



General Certificate of Secondary Education  
2025

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--	--

# Statistics

## Unit 1 (With Calculator)

Foundation Tier



[GST11]

\*GST11\*

**FRIDAY 13 JUNE, AFTERNOON**

### TIME

1 hour 30 minutes.

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

**You must answer the questions in the spaces provided.**

**Do not write outside the boxed area on each page or on blank pages.**

Complete in black ink only. **Do not write with a gel pen.**

Questions which require drawing can be completed using an HB pencil.

Any working **must** be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

Answer **all ten** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and protractor.

There is no formula sheet for this examination.

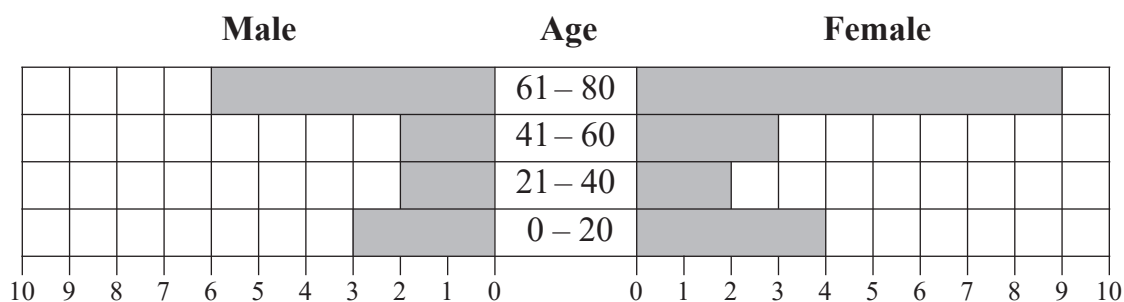
15892



\*20GST1101\*

Answer **all** questions

- 1 The population pyramid below shows the distribution of ages of volunteers at a charity shop.



- (a) How many females aged 61 – 80 volunteer at the charity shop?

Answer \_\_\_\_\_ [1]

- (b) How many more females than males volunteer at the charity shop?

Answer \_\_\_\_\_ [2]

According to the population pyramid, people aged 21 – 40 are less likely to volunteer at the charity shop than people of any other age group.

- (c) Suggest a possible reason for this.

\_\_\_\_\_  
 \_\_\_\_\_ [1]

- (d) Explain why it is not possible to find the range of ages of the volunteers from this population pyramid.

\_\_\_\_\_  
 \_\_\_\_\_ [2]



2 Sasha is doing some research about how often people visit a recycling centre.

She goes along to her local recycling centre and asks some people this question:

*How often do you visit the recycling centre?*

0     1–2     3–4     4–5     more than 5

(a) Why is this question not suitable?

\_\_\_\_\_ [1]

(b) Outline two problems with Sasha's response section.

1. \_\_\_\_\_  
\_\_\_\_\_ [1]

2. \_\_\_\_\_  
\_\_\_\_\_ [1]

(c) What type of data is Sasha collecting?

Circle two answers.

**Qualitative    Ordinal    Primary    Quantitative    Secondary** [2]

Before collecting her data, Sasha worked out the number of men and women she needed to survey and what age group they should be.

At the recycling centre, she surveyed the first people she saw who fitted these characteristics.

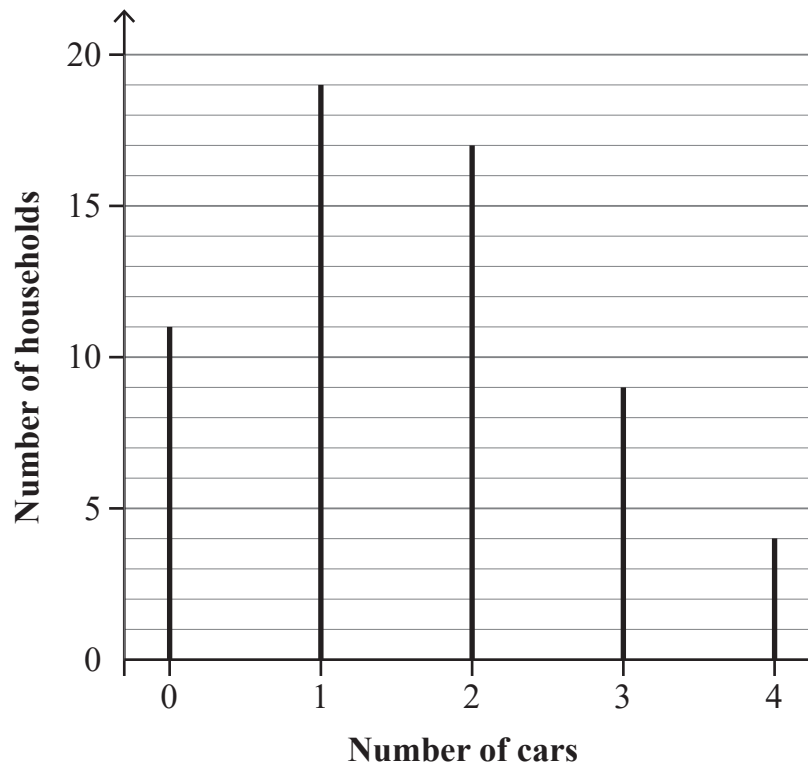
(d) Write down the name of this method of sampling.

