Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

STATISTICS 4073/2
PAPER 2

SPECIMEN PAPER 2 hours 30 minutes

Candidates answer on the question paper
Additional materials: Electronic calculator Mathematical Set
Allow candidates 5 minutes to count pages before the examination.

This booklet should not be punched or stapled and pages should not be removed.

TIME 2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES
Write your name, Centre number and candidate number in the spaces at the top.
Write your centre and candidate number in the boxes on the top right corner of every page of this paper.
Check if the booklet has all the pages and ask the invigilator for a replacement if there are duplicate or missing pages.
Answer **all** questions in Section A and any **four** questions in Section B
Write your answers in the spaces provided on the question paper.
If working is needed for any question it must be shown in the space below that question.
Omission of essential working will result in loss of marks. Decimal answers which are not exact should be given to three significant figures unless stated otherwise.

INFORMATION FOR CANDIDATES
The number of marks is given in brackets [ ] at the end of each question.

This question paper consists of 19 printed pages and 1 blank page.

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Section A [36 marks]

Answer **all** questions in this section.

1 State any two differences between census and survey.

CENSUS	SURVEY
1.	1.
2.	2.

[4]

2 The following table shows the Price Relatives and weights given to the items **A, B** and **C**.

item	A	B	C
price relative	120	90	x
weights	6	4	2

Given that the weighted aggregate cost index is 110, find the value of x.

Answer _____ [4]

3 Calculate the maximum absolute error of the expression:

$$\frac{27 \times 24}{16}$$

Answer _____ [5]

4 The distances in (km) covered in a day by 40 cyclists during their training sessions are as shown in the following table:

distance (km)	**number of cyclists**
10 – 20	2
21 - 30	9
31 - 40	15
41 – 50	11
51 – 60	3

Calculate, to 2 decimal places, an estimate of the

(a) mean,

Answer _____ [3]

4 **(b)** variance,

Answer_____ [4]

(c) standard deviation.

Answer_____ [2]

5 The following table shows the number of learners in each form, at a high school.

form	**1**	**2**	**3**	**4**	**5**	**6**
number of learners	300	280	200	150	90	85

A stratified random sample of 60 learners is to be selected to represent the school at a certain function.

(a) Construct a table showing the number of learners from each form required to make up the sample.

[4]

(b) Explain how the required learners can be selected from each form.

_____

_____

_____

_____ [3]

6. A packet containing 15 apples has 10 good ones and 5 bad ones. If 3 apples are taken from the packet without replacement, find the probability that,

(a) they are all good,

Answer_____ [2]

(b) one apple is bad,

Answer_____ [3]

(c) at least two apples are good.

Answer_____ [2]

