

SHARP

Worksheet 9 – Statistics

1. The number of times each person in a group of 30 enters any competition per month is given below. Look at the data carefully and then answer the questions that follow.

38 54 20 61 60 21 31 54 65 76
48 60 5 22 63 17 15 66 54 59
73 31 98 26 42 67 8 5 46 54

- Determine the mode of the data
- Determine the mean of the data.
- Determine the standard deviation of the data.
- Draw up a frequency and cumulative frequency table of the data in shown below:

Number of Competitions per month	Frequency	Cumulative Frequency
$0 \leq x < 10$		
$10 \leq x < 20$		

And so on...

- Draw a frequency polygon from the above data.
- Draw an ogive using the data in your table.
- Using the ogive, determine the first and third quartile as well as the median.
- Give the range of the data.
- Give the interquartile range of the data.
- Comment on the distribution of the data.
- Draw a box and whisker plot of the above data.
- Determine the percentage of people who entered competitions within one standard deviation of the mean.

2. The weights (in kg) of the school's top 15 rugby players are given below.

72 129 102 118 126 116 116 107 136 132
130 102 120 98 134

- a) Determine the mean weight of the rugby players
- b) Determine the standard deviation of the above data.
- c) If another school's rugby team's mean weight is 120kg and the standard deviation is 7,34kg, which school do you think has a greater advantage on the field and why?
- *d) Is there an outlier in the above data and why do you say so?
- e) If the coach wrote 72 by mistake instead of 99, how will this affect the average and the standard deviation?
- f) Give the 5-number summary and use it to draw a box and whisker plot.

3. A teacher asks her 20 fellow teachers how many times they have a cup of coffee per day. These are her results:

9 6 15 6 10 4 12 2 10 6
2 0 5 1 8 7 4 3 14 7

- a) Determine the mean number of cups of coffee drunk by the teachers.
- b) Determine the median number of cups of coffee drunk by the teachers.
- c) Determine the mode for the above data.
- d) Determine the first and third quartiles of the data.
- e) Determine the range of the data and the interquartile range for the data.
- f) Draw a box and whisker plot of the data.
- g) State the skewness of the data

Using your box and whisker plot, answer the following questions:

- h) What percentage of teachers drink less than 6 cups of coffee per day?
- i) What percentage of teachers drink more than 10 cups of coffee per day?
- j) What percentage of teachers drink between 3 and 10 cups of coffee per day?

4. George counts the number of chocolates bought by people at the check-out counter where he works. He summarises the data he finds in the table below:

Number of Chocolates Bought	Frequency
$0 \leq x < 2$	7
$2 \leq x < 4$	10
$4 \leq x < 6$	14
$6 \leq x < 8$	17
$8 \leq x < 10$	4
$10 \leq x < 12$	3

- Draw up a table for the above that includes the cumulative frequency.
 - Use the table to draw an ogive.
 - From the ogive, determine the median number of chocolates bought as well as the first and third quartiles for the data.
 - Given that the minimum number of chocolates bought is 1 and the maximum number of chocolates bought is 11, draw up a box and whisker plot.
 - Comment on the distribution of the data.
 - Determine the interquartile range.
5. A shop-owner keeps a record of the number of ice-creams bought on each day as well as the temperature of that day. He does this for two weeks. These are his results:

Temperature	25	18	25	20	27	17	26
# of Ice-creams	20	6	24	12	22	3	25
Temperature	23	24	26	21	22	19	23
# of Ice-creams	17	21	22	7	18	8	15

- Draw a scatter plot for the above data.
- What kind of relationship, e.g. linear, quadratic, or exponential, does this data seem to have?
- Draw in the line of best fit for the data
- *d) Determine the regression line for the data.

*e) Is this a positive/negative, weak/ strong relationship and why?

6. A fellow student in your class asks your classmates how many hours they spent on BBM on average per week and what their last maths test results were. These are her results:

BBM hours	4	1.5	6	7.5	4.5	3
Maths mark	85	86	69	60	79	91
BBM hours	5	7	13	9	14	11.5
Maths mark	77	61	21	47	51	34
BBM hours	2	3.5	8.5	10	18	15
Maths mark	88	78	53	54	28	21

- a) Draw a scatter plot of the above information.
- b) What kind of relationship does this data have?
- c) Draw in the line of best fit for this data.
- d) According to the line of best fit, if you spent $5\frac{1}{2}$ hours on BBM what will your mark be?
- e) If you wanted to get 80% for your next maths test how many hours maximum can you spend on BBM per week.
- *f) Determine the equation for the line of regression.
- *g) Is this a positive / negative, strong / weak relationship and why?
- *h) Are there any outliers in the data? And if there are, what are they?
- *i) What would the new regression line be if these two outliers were removed?