\_\_\_\_\_ [1]

[Turn over



3 The graph below shows the number of cars per household on a certain street.



(a) How many households have more than two cars?

Answer \_\_\_\_\_ [1]

(b) Work out the mean number of cars per household on this street.

Answer \_\_\_\_\_ [3]



(c) Find the range of the number of cars per household on this street.

Answer \_\_\_\_\_ [1]

Gary says that a line graph would be better for this data, so he suggests joining the top of each vertical line.

(d) Tick the correct reason to explain why Gary is not correct.

The number of cars is a discrete variable.

The number of cars is a continuous variable.

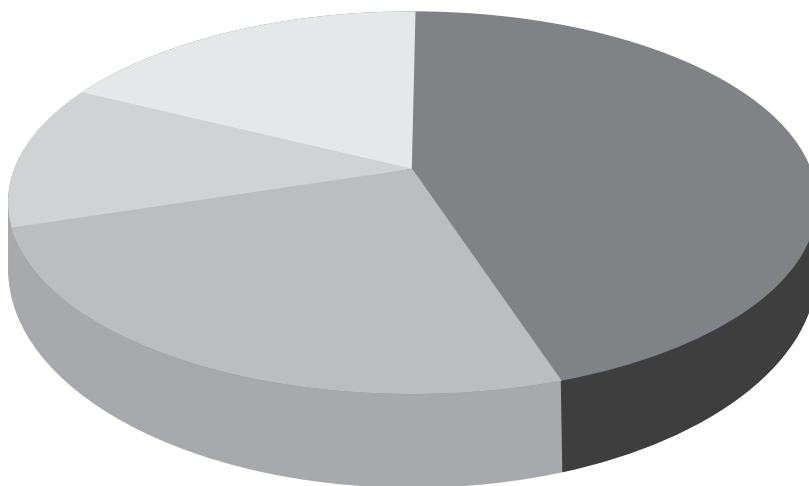
[1]



- 4 The table below shows the percentages of each ingredient contained in a type of oat cookie.

Ingredient	Percentage
Flour	45%
Butter	25%
Sugar	10%
Oats	20%

Ella has drawn the pie chart below to illustrate the data in the table above.



