

NAME _____ INDEX NUMBER _____

SCHOOL _____ DATE _____

STATISTICS I

<i>KCSE 1989 - 2012 Form 2 Mathematics</i>		Working Space																		
1.	<p>1990 Q2 P2</p> <p>The shoe sizes for 40 pupils in a class were recorded as shown in the table below</p> <table border="1"><thead><tr><th>Shoe size</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th></tr></thead><tbody><tr><td>Number of pupils</td><td>1</td><td>4</td><td>18</td><td>14</td><td>2</td><td>1</td></tr></tbody></table> <p>Determine the mean shoe size in the class</p> <p style="text-align: right;">(2 marks)</p>	Shoe size	4	5	6	7	8	9	Number of pupils	1	4	18	14	2	1					
Shoe size	4	5	6	7	8	9														
Number of pupils	1	4	18	14	2	1														
2	<p>1991 Q6 P2</p> <p>The height in centimeters of 60 children attending a clinic were recorded as follows:</p> <table border="1"><thead><tr><th>Height (cm)</th><th>No. of Children</th></tr></thead><tbody><tr><td>33-35</td><td>1</td></tr><tr><td>36-38</td><td>3</td></tr><tr><td>39-41</td><td>14</td></tr><tr><td>42-44</td><td>15</td></tr><tr><td>45-47</td><td>16</td></tr><tr><td>48-50</td><td>8</td></tr><tr><td>51-53</td><td>2</td></tr><tr><td>54-56</td><td>1</td></tr></tbody></table> <p>Calculate the median height</p>	Height (cm)	No. of Children	33-35	1	36-38	3	39-41	14	42-44	15	45-47	16	48-50	8	51-53	2	54-56	1	
Height (cm)	No. of Children																			
33-35	1																			
36-38	3																			
39-41	14																			
42-44	15																			
45-47	16																			
48-50	8																			
51-53	2																			
54-56	1																			

	(3marks)	Working Space														
3	<p>1993 Q4 P1</p> <p>The mean age of 15 boys in a class is 19 years. On a day when one of the boys was absent, the rest gave their ages as follows:</p> <p>20, 22, 16, 18, 17, 21, 18, 20, 17, 18, 19, 20, 19, 21.</p> <p>Find the age of the absent boy</p> <p style="text-align: right;">(3marks)</p>															
4	<p>1995 Q3 P1</p> <p>Every week the number of absentees in a school was recorded. This was done for 39 weeks these observations were tabulated as shown below</p> <table border="1" data-bbox="269 1362 919 1614"> <thead> <tr> <th>Number of absentees</th> <th>Number of weeks</th> </tr> </thead> <tbody> <tr> <td>0-3</td> <td>6</td> </tr> <tr> <td>4-7</td> <td>9</td> </tr> <tr> <td>8-11</td> <td>8</td> </tr> <tr> <td>12-15</td> <td>11</td> </tr> <tr> <td>16-19</td> <td>3</td> </tr> <tr> <td>20-23</td> <td>2</td> </tr> </tbody> </table> <p>Estimate the median absentee rate per week in the school</p>	Number of absentees	Number of weeks	0-3	6	4-7	9	8-11	8	12-15	11	16-19	3	20-23	2	
Number of absentees	Number of weeks															
0-3	6															
4-7	9															
8-11	8															
12-15	11															
16-19	3															
20-23	2															