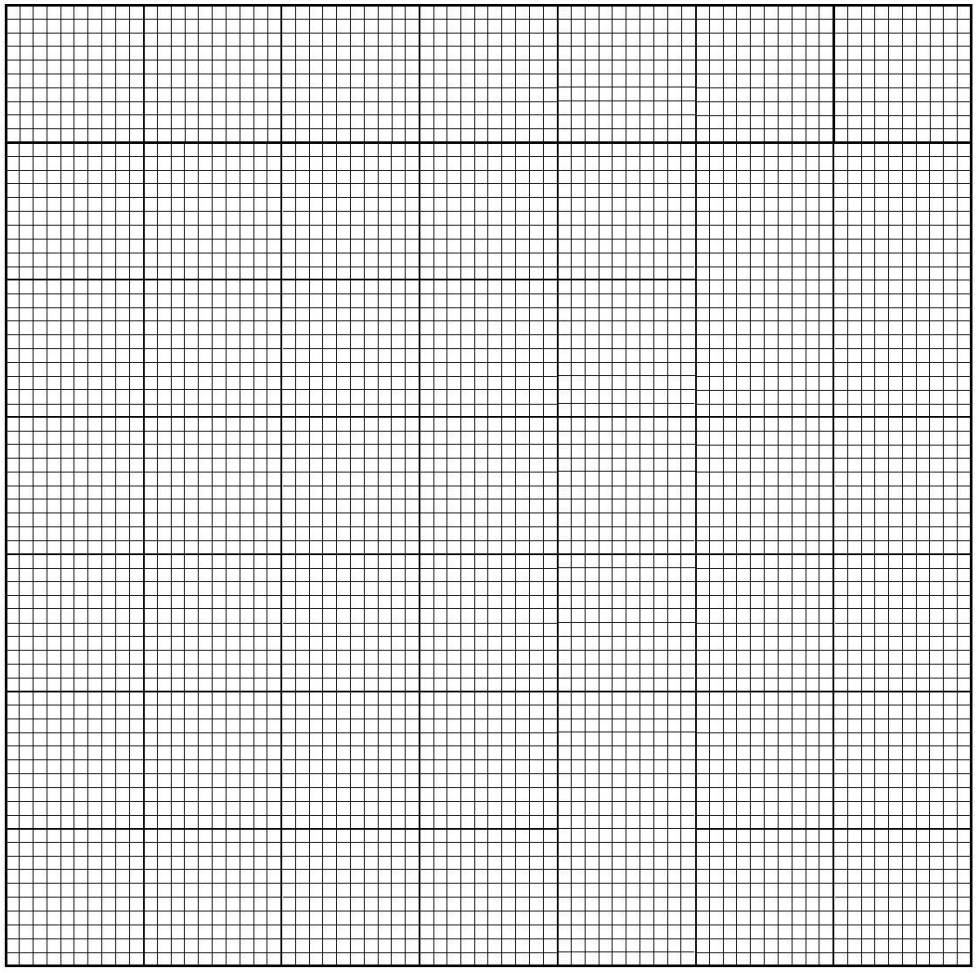
Section B (64 marks)

Answer any **four** questions in this section

7 The following table shows the marks in Mathematics and English for 10 candidates.

Mathematics (x)	43	31	83	39	13	20	52	96	30	63
English (y)	53	63	25	53	90	80	43	27	66	29

(a) Using a scale of 2cm to represent 10 marks on both axes, draw a scatter diagram for the marks.



[4]

7 **(b)** Calculate

(i) M $(\bar{x}, \bar{y})$

(ii) L $(\bar{x}, \bar{y})$

(iii) U $(\bar{x}, \bar{y})$

Answer **(i)** M $(\bar{x}, \bar{y})$ = _____ [3]

(ii) L $(\bar{x}, \bar{y})$ = _____ [1]

(iii) U $(\bar{x}, \bar{y})$ = _____ [1]

(c) Draw the line of best fit. [1]

(d) Write down

(i) the gradient of the line of best fit, to 2 decimal places.

(ii) the y – intercept of the line of best fit, to the nearest whole number.

(i) _____ [2]

(ii) _____ [1]

7 **(e)** **(i)** Write down the equation of the line of best fit in the form $y = mx + c$

Answer_____ [1]

(ii) Use the equation to find y when $x = 71$.

