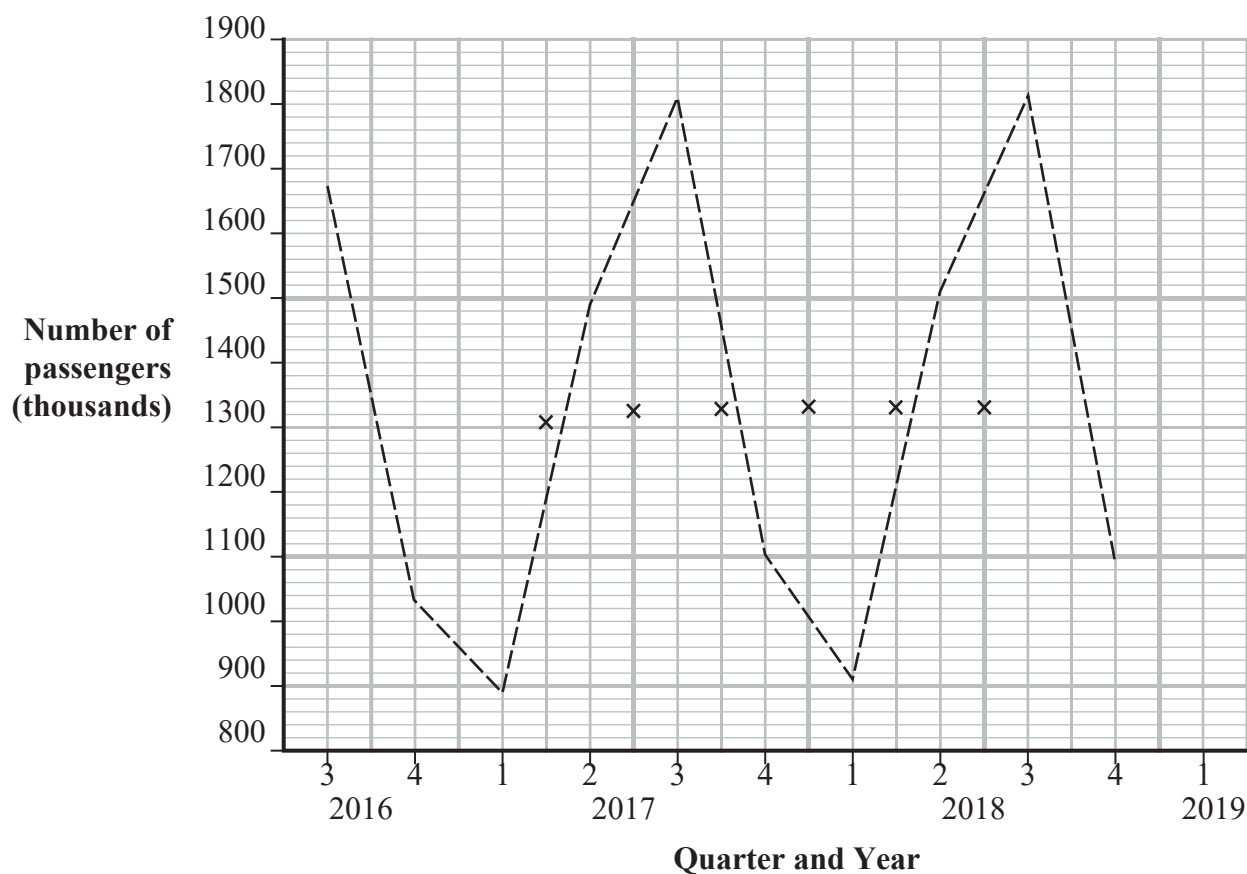
(Total for Question 5 is 9 marks)

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- 6 The table and time series graph give information about the numbers, in thousands, of passengers using Newcastle Airport for each quarter from Quarter 3, 2016 to Quarter 4, 2018

Year	Quarter	Number of passengers (thousands)	4-point moving averages (thousands)
2016	3	1672	
	4	1034	
2017	1	895	1307.8
	2	1491	
	3	1811	1324.8
	4	1102	1329
			1333.5
2018	1	912	1334.5
	2	1509	1333.25
	3	1815	
	4	1097	

(Source: newcastleairportguide.com)



Six of the seven 4-point moving averages for the data are also plotted on the time series graph.