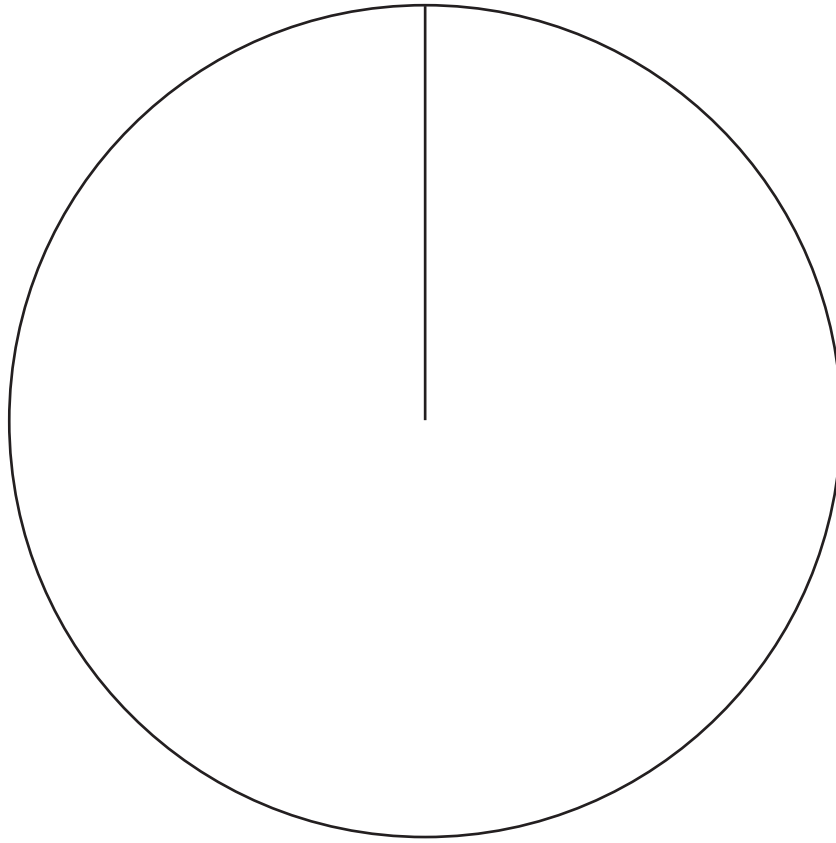
- (a) Give two reasons why Ella's pie chart is not suitable.

1. \_\_\_\_\_ [1]

2. \_\_\_\_\_ [1]



(b) Draw a pie chart below to illustrate the data in the table opposite.



[4]

Julie decides to adjust this recipe by increasing the amount of oats in it, but keeping the amounts of each other ingredient the same.

(c) Explain how this would affect the sizes of the angles for the ingredients in the pie chart above.

---

---

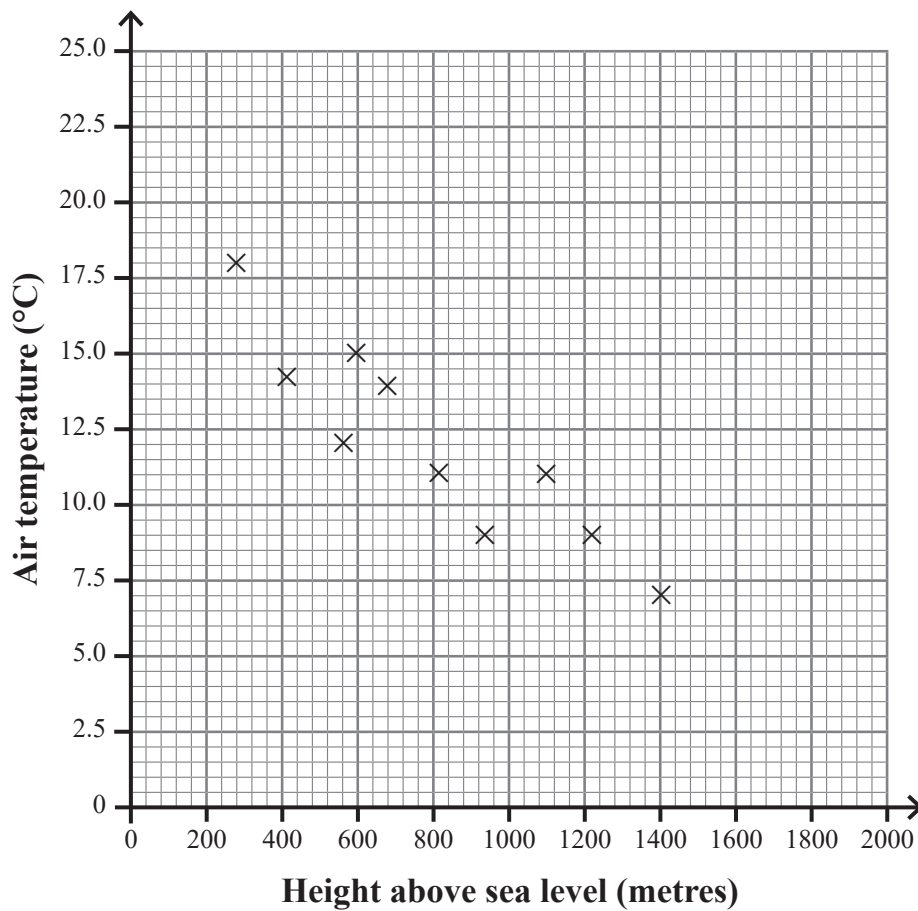
---

[2]

[Turn over



- 5 The scatter diagram below shows the height above sea level, in metres, and the air temperature, in  $^{\circ}\text{C}$ , for 10 locations.



