STATISTICS

KCSE 1989 – 2012 Form 4 Mathematics
Answer all the questions

1. **1989 Q12 P1**

The table below shows the defective bolts from 40 samples

No. of detective bolts (x)	0	1	2	3	4	5
Frequency (y)	20	8	6	4	1	1

Calculate the standard deviation (5marks)

2. **1989 Q20 P2**

The table below shows the life expectancy, in hours, of 106 bulbs

Expectancy (hours)	Frequency (f)
90-94	5
90-94	14
100-104	16
105-109	17
110-114	24
115-119	12
120-124	11
125-129	4
130-134	2
135-139	1

(a) Calculate the mean life expectancy, (4marks)
(b) On the grid provided draw a cumulative frequency curve and use it to determine the median (4marks)

3. **1990 Q23 P1**

For a sample of 100 bulbs the time taken for each bulb to burn out was recorded. The table below shows the results of the measurements.

Time (hours)	Frequency (Number of bulbs)
12-19	6
20-24	10
25-29	9
30-34	5
35-39	7
40-44	11
45-49	15
50-54	13
55-59	8
60-64	7
65-69	5
70-74	4

Using an assumed mean or otherwise, calculate
(i) The mean
(ii) The standard deviation of the distribution (8marks)

4. **1991 Q22 P1**

The table below gives marks scored by 80 candidates in a test

Marks	1-10	11-20	21-30	31-40	41-50
No. of candidates	5	13	32	27	3

Using an assumed mean of 25.5 calculate the mean, the variance and the standard deviation of the marks (8marks)

5. **1992 Q 23 P1**

Lengths of 100 mango leaves from a certain mango tree were measured to the nearest centimeter and recorded as per the table below

Lengths in cm	**No. of leaves**
10 to 12	3
13 to 15	12
16 to 18	40
19 to 21	37
22 to 24	8

(a) On the grid provided, draw a cumulative frequency graph to represent this data (4marks)

(b) Use the graph to estimate

(i) The median length of the leaves (1mark)

(ii) The number of leaves whose lengths lie between 13 and 17cm (3marks)

6. **1993 Q20 P2**

The table below shows the distribution of marks scored in a test by standard 8 pupils in one school.

Marks	No. of pupils
30-34	1
35-39	5
40-44	10
45-49	10
50-54	19
55-59	20
60-64	20
65-69	8
70-74	4
70-79	3

Using 57 as the assumed mean mark, calculate

(i) The actual mean for the grouped marks (3marks)

(ii) The standard deviation of the marks (5marks)

7. **1994 Q10 P1**

Determine the interquartile range for the following numbers: (3marks)

4, 9, 5, 4, 7, 6, 2, 1, 6, 7, 8.

8. **1994 Q21 P2**

The table below gives marks obtained in a mathematics test by 47 candidates

Marks	31-35	36-40	41-45	46-50	51-55	56-60
No. of candidates	4	6	12	15	8	2

(a) Calculate the mean score

(b) Draw a cumulative frequency graph and use it to estimate

(i) The median score (2marks)

(ii) The semi-interquartile range (6marks)

9. **1995 Q18 P2**

The table below shows high altitude wind speeds recorded at a weather station in a period of 100 days.

Wind speed (knots)	Frequency (days)
0 - 19	9
20 - 39	19
40 - 59	22
60-79	18
80- 99	13
100- 119	11
120-139	5
140-159	2
160-179	1

(a) On the grid provided draw a cumulative frequency graph for the data (4 marks)

(b) Use the graph to estimate

(i) The interquartile range (3 marks)

(ii) The number of days when the wind speed exceeded 125 knots (1 mark)

10. **1996 Q10 P1**

Five pupils A, B, C, D and E obtained the marks 53, 41, 60, 80 and 56 respectively. The table below shows part of the work to find the standard deviation.

Pupil	Mark x	$x - \bar{x}$	$(x-\bar{x})^2$
A	53	-5	
B	41	-17	
C	60	2	
D	80	22	
E	56	-2	

(a) Complete the table (1 mark)

(b) Find the standard deviation (3 marks)

11. **1996 Q19 P2**

In an agricultural research centre, the lengths of a sample of 50 maize cobs were measured and recorded as shown in the frequency distribution table below.