	(2 marks)	Working space																		
5	<p>1998 Q12 P1</p> <p>Six weeks after planting the height of bean plants were measured correct to the nearest centimeter. The frequency distribution is given in the table below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Height (x)</th> <th>Frequency</th> <th>Cumulative frequency</th> </tr> </thead> <tbody> <tr> <td>$0 \leq x \leq 4$</td> <td>3</td> <td></td> </tr> <tr> <td>$4 \leq x \leq 8$</td> <td>8</td> <td></td> </tr> <tr> <td>$8 \leq x \leq 12$</td> <td>19</td> <td></td> </tr> <tr> <td>$12 \leq x \leq 16$</td> <td>14</td> <td></td> </tr> <tr> <td>$16 \leq x \leq 16$</td> <td>6</td> <td></td> </tr> </tbody> </table> <p>(a) Enter the cumulative frequency values in the above table</p> <p>(b) Estimate the median height of the plants</p> <p style="text-align: right;">(3 marks)</p>	Height (x)	Frequency	Cumulative frequency	$0 \leq x \leq 4$	3		$4 \leq x \leq 8$	8		$8 \leq x \leq 12$	19		$12 \leq x \leq 16$	14		$16 \leq x \leq 16$	6		
Height (x)	Frequency	Cumulative frequency																		
$0 \leq x \leq 4$	3																			
$4 \leq x \leq 8$	8																			
$8 \leq x \leq 12$	19																			
$12 \leq x \leq 16$	14																			
$16 \leq x \leq 16$	6																			
6	<p>1999 Q13 P2</p> <p>The number of people who attended an agricultural show in one day was 510 men, 1080 women and some children. When the information was represented on a pie chart, the combined angle for the men and children was 2160. Find the angle representing the children.</p>																			

		Working space																								
7	<p>1999 Q19 P2 Patients who attend a clinic in one week were grouped by age as shown in the table below:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Age x years</th> <th style="padding: 2px;">No. of patients</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">$0 \leq x \leq 5$</td> <td style="padding: 2px;">14</td> </tr> <tr> <td style="padding: 2px;">$5 \leq x \leq 15$</td> <td style="padding: 2px;">41</td> </tr> <tr> <td style="padding: 2px;">$15 \leq x \leq 25$</td> <td style="padding: 2px;">59</td> </tr> <tr> <td style="padding: 2px;">$25 \leq x \leq 45$</td> <td style="padding: 2px;">70</td> </tr> <tr> <td style="padding: 2px;">$45 \leq x \leq 75$</td> <td style="padding: 2px;">15</td> </tr> </tbody> </table> <p style="margin-top: 10px;">i. Estimate the mean age</p> <p style="margin-top: 10px;">ii. On the grid provided draw a histogram to represent the distribution</p> <p style="margin-top: 10px;">1 cm to represent 5 unit on the horizontal axis 2 cm to represent 5 units on the vertical axis</p> <p style="text-align: right; margin-top: 20px;">(8 marks)</p>	Age x years	No. of patients	$0 \leq x \leq 5$	14	$5 \leq x \leq 15$	41	$15 \leq x \leq 25$	59	$25 \leq x \leq 45$	70	$45 \leq x \leq 75$	15	<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Height (cm) (3 marks)</th> <th style="padding: 2px;">Frequency</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">140 – 144</td> <td style="padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">145 – 149</td> <td style="padding: 2px;">15</td> </tr> <tr> <td style="padding: 2px;">150- 154</td> <td style="padding: 2px;">19</td> </tr> <tr> <td style="padding: 2px;">155-159</td> <td style="padding: 2px;">11</td> </tr> <tr> <td style="padding: 2px;">160-164</td> <td style="padding: 2px;">2</td> </tr> </tbody> </table>	Height (cm) (3 marks)	Frequency	140 – 144	3	145 – 149	15	150- 154	19	155-159	11	160-164	2
Age x years	No. of patients																									
$0 \leq x \leq 5$	14																									
$5 \leq x \leq 15$	41																									
$15 \leq x \leq 25$	59																									
$25 \leq x \leq 45$	70																									
$45 \leq x \leq 75$	15																									
Height (cm) (3 marks)	Frequency																									
140 – 144	3																									
145 – 149	15																									
150- 154	19																									
155-159	11																									
160-164	2																									
8	<p>2000 Q4 P1 The table below shows heights of 50 students</p>																									