(a) (i) Calculate the first 4-point moving average for the data. _____ thousands
(2)

(ii) Plot this moving average on the graph. (1)

(iii) Draw a trend line on the graph. (1)

(b) Describe and interpret the trend in the number of passengers using Newcastle Airport from Quarter 3, 2016 to Quarter 4, 2018

(2)

(c) (i) Give **two** examples of seasonal variation shown by the graph.

(2)

(ii) Interpret one of these seasonal variations in context.

(1)

Ronan attempts to calculate the average seasonal effect for Quarter 3 and gets –150 thousand.

(d) Explain why this value of –150 thousand cannot be correct.

(2)

- (e) Calculate an estimate for the number of passengers using Newcastle Airport in Quarter 1 of 2019
You must show your working.

..... thousand
(3)

- (f) Discuss the reliability of using your answer to part (e) to estimate the number of passengers using Newcastle Airport in Quarter 1 of 2019
Give a reason for your answer.

.....
.....
(2)

(Total for Question 6 is 16 marks)

7 A tour bus company is planning the design of a new bus route.

The table gives the percentage of ticket types sold by the company on other routes.

Child	Adult	Senior
30%	60%	10%

The company is going to use a simulation to predict the maximum number of child tickets that they will sell for this new bus route.

The company sells 50 tickets per bus route.

They assign the numbers shown in the table below to each type of ticket.

Type of ticket	Child	Adult	Senior
Numbers	0, 1	2, 3, 4, 5, 6, 7	8

They will then use a calculator to generate 50 random numbers, each between 0 and 8, to simulate 50 tickets.
They will count the number of child tickets generated in the simulation.

They will repeat this process two more times and take the maximum number of child tickets found in the 3 trials.

Comment on the suitability of the company’s plan.

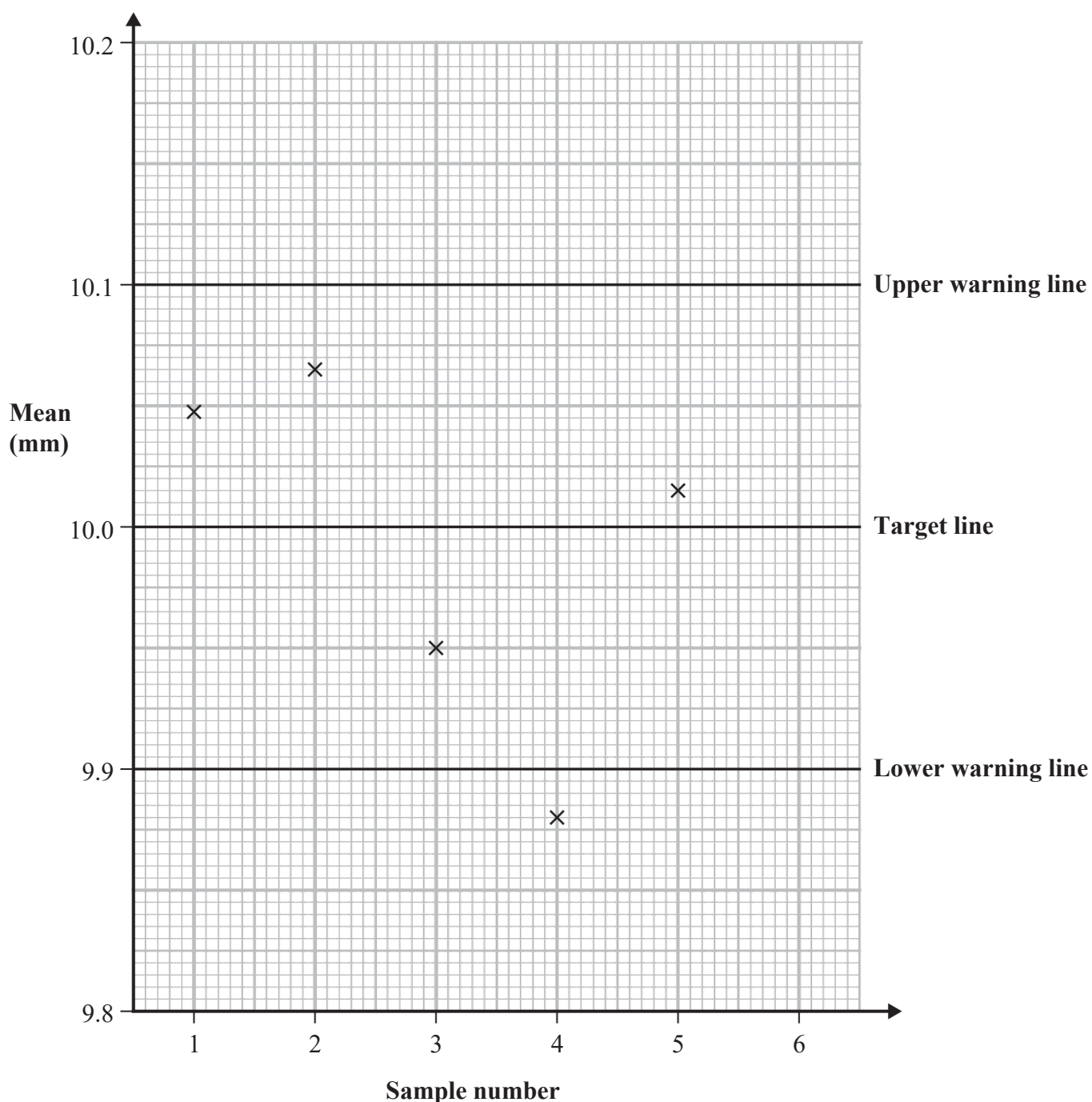
(Total for Question 7 is 2 marks)