_____

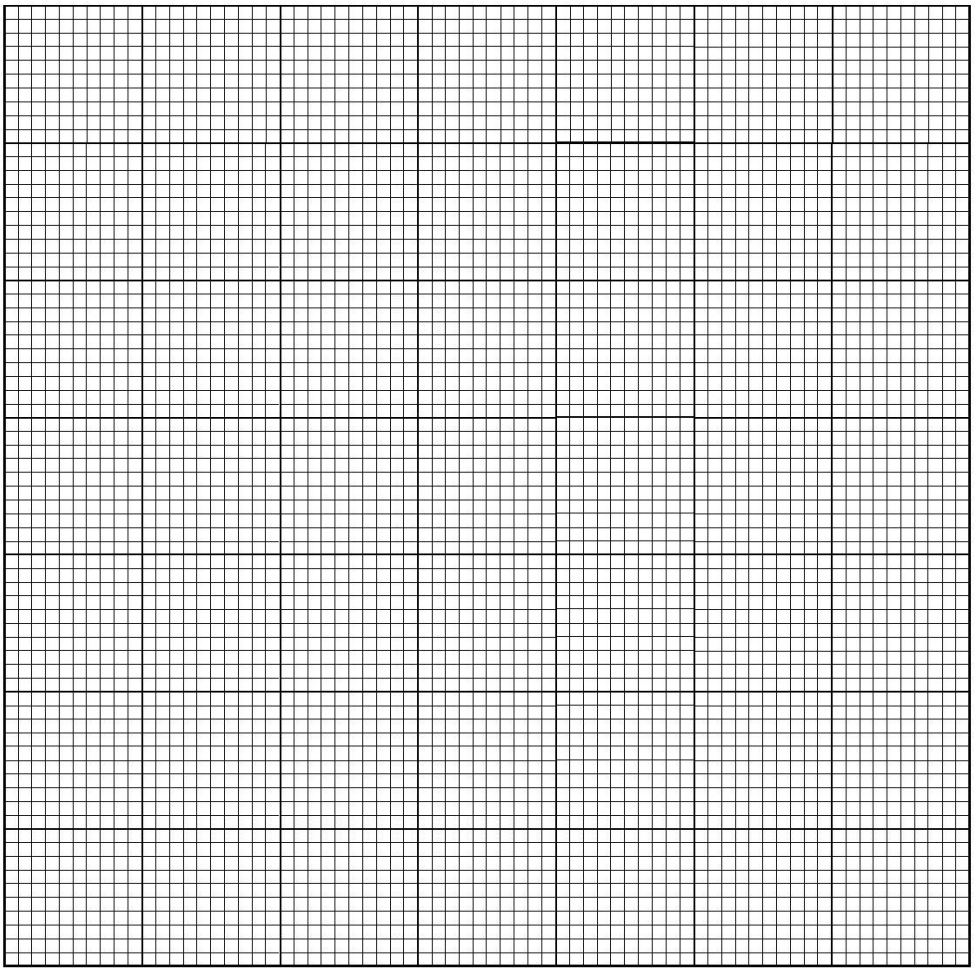
_____ [2]

8 The following table shows the yearly car sales figures in ($ million) for a certain company for 3 years.

year	Quarters			
	1st	**2nd**	**3rd**	**4th**
2012	15	19	28	24
2013	14	21	32	25
2014	14	22	30	23

(a) Using a scale of 1cm to represent one quarter on the horizontal axis and 2cm to represent $5 million on the vertical axis, draw a time series graph.

8 **(a)**



[5]

(b) Calculate the 4 point moving averages.

Answer_____ [3]

8 **(c)** Calculate the centred moving averages.

_____ [3]

(d) Plot the centred moving averages. [2]

(e) Join the consecutive points to come up with a trend line. [1]

(f) Comment on the trend and on the time series.

(i) Trend _____

_____ [1]

(ii) Time Series _____

_____ [1]

9 Fifty learners sat for a Biology test which was marked out of 100. Their marks were as follows:

57	65	51	64	44	33	94	87	43	40
63	60	51	14	38	66	75	71	48	53
73	81	54	41	13	21	61	31	53	45
22	52	56	68	44	54	58	45	59	68
70	62	36	49	76	55	56	49	33	69

(a) The marks were grouped as shown in the table.

mark	**frequency**
$10 \leq x < 20$	
$20 \leq x < 30$	
$30 \leq x < 40$	
$40 \leq x < 50$	
$50 \leq x < 60$	
$60 \leq x < 70$	
$70 \leq x < 80$	
$80 \leq x < 90$	
$90 \leq x < 100$	

(i) Complete the frequency table. [4]