The mean height above sea level for the 10 locations is 800 metres and the mean air temperature is  $12^{\circ}\text{C}$ .

- (a) Use this information to plot the double-mean point on the scatter diagram above and draw a line of best fit. [2]

- (b) Describe, and interpret, the correlation shown in the diagram.

---



---

[2]



(c) Use your line of best fit to estimate:

(i) the air temperature at a location which is 500 metres above sea level;

Answer \_\_\_\_\_ °C [1]

(ii) the height above sea level if the air temperature at the location is 10.0 °C.

Answer \_\_\_\_\_ metres [1]

Pat wants to estimate the air temperature at a location which is at sea level.

(d) Comment on whether or not Pat should use a line of best fit for his estimate.

---

---

---

[2]

[Turn over



- 6 Guests at a wedding had a choice of one of three main courses and one of three desserts.

The two-way table below shows how many people chose each option.

		Main Course			TOTAL
		Chicken	Beef	Vegetarian	
Dessert	Ice cream	26	24	17	
	Fruit salad		21	17	71
	Cheesecake	27	15		42
TOTAL		86		34	180

- (a) Complete the missing values in the table above. [3]

- (b) Write down the most popular main course.

\_\_\_\_\_ [1]

One of the 180 guests is chosen at random.

- (c) How would you describe the likelihood that this guest chose a vegetarian main course and cheesecake for dessert?

\_\_\_\_\_ [1]

- (d) What is the probability that one of the guests chose ice cream for dessert?

Answer \_\_\_\_\_ [1]

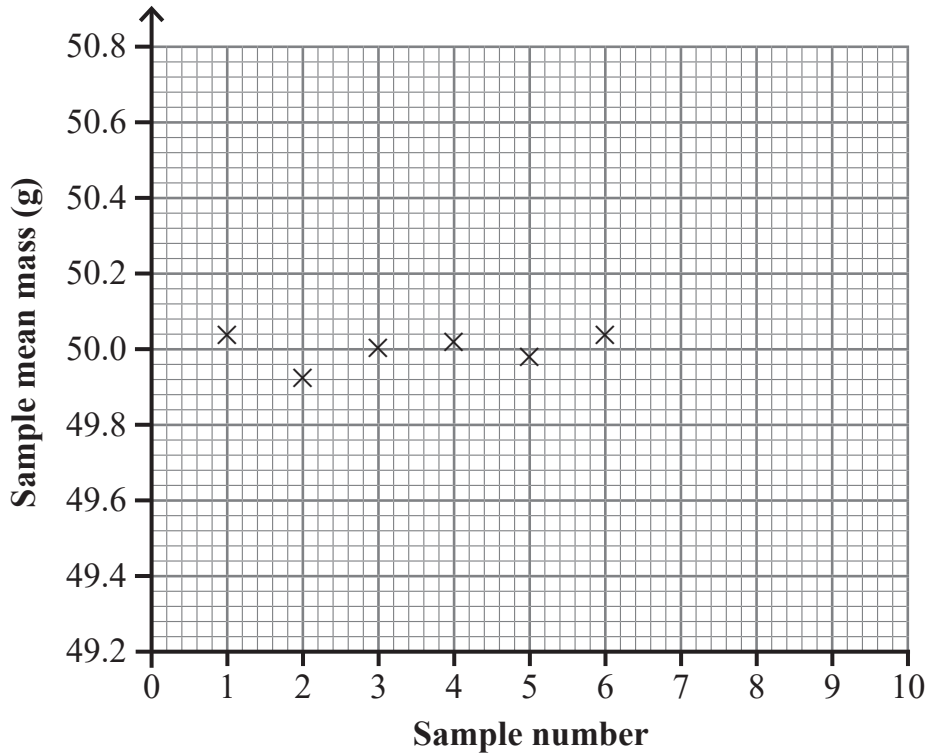




7 A production process is designed to fill bags with 50 g of crisps.

At regular intervals, a sample of bags is taken and the mean mass of crisps in the bags is calculated and plotted on a control chart.

The control chart below shows the first six sample means taken one morning.



