



ZIMBABWE SCHOOL EXAMINATIONS COUNCIL
General Certificate of Education Ordinary Level
STATISTICS
PAPER 1

4073/1

SPECIMEN PAPER

2 hours 30 minutes

Candidates answer on the question paper

Additional materials: Answer paper
Electronic calculator
Mathematical Set

Allow candidates 5 minutes to count pages before the examination.

TIME 2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of answer paper or booklet provided.

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.

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 9 printed pages and 3 blank pages.

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2

1 Define the following terms as they are used in statistics

(a) Variable [1]

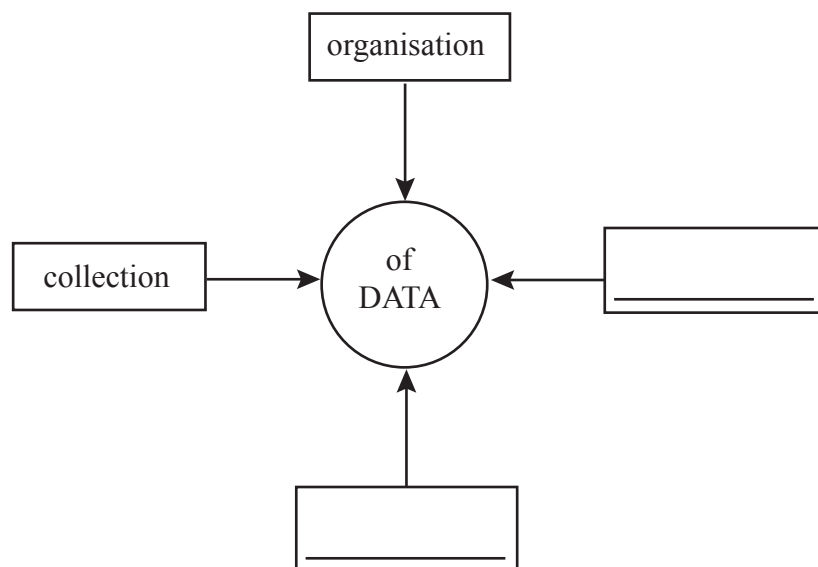
(b) Average [1]

2 Distinguish between a *parameter* and a *statistic*. [2]

3 (a) List any **two** components of time series. [2]

(b) Give any **one** smoothening technique. [1]

4 Statistics involves collection and organisation of data. Complete the following diagram, filling in **two** missing processes.



[2]

5 Compare and contrast *stratified sampling* and *quota sampling*. [4]

3

- 6 The table below represents the probability distribution of a discrete random variable X , where a and b are constants.

X	1	2	3
$P(X = x)$	a	b	0,1

Given that $E(X) = 1.5$, find the value of a and b . [4]

- 7 (a) Define the term *data*. [1]
 (b) Distinguish between *data* and *information*. [3]

- 8 **Table 8.1** shows the prices of 1 kg of milk powder in the years 2010 to 2014.

Table 8.1

Year	2010	2011	2012	2013	2014
Price(\$)	3,50	3,65	3,80	4,20	4,50

- (a) Calculate, correct to 2 decimal places, the price relative for 2012 and 2014, using 2010 as the base year. [3]
 (b) Comment on the results obtained in (a). [1]
- 9 (a) Give **one** situation where a pie chart **cannot** be used appropriately to represent data. [1]

4

- (b) **Table 9.1** shows how a group of 28 students travelled to school on a particular day.

Table 9.1

method of travel	number of pupils
bus	12
car	2
bicycle	5
walking	9

If the data is to be represented on a pie chart, calculate, to the nearest degree, the sector angles for those who

- (i) travelled by car, [2]
- (ii) walked. [1]
- 10** Give any **two** differences and any **two** similarities between questionnaires and interviews. [4]
- 11** The standard deviation of three numbers **a**, **b**, and **c** is 2,8.
Find the standard deviation of
- (a) $3\mathbf{a}$; $3\mathbf{b}$ and $3\mathbf{c}$, [2]
- (b) $2\mathbf{a} - 5$; $2\mathbf{b} - 5$ and $2\mathbf{c} - 5$. [2]

