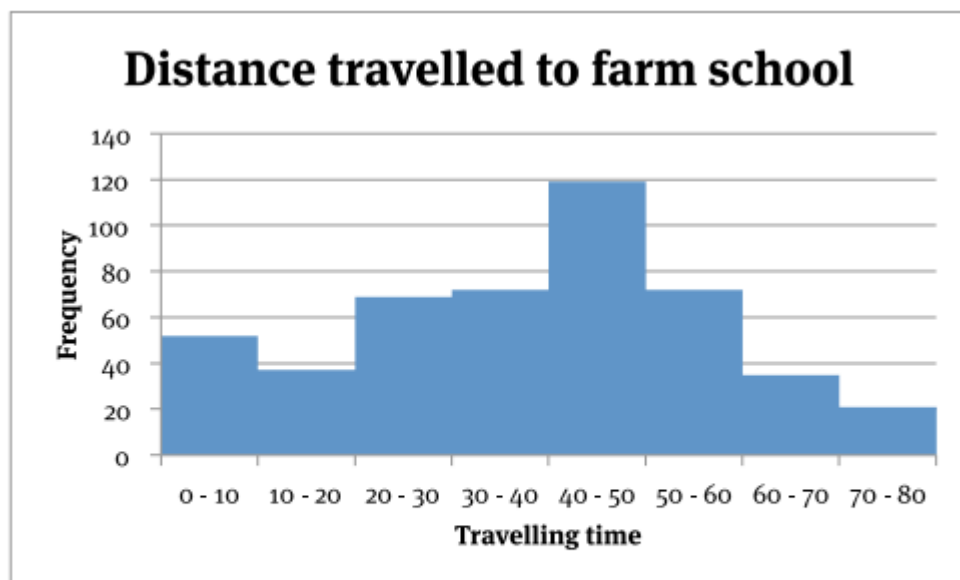# GR 11 REVISION: STATISTICS

In an effort to increase the Mathematical Literacy levels amongst young adults, the Department of Education tested 50 twenty-year-olds' skills, sent them all on a course, and after the course tested their skills again. After the course their scores (in percentage terms) were:

15, 17, 19, 26, 28, 35, 39, 41, 41, 42, 45, 45, 45, 45, 47, 52, 53, 54, 57, 59, 55, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 68, 67, 72, 75, 74, 78, 81, 82, 82, 82, 82, 82, 82, 91, 95, 92, 99, 98, 94

1.1   Represent this data in a frequency table with intervals of 10.

1.2   Give the mode.

1.3   In which class will the median lie?

1.4   Draw a histogram of the data.

1.5   Construct a frequency polygon on the histogram.

A survey was conducted at a small farm school to establish how far learners travelled to school daily. The histogram below represents the results of the survey:

2.1   Calculate the estimated mean travelling time by using a frequency table.

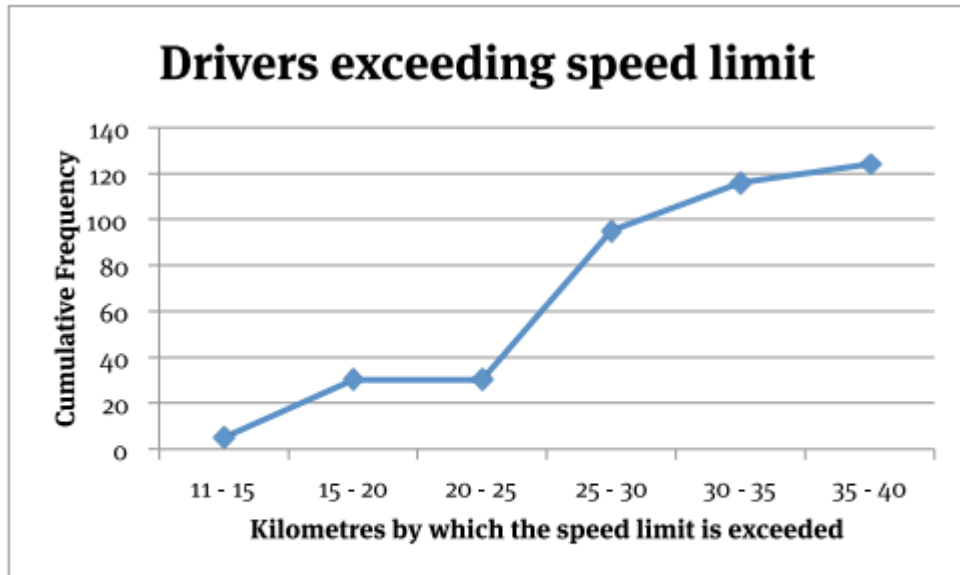2.2   Give the modal class.

2.3   Draw a frequency polygon.

Question 3

Represent the following data in an ogive. Show how you would use the ogive to read off the median, lower and upper quartiles.

Interval	Frequency
$10 \leq x < 20$	23
$20 \leq x < 30$	37
$30 \leq x < 40$	45
$40 \leq x < 50$	88
$50 \leq x < 60$	52
$60 \leq x < 70$	16
$70 \leq x < 80$	12

Question 4

An ogive showing how many drivers exceed the speed limit, and by how many kilometres they exceed it, is given below.

4.1   How many drivers exceeded the speed limit?

4.2   How many drivers exceeded the speed limit by more than 20 km/h?

4.3   Construct a cumulative frequency table for the data given.

Question 5

Calculate the variance and standard deviation of the following data set:

155, 142, 169, 133, 189, 128, 175, 168, 135

Question 6

A survey was conducted on the weight of 10 000 adult female koi fish in breeder ponds. It was found that the average mass of an adult female koi was 7,5 kg with a standard deviation of 2 kg.

6.1 How many adult female koi weighed between 5,5 kg and 9,5 kg?

6.2 How many of the female koi weigh less than 3,5 kg?

6.3 What percentage of the koi weigh more than 15,5 kg?

6.4 Do any of the adult female koi weigh more than 20 