	<p>(a) State the modal class</p> <p>(b) Calculate the median height (3 marks)</p>	Working space
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9	<p>2000 Q16 P2</p> <p>The frequency distribution table below shows the weekly salary (K£) paid to workers in a factory</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Salary (Ksh)</th> <th style="text-align: left;">No. of workers</th> </tr> </thead> <tbody> <tr> <td>$50 \leq x \leq 100$</td> <td>13</td> </tr> <tr> <td>$100 \leq x \leq 150$</td> <td>16</td> </tr> <tr> <td>$150 \leq x \leq 200$</td> <td>38</td> </tr> <tr> <td>$200 \leq x \leq 250$</td> <td></td> </tr> <tr> <td>$250 \leq x \leq 300$</td> <td></td> </tr> <tr> <td>$300 \leq x \leq 350$</td> <td>9</td> </tr> </tbody> </table> <p>On the grid provided draw a histogram to respect the information shown above</p> <p style="text-align: right;">(3 marks)</p>	Salary (Ksh)	No. of workers	$50 \leq x \leq 100$	13	$100 \leq x \leq 150$	16	$150 \leq x \leq 200$	38	$200 \leq x \leq 250$		$250 \leq x \leq 300$		$300 \leq x \leq 350$	9	
Salary (Ksh)	No. of workers															
$50 \leq x \leq 100$	13															
$100 \leq x \leq 150$	16															
$150 \leq x \leq 200$	38															
$200 \leq x \leq 250$																
$250 \leq x \leq 300$																
$300 \leq x \leq 350$	9															

10	<p>2003 Q3 P2</p> <p>The table below shows the number of goals scored by a football team in 20 matches</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Goals scored</th> <th style="text-align: left;">Number of matches</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>5</td> </tr> <tr> <td>1</td> <td>6</td> </tr> <tr> <td>2</td> <td>4</td> </tr> <tr> <td>3</td> <td>1</td> </tr> <tr> <td>4</td> <td>1</td> </tr> <tr> <td>5</td> <td>1</td> </tr> </tbody> </table>	Goals scored	Number of matches	0	5	1	6	2	4	3	1	4	1	5	1	
Goals scored	Number of matches															
0	5															
1	6															
2	4															
3	1															
4	1															
5	1															

1	6
2	4
3	1
4	1
5	1

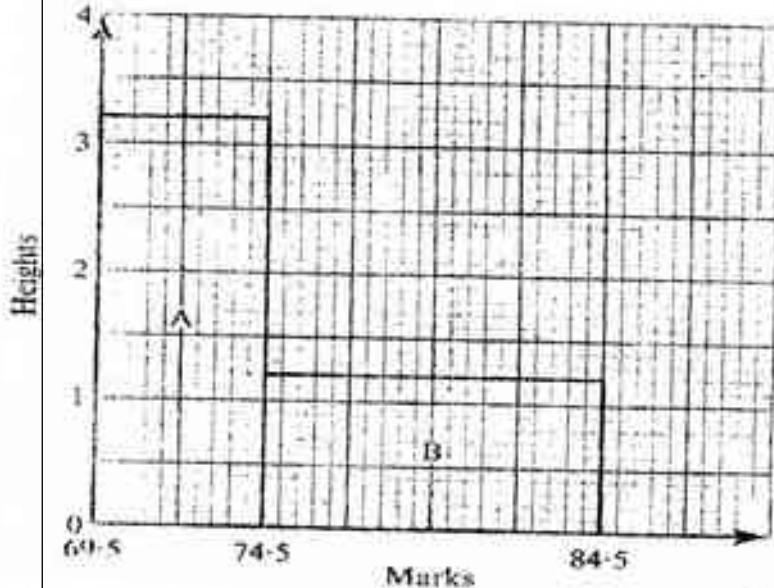
Find:

- a) The mode (1mark)
- b) The mean number of goals (2marks)

Working Space

11 **2006 Q15 P1**

The histogram below represents the distribution of marks obtained in a test.



The bar marked A has a height of 3.2 units and a width of 5 units. The bar marked B has a height of 1.2 units and a width of 10 units

If the frequency of the class represented by bar B is 6, determine the frequency of the class represented by bar A.