The target mass of crisps per bag is 50 g.

Warning lines are set at 0.4 g above and below the target mass.

Action lines are set at 0.6 g above and below the target mass.

(a) On the control chart above, draw and label lines for:

- the target mass
- warning limits
- action limits

[3]



(b) Comment on what the control chart shows for the first six sample means.

---

---

---

[2]

The next four sample means are shown in the table below.

Sample 7	Sample 8	Sample 9	Sample 10
50.04 g	50.08 g	50.16 g	50.18 g

(c) Plot these sample means on the control chart opposite. [1]

(d) What action should be taken, if any, based on the values of these next four sample means?

Explain your answer.

---

---

---

---

---

[3]

[Turn over



- 8 Jacob recorded the mid-day temperature, in °C, for the first 15 days in September in Belfast.

His results are listed below.

11	17	11	7	6
13	22	7	8	16
15	9	16	18	20

Jacob also recorded the mid-day temperature, in °C, in Madrid for the same 15 days in September.

His results for Madrid are given in the back-to-back stem and leaf diagram below.

Madrid		Belfast
	0	
8 8 8	1	
9 9 7 4 2	2	
8 7 6 4 4 3 2	3	

8 | 1 means 18 °C

- (a) Complete the back-to-back stem and leaf diagram above with Jacob's results for Belfast. [3]
- (b) Find the median temperature for Belfast.

Answer \_\_\_\_\_ °C [1]



The upper quartile for Belfast is  $17^{\circ}\text{C}$ .

(c) Work out the interquartile range of the temperatures for Belfast.

Answer \_\_\_\_\_  $^{\circ}\text{C}$  [2]

The median temperature for Madrid is  $29^{\circ}\text{C}$  and the interquartile range is  $12^{\circ}\text{C}$ .

(d) Use this information and your answers to parts (b) and (c) to make two comparisons between the distributions of temperatures for Belfast and Madrid for this period in September.

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

[Turn over



9 The probability that a certain coin shows TAILS when tossed is  $\frac{3}{8}$

(a) How can you tell that this coin is biased?

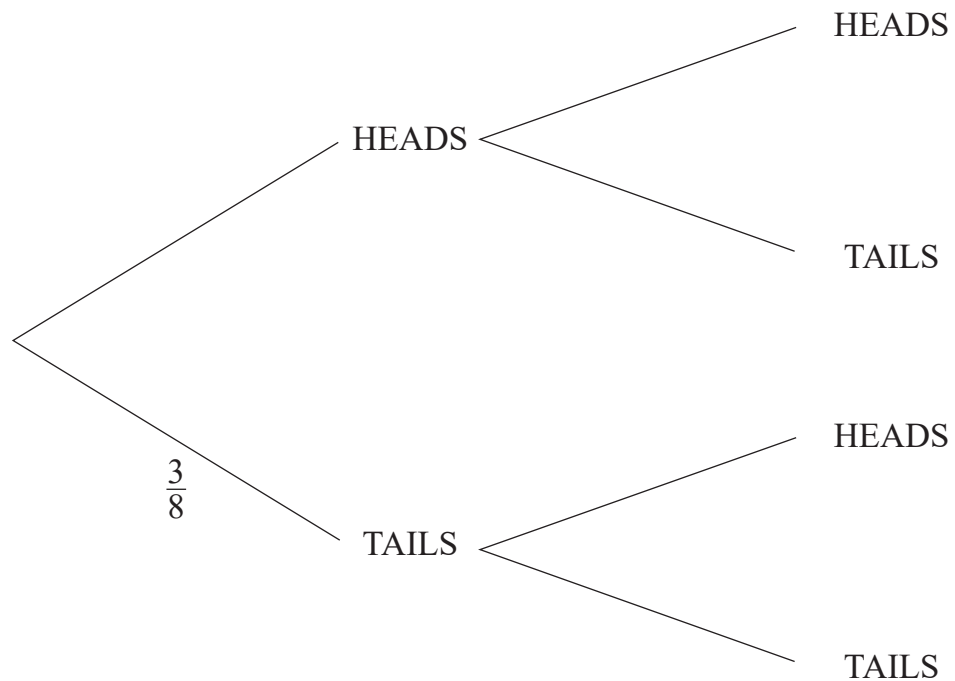
---

---

[1]

Jo tosses the coin twice.