8 A company uses a machine that produces buttons with a diameter of 10 mm.

The company uses a quality control chart to monitor the production process.

The company takes a sample of 3 buttons at regular intervals and measures their diameters.

Here is a quality control chart for the sample means.



When the machine is working properly the mean diameter, in mm, of a sample of 3 buttons is modelled by a normal distribution.

(a) Find the mean and standard deviation of the sample mean of size 3 used to set the warning limits on the control chart.

mean = mm

standard deviation =mm
(2)

The diameters of the buttons for sample 6 are

10.2 mm 10.15 mm 10.16 mm

(b) Plot sample 6 on the control chart.

(2)

(c) Complete the control chart by drawing upper and lower action lines.

(2)

Sample 5 was taken immediately after sample 4 and the machine was allowed to continue.

(d) Comment on whether this action was appropriate.

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(2)

(e) Describe what action should be taken after sample 6

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(1)

(Total for Question 8 is 9 marks)

9 Navtej wants to estimate the population of red squirrels in Kielder Forest.

Explain how Navtej could use the Petersen capture recapture method to estimate this population.

You should include

- a description of the Petersen capture recapture method that he would use
- a description of the calculation that he needs to make
- a comment on the reliability of the estimate, considering the assumptions of the Petersen capture recapture method.

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10 (a) Write down three characteristics of a normal distribution.

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3

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(3)

In a country, the heights of adult males are normally distributed with a mean height of 180 cm and a standard deviation of 8 cm.

Helen says,

“Around 5% of the adult males are taller than 196 cm.”

(b) Use statistical calculations to assess Helen’s conclusion.

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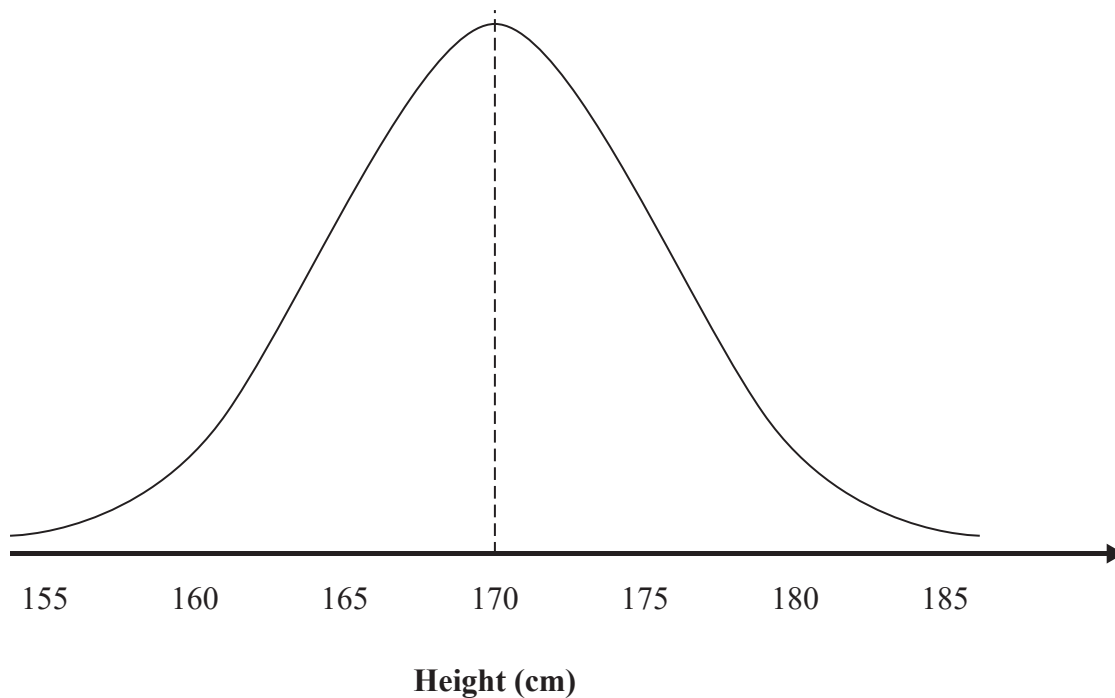
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(4)