Working Space

12 **2007 Q19 P1**

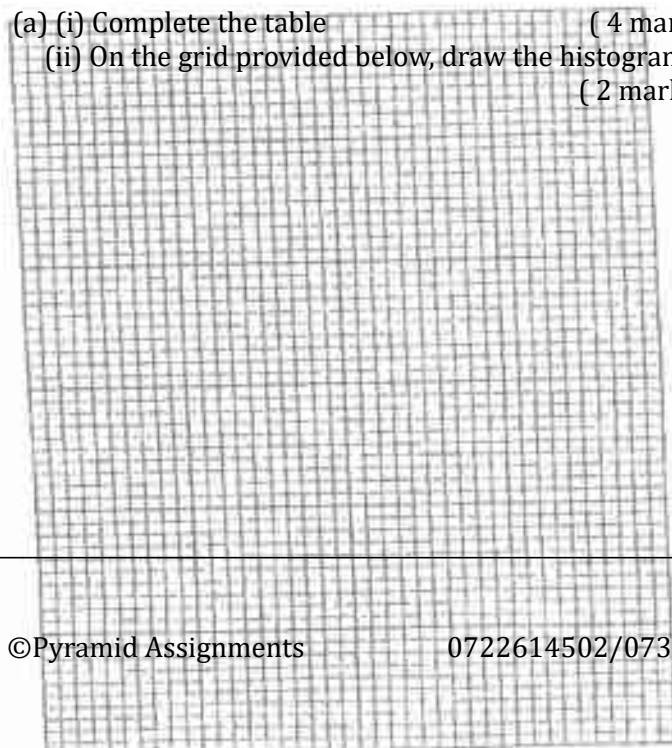
A frequency distribution of marks obtained by 120 candidates is to be represented in a histogram. The table below shows the grouped marks.

Frequencies for all the groups and also the area and height of the rectangle for the group 30 – 60 marks.

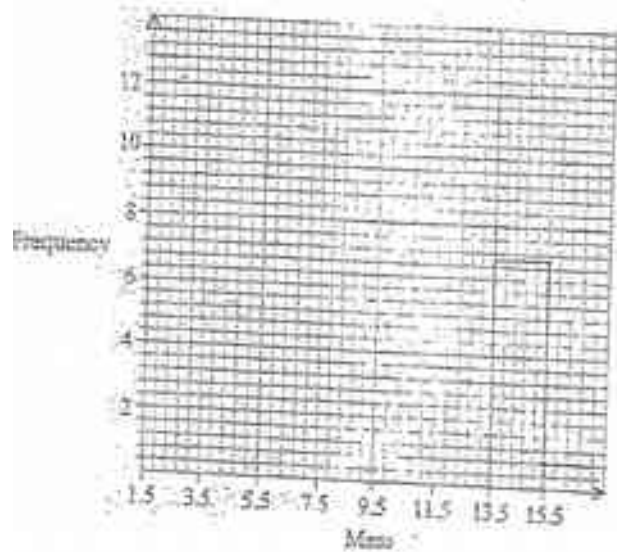
Marks	0-10	10-30	30-60	60-70	70-100
Frequency	12	40	36	8	24
Area of rectangle			180		
Height of rectangle			6		

(a) (i) Complete the table (4 marks)

(ii) On the grid provided below, draw the histogram (2 marks)



		Working space										
	<p>(b) (i) State the group in which the median mark lies (1 mark)</p> <p>(ii) A vertical line drawn through the median mark divides the total area of the histogram into two equal parts Using this information or otherwise, estimate the median mark (3marks)</p>											
13	<p>2009 Q16 P1 The following data was obtained for the masses of certain animals.</p> <table border="1" data-bbox="284 1150 714 1333"> <thead> <tr> <th>Mass (x kg)</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>$1.5 \leq x < 5.5$</td> <td>16</td> </tr> <tr> <td>$5.5 \leq x < 7.5$</td> <td>20</td> </tr> <tr> <td>$7.5 \leq x < 13.5$</td> <td>18</td> </tr> <tr> <td>$13.5 \leq x < 15.5$</td> <td>14</td> </tr> </tbody> </table> <p>Complete the histogram on the grid provided below:</p>	Mass (x kg)	Frequency	$1.5 \leq x < 5.5$	16	$5.5 \leq x < 7.5$	20	$7.5 \leq x < 13.5$	18	$13.5 \leq x < 15.5$	14	
Mass (x kg)	Frequency											
$1.5 \leq x < 5.5$	16											
$5.5 \leq x < 7.5$	20											
$7.5 \leq x < 13.5$	18											
$13.5 \leq x < 15.5$	14											