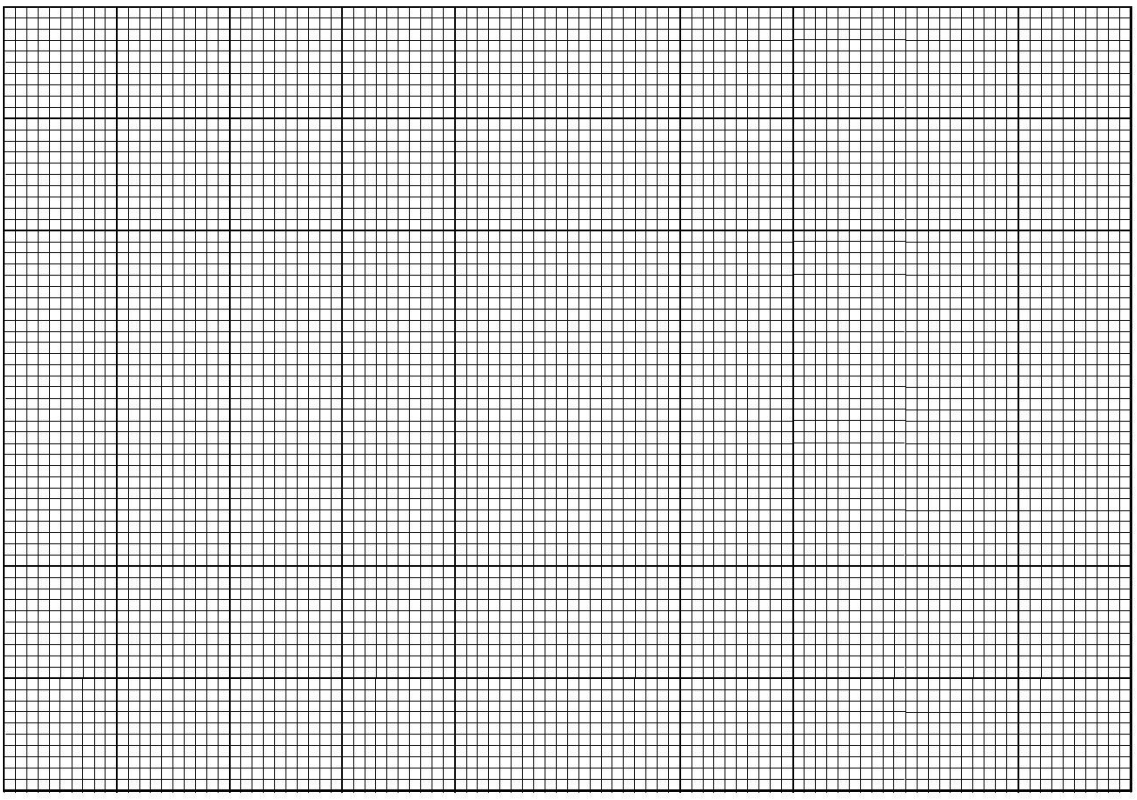
(ii) State the modal class

Answer _____ [1]

9 **(b)** Use the data in the table to construct a cumulative frequency table.

[3]

(c) Construct a cumulative frequency curve using a scale of 2cm to represent 10 students on the vertical axis and 2cm to represent 10 marks on the horizontal axis.



[4]

9 **(d)** Scoring at least 75 marks earns a learner grade A and scoring at least 60 marks but less than 75 marks earns a learner grade B.
Using the graph in **(c),** find the percentage of learners who attained:

(**i**) grade A,

Answer _____ [2]