(b) Complete the missing probabilities on the tree diagram below.



[2]



(c) In the space below, list all four possible outcomes when Jo tosses this coin twice.

[2]

(d) Find the probability that the coin shows HEADS on both tosses.

Answer \_\_\_\_\_ [2]

(e) Calculate the probability that Jo obtains HEADS on one toss and TAILS on the other.

Answer \_\_\_\_\_ [2]

Jo tosses the coin 200 times.

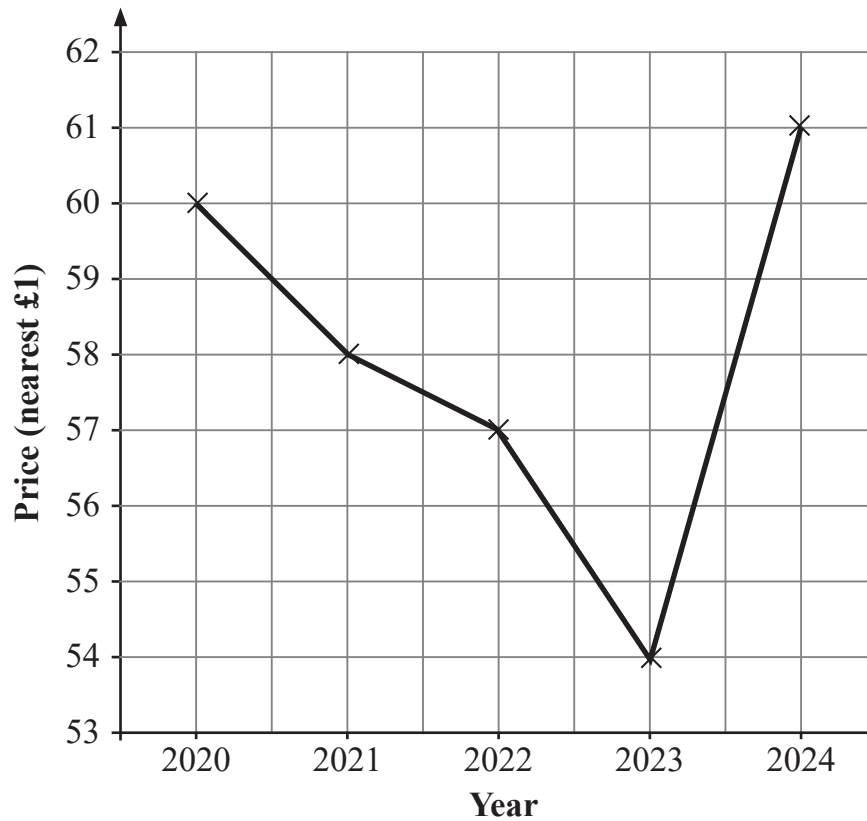
(f) How many times should Jo expect to obtain HEADS in these 200 tosses?

Answer \_\_\_\_\_ [2]

[Turn over



- 10 The time series graph below shows the price of a pair of shoes, to the nearest £1, between 2020 and 2024



- (a) Describe the trend in the price of this pair of shoes between 2020 and 2024

\_\_\_\_\_  
\_\_\_\_\_ [1]

- (b) (i) Between which two consecutive years was there the smallest change in price?

Answer \_\_\_\_\_ and \_\_\_\_\_ [1]

- (ii) How is this shown on the graph above?

\_\_\_\_\_  
\_\_\_\_\_ [1]



Using 2020 as the base year, Laura calculates index numbers for the years 2021 to 2024

(c) Write down the index number for 2020

Answer \_\_\_\_\_ [1]

Laura works out the index number for 2024 to be 101.7

(d) Explain the meaning of this value in relation to the price of this pair of shoes.

---

---

---

[3]

(e) Using 2020 as the base year, calculate the index number for 2023

Answer \_\_\_\_\_ [3]

---

**THIS IS THE END OF THE QUESTION PAPER**

---



**DO NOT WRITE ON THIS PAGE**

<b>For Examiner's use only</b>	
<b>Question Number</b>	<b>Marks</b>
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

<b>Total Marks</b>	
--------------------	--

Examiner Number

Permission to reproduce all copyright material has been applied for.  
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA will be happy to rectify any omissions of acknowledgement in future if notified.

15892/1



\*20GST1120\*