12 Fig.12.1 shows a scatter diagram and the line of best fit.

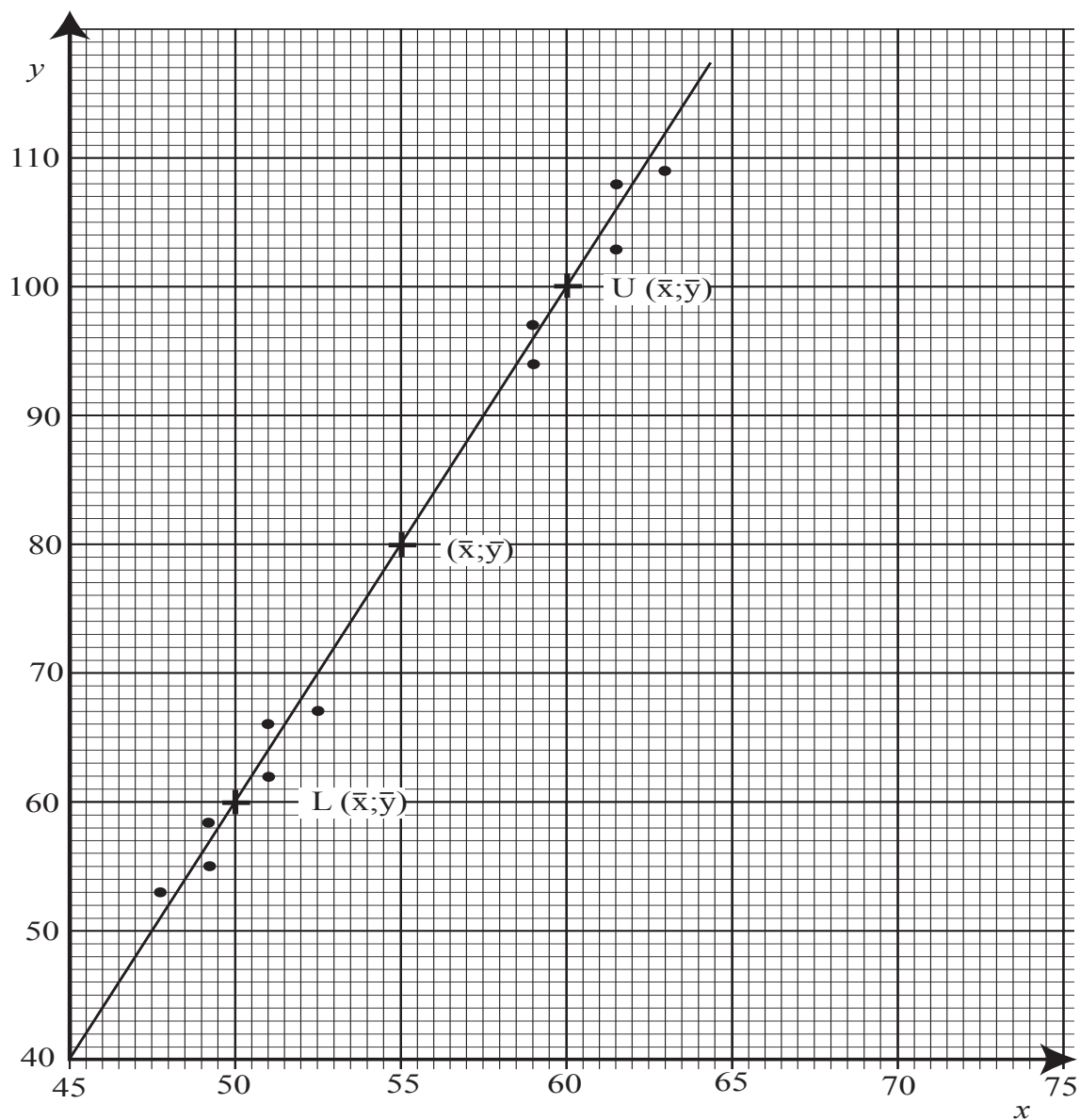


Fig.12.1

(a) Explain why the value of **C (y-intercept)** cannot be read directly from the graph. [2]

(b) Write down the co-ordinates of the,

(i) mean point, [1]

(ii) semi-averages. [2]

6

- 13** A bag contains 5 red and 8 blue balls. All balls are identical except for colour. Two balls are drawn at random from the bag one after the other without replacement.

Find the probability that,

- (a) both balls are of the same colour, [2]
- (b) the second ball drawn is red, given that the first ball drawn is blue. [3]

- 14** (a) **Table 14.1** shows number of children in families.

Table 14.1

Number of children in a family	0	1	2	3	4	5	6	7
Number of families	10	14	42	34	20	10	1	2

Calculate the,

- (a) mean, [2]
- (b) standard deviation. [3]

- 15** **Table 15.1** shows the sales of a certain company in seven months.

Table 15.1

month	January	February	March	April	May	June	July
Sales in (000)	28	20	15	30	25	16	9

- (a) Define the term *centred moving averages*. [2]
- (b) Calculate the
- (i) 4-point moving averages [2]
- (ii) centred moving averages. [2]

7

- 16** Find the equation of the line of best fit passing through the points
(9; 18) and (16; 23). [5]
- 17** The following is a distribution of marks scored by a student in 5 different Statistics examinations.
87; 91; 100; 19; 96.
- (a) Identify the outlier in this data set. [1]
- (b) Find the,
- (i) median, [1]
- (ii) range. [2]
- (c) Give any **one** advantage and any **one** disadvantage of the range as a measure of dispersion. [2]

- 18** Table 18.1 shows marks obtained by a group of students in a quiz.

Table 18.1

Mark	4	5	6	7	8	9
Number of students	2	7	4	1	5	2

Find the

- (a) number of students who participated in the quiz, [2]
- (b) median mark, [2]
- (c) arithmetic mean of the marks. [3]

8

19 (a) Define the term *error*. [1]

(b) A Statistics student estimated that 260 students will attend a sports function, but 325 came.

Calculate the

(i) absolute error, [2]

(ii) relative error, [2]

(iii) percentage error. [2]

20 (a) Express 0,04302 correct to

(i) 2 decimal places, [1]

(ii) 3 significant figures. [1]

(b) **Table 20.1** shows the speed of cars passing through a busy road.

Table 20.1

speed of a car (km/hr)	number of car
$50 \leq x < 60$	1
$60 \leq x < 70$	3
$70 \leq x < 80$	6
$80 \leq x < 100$	10
$100 \leq x < 110$	5

Calculate, giving your answers correct to 2 decimal places, an estimate of the

(i) mean, [3]

(ii) variance. [3]

21 **Table 21.1** relates to population in a certain town.

Age group (years)	Population (000)	Deaths	Standard population (%)
0 to 20	9	72	26
21 to 49	12	36	18
50 to 69	13	156	24
70 and over	6	480	32

- (a) Calculate, correct to 2 decimal places, the
- (i) crude death rate, [2]
- (ii) standard death rate. [5]
- (b) Compare and comment on the results obtained in (a). [2]

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