(3marks)

Working space

14 **2009 Q18 P1**

The marks scored by a group of pupils in a mathematics test were as recorded in the table below.

Marks	Frequency
0-9	1
10-19	2
20-29	4
30-39	7
40-49	10
50-59	16
60-69	20
70-79	6
80-89	3
90-99	1

(a) (i) State the modal class

(ii) Determine the class in which the median mark lies

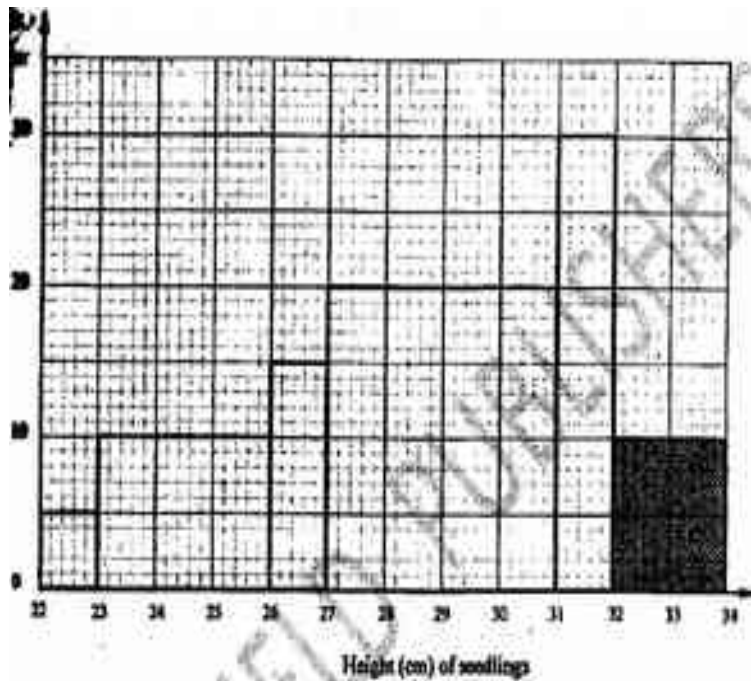
(b) Using an assumed mean of 54, 4 calculate the mean mark.

(10 marks)

Working Space

15 **2010 Q16 P1**

The histogram below represents the distribution of heights of seedlings of a certain plant.



The shaded area in the histogram represents 20 seedlings.

Calculate the percentage number of seedlings with heights of at least 23 cm but less than 27 cm. (3 marks)

Working Space

16 **2010 Q23 P1**

The frequency distribution table below represents the number of kilograms of meat sold in butchery.

Mass in kg	Frequency
1-5	2
6-10	3
11-15	6
16-20	8
21-25	3
26-30	2
31-35	1

- (a) State the modal frequency (1 mark)
(b) Calculate the mean mass. (5 marks)

Working Space

17 **2011 Q10 P1**

The masses of people during a clinic session were recorded as shown in the table below.

Mass (kg)	No of people
40-44	1
45-49	2
50-54	12
55-59	10
60-64	2
65-69	2
70-74	1

Calculate the mean mass.

(3marks)

18 **2012 Q17 P1**

The table below shows the height, measured to the nearest cm, of 101 pawpaw trees.

Height in cm	Frequency
20-24	2
25-29	15
30-34	18
35-39	25
40-44	30
45-49	6
50-54	3
55-59	2

- (a) State the modal class. (1mark)
- (b) Calculate to 2 decimal places:
- (i) The mean height; (4marks)
- (ii) The differences between the median height and the mean height (5marks)