Length in cm.	Number of cobs.
8 – 10	4
11 – 13	7
14 – 16	11
17 – 19	15
20 – 22	8
23 – 25	5

Calculate;

a) the mean

b) i) the variance

ii) the standard deviation (8marks)

12. **1997 Q22 P2**

The table below shows the frequency distribution of masses of 50 new-born Calves in a ranch.

Mass (kg)	Frequency
15 – 18	2
19 – 22	3
23 – 26	10
27 – 30	14
31 – 34	13
35 – 38	6
39 – 42	2

a) On the grid provided draw a cumulative frequency graph for the data (4marks)

b) Use the graph to estimate

(i) the median mass (1mark)

(ii) the probability that a calf picked at random has a mass lying between 25kg and 28 kg (3marks)

13. **2001 Q18 P2**

The marks obtained by 10 pupils in an English test were 15,14,13,12,P,16,11,13,12 and 17.The sum of the squares of the marks, $\sum x^2$ is 1,794

a) Calculate the:

i) Value of P

ii) Standard deviation.

b) If each mark is increased by 3, write down the:

i) New mean

ii) New standard deviation

14. **2002 Q19**

The following distribution shows the masses to the nearest kilogram of 65 animals in a certain farm.

Mass Kg	26-30	31-35	36-40	41-45	46-50	51-55
frequency	9	13	20	15	6	2

a) On the grid provided draw the cumulative frequency curve for the given information.

b) Use the graph to find the:-

i) Median mass

ii) Inter-quartile range

iii) Percentage of animals whose mass is at least 42kg.

15. **2003 Q18 P1**

The mass of 40 babies in a certain clinic were recorded as follows:

Mass in Kg	No. of babies.
1.0 – 1.9	6
2.0 – 2.9	14
3.0 -3.9	10
4.0 – 4.9	7
5.0 – 5.9	2
6.0 – 6.9	1

Calculate

(a) The inter – quartile range of the data.

(b) The standard deviation of the data using 3.45 as the assumed mean

16. **2004 Q18 P2**

The table below shows the ages in years of 60 people who attended a conference.

Age in years	30 – 39	40- 49	50- 59	60- 69	70-79
Number of people	10	12	18	17	3

Calculate

(a) The inter-quartile range of the data

The percentage of the people in the conference whose ages were 54.5 years and below.

17. **2005 Q22 P1**

The data below shows the masses in grams of 50 potatoes

Mass (g)	Frequency (days)
25- 34	3
35-44	6
45 - 54	16
55- 64	12
65 - 74	8
75-84	4
85-94	1

(a) On the grid provided, draw a cumulative frequency curve for the data (4mks)

(c) Use the graph in (a) above to determine

(i) The 60^{th} percentile mass

(ii) The percentage of potatoes whose masses lie in the range 53 g to 68g (3mks)

18. **2006 Q5 P2**

The data below represents the ages in months at which 6 babies started walking:
9,11, 12, 13, 11, and 10. Without using a calculator, find the exact value of the variance (3 marks)

19. **2008 Q22 P2**

The table below shows the distribution of marks scored by 60 pupils in a test.

Marks	Frequency (days)
11-20	2
21-30	5
31-40	6
41-50	10
51-60	14
61-70	11
71-80	9
81-90	3

a) On the grid provided, draw an ogive that represents the above information (4mks)

b) Use the graph to estimate the interquartile range of this information. (3mks)

20. **2009 Q19 P2**

The table below shows the number of goals scored in handball matches during a tournament

Number of goals	0-10	11-19	20-29	30-39	40-49
Number of matches	2	14	24	12	8

(a) Draw a cumulative frequency curve on the grid provided (5 marks)

(b) Using the curve drawn in (a) above determine

(i) The median; (1 mark)

(ii) The number of matches in which goals scored were not more than 37; (1 mark)

(iii) The inter-quartile range

21. **2012 Q8 P2**

The masses in kilograms of 20 bags of maize were ;
90,94,96,98,99,102,105,91,102,99,105,94,99,90,94,99,98,96,102 and 105.
Using an assumed mean of 96kg, calculate the mean mass, per bag, of the maize (3 marks)