SHARP

Worksheet 14 – Statistics

Grade 10 – Mathematics

1. Give definitions in your own words of the following: (K)

    a) mean   b) range

    c) mode   d) median

    e) quartile   f) interquartile range

    g) maximum   h) percentile

    i) population   j) sample

2. Mrs Mahlangu writes down the marks for the English test that the students in her class got for their first class test and wants to work out the different statistics for the test. She asks you to help her. Below are the marks that the 31 students scored:

87	74	76	21	65	29	28
13	63	56	58	54	19	63
66	52	4	72	34	69	58
42	50	52	48	67	63	72
58	81	61				

    a) Determine the mean mark.   (R)
    b) If an A is 80% and above, how many students got an A?   (C)
    c) Give the range of the marks.   (R)
    d) Give the median and the mode of the data.   (R)
    e) Give the first and third quartiles of the marks.   (R)
    f) Find the interquartile range.   (C)
    g) How many students got a mark that was less than the average class mark?   (C)
    h) Determine the 40th percentile of the data.   (C)
    i) Determine the 60th percentile of the data.   (C)
    j) According to the data gathered in the previous questions, do you think the test was a fair test? Give a reason for your answer.   (P)
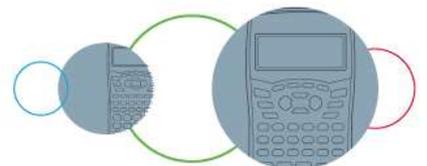
3. The Department of Education interviews 100 teachers and asks them to rate the classes they teach on a scale of one to ten with one being very difficult to teach and ten being very easy to teach. The results are displayed in the table below. Redraw the table and include a cumulative frequency before answering the questions that follow:

Rating	Frequency	Rating	Frequency
1	3	6	18
2	6	7	17
3	8	8	15
4	9	9	12
5	12	10	0

    a)   Determine the mode of the data. (R)

    b)   Determine the median, quartile 1 and quartile 3 from the table. (C)

    c)   Determine the average score of the teachers. (C)

    d)   Draw a histogram of the data. (R)

    e)   Determine the range and the interquartile range. (R)

4. Given below is the box and whisker plot of the data for Danielle's scores (out of 50) she received for the 20 different dance routines she did over the last 6 months.
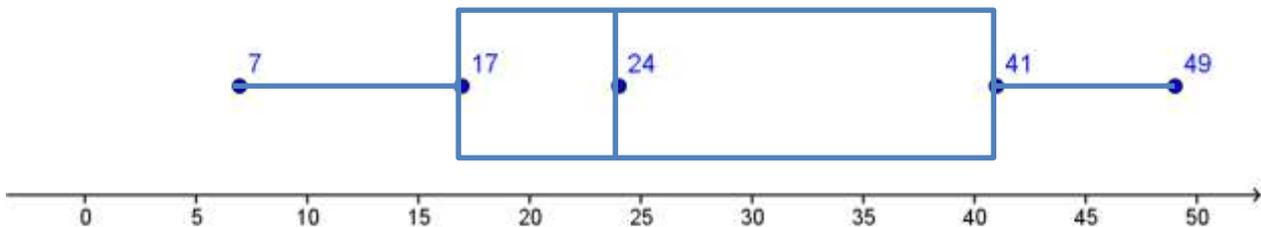
    a)   Give the range of scores Danielle receives. (R)

    b)   Give the interquartile range. (R)

    c)   How many scores did Danielle get between 24 and 41? (C)

    d)   How many scores did Danielle get between 17 and 41? (C)

    e)   What can you say about the spread of Danielle's scores? (C)

    f)   If Danielle's top 25% of scores occurred in the last two months, what can we say about Danielle's dancing? (P)

    g)   In order to go through to the next round, you need to score more than 40. In how many competitions did Danielle go through to the next round? (P)
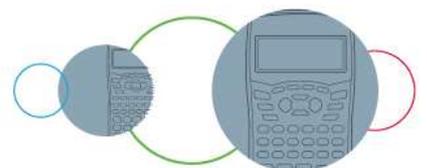
5. Below are the marks of all grade 5 learners in a Sunshine Primary school for a test out of 35.

23	34	2	31	14	12	15	28	25	33	24	21	16
34	13	25	28	27	24	23	21	30	20	7	22	17
16	11	4	0	33	14	5	22	8	29	27	9	25
29	18	5	30	1	32	17	34	12	25	31	32	27
28	27	11	17	30	25	3	24					

a) Rewrite and complete the following frequency table into your workbook:

Mark Obtained	Tally	Frequency
$0 < x \leq 5$		
$5 < x \leq 10$		
$10 < x \leq 15$		
$15 < x \leq 20$		
$20 < x \leq 25$		
$25 < x \leq 30$		
$30 < x \leq 35$		

b) Using the table in a) answer the following questions:

    i)   Calculate the approximate mean mark for the grade 5 test.   (C)

    ii)   Determine the modal group of the data.   (R)

    iii)   Determine the median, first quartile, third quartile and the interquartile range.

        (C)

    iv)   Determine the 90th percentile.   (C)

    v)   Looking at the table, and the spread of the data, what conclusions can you draw about the test?   (P)

6. The scores of the SHARKS rugby team over the last year are given below:

| 58 | 19 | 22 | 16 | 23 | 17 | 22 | 29 | 6 | 15 | 21 | 64 | 10 |
| 21 | 12 | 29 | 25 | 46 | 23 | 54 | 26 | 34 | 24 | 72 | | |

a) Give the 5-number summary.   (R)

b) Using the data in question a) draw a box and whisker plot of the SHARK's scores. (R)

c) What percentage of games did the SHARKS score below 23?   (C)

d) What is the interquartile range?   (R)

e) What can you say about the spread of the data?   (P)
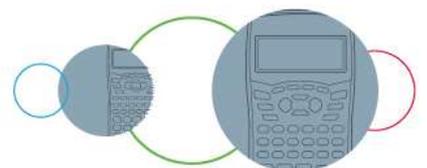
7. The girls' netball team went to 25 matches over the first term. The girls measured the distance of each trip and sorted them into groups. Below are their results:

Distance	Frequency
$0 < x \leq 5$	3
$5 < x \leq 10$	6
$10 < x \leq 15$	8
$15 < x \leq 20$	7
$20 < x \leq 25$	1

a) Determine the approximate average distance of the girls' trips. (C)

b) What is the modal group of the data? (R)

c) Determine the median and the first and third quartiles. (R)

d) Draw a histogram of the data. (R)

e) Comment on the spread of the data. (P)

8. Study the histogram given below about the different weights of fish caught in the Plop Dam, and then answer the questions that follow:

a) What is the modal group of the weight of fish? (R)

b) How many fish were caught and analysed for this histogram? (R)

c) In which group does the median of the weight of fish caught in the Plop Dam lie? (C)

d) What is the range of weights of the fish caught in the Plop Dam. (R)

e) Determine the approximate mean weight of the fish caught in Plop Dam. (C)

f) If the average weight of the type of fish caught in Plop Dam is 55 grams, how many fish were caught that are below the average? (P)