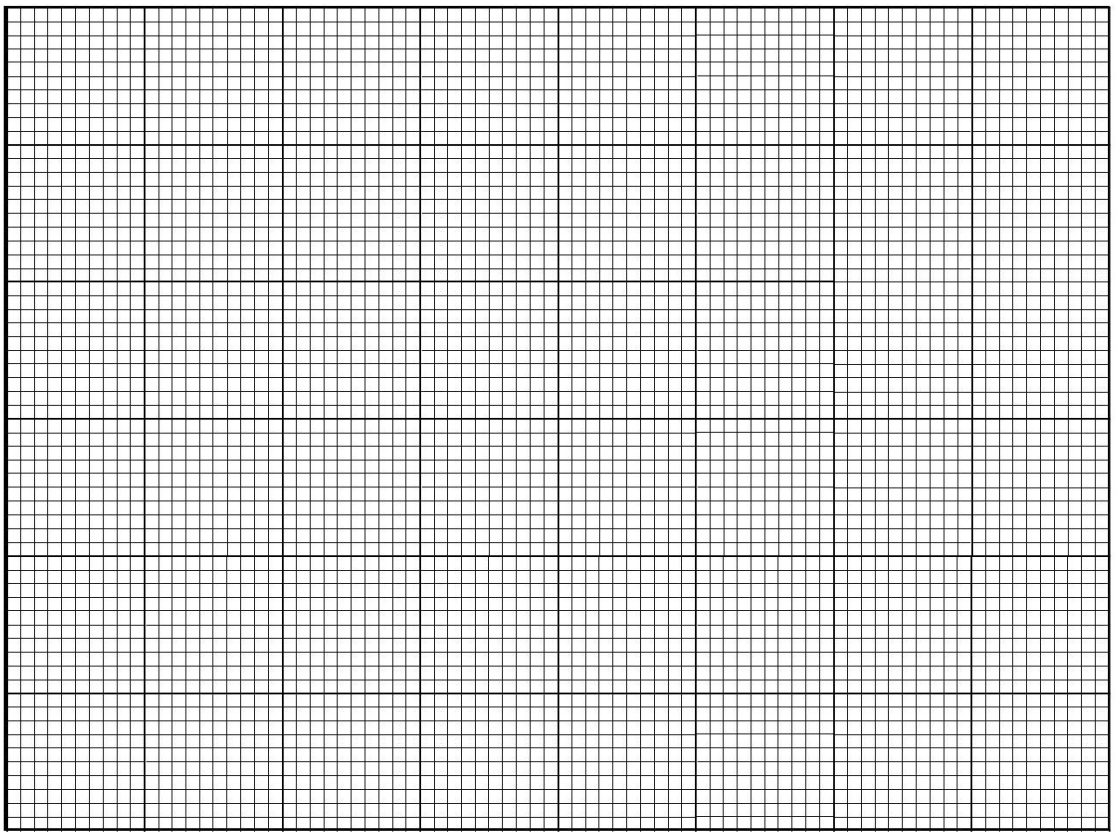
(ii) grade B

Answer_____ [2]

10 The average times (minutes) taken by employees of a certain factory to travel to work each morning, are shown in the following table:

time taken (minutes)	number of employees
$20 \leq m < 25$	6
$25 \leq m < 30$	11
$30 \leq m < 40$	25
$40 \leq m < 55$	12

(a) Using a scale of 2 cm to represent 5 minutes on the horizontal axis and 2 cm to represent 0.5 units on the vertical axis, draw a histogram to illustrate the distribution.



[7]

10 **(b)** Use the graph to find the modal travelling time.

Answer _____ [2]

(c) Calculate an estimate of the median using interpolation method.

Answer _____ [3]

(d) Why is the median in **(c)** an estimate?

_____

_____

_____ [2]

10 **(e)** Suggest any **two** reasons why some workers take less time to travel to work.

_____

_____

_____ [2]

11 Two balls are rolled down a slope so that each ball comes to rest in one of the five slots, scoring the number of points in the particular slot as shown in the diagram.

8	**3**	**12**	**3**	**8**

A ball can rest in any slot. It is also possible that both balls can rest in the same slot. A player's score is the total of the points scored by the two balls.

(a) List all the possible scores.

Answer _____ [2]

11 **(b)** Expressing the answer as a fraction in its lowest terms, calculate the probability that a player gets a score of

(i) 24,

Answer _____ [2]

(ii) 11.

Answer _____ [3]

11 **(c)** **(i)** Draw a table showing possible scores and corresponding probabilities.

x	
P(X = x)	

[6]

(ii) Calculate a player's expected score.

Answer _____ [3]

20
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