In the same country, the heights of adult females are also normally distributed.

The diagram below shows a sketch of the distribution of the heights of a group of adult females in this country.



Helen makes the following two conclusions.

Conclusion 1: On average, the adult males are taller than the adult females.

Conclusion 2: The adult female heights are less consistent than the adult male heights.

(c) Assess Helen's two conclusions.

You should show clearly the values of any statistics you use in your answer.

Conclusion 1

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Conclusion 2

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(4)

(Total for Question 10 is 11 marks)

- 11 A garden contains only two types of flower, tulips and daffodils.
Each tulip and each daffodil is either white or yellow.

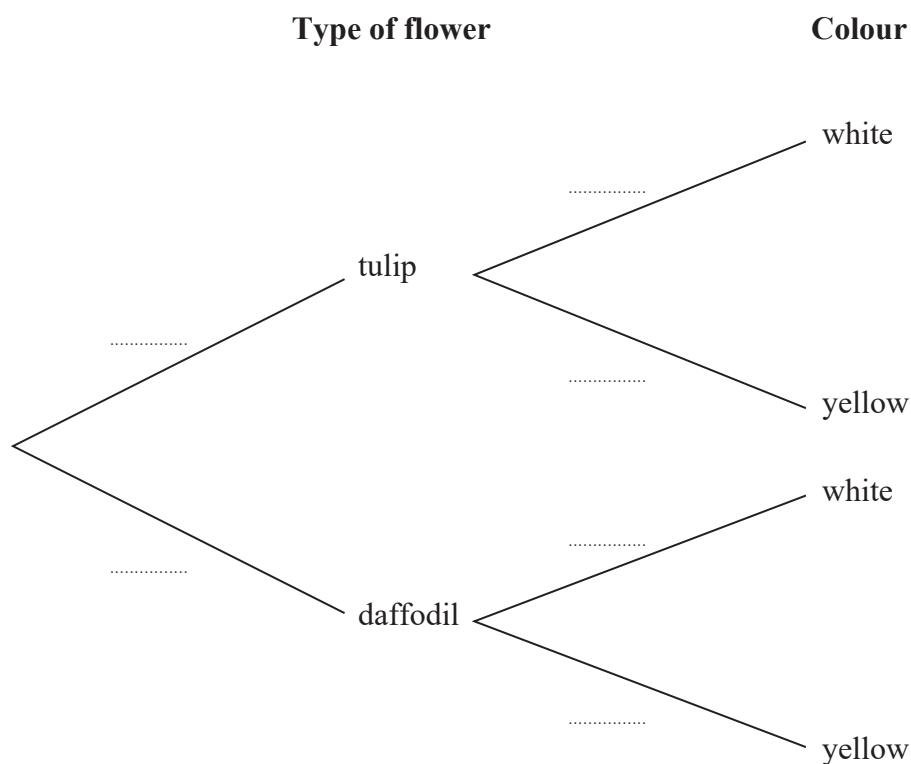
60% of the flowers are tulips.

30% of the tulips are white.

One flower is to be selected at random.

The probability of selecting a flower that is a daffodil and yellow is 0.04

(a) Complete the tree diagram.



(2)

Given that the flower selected at random is white,

(b) find the probability that the flower is a tulip.

(2)

(Total for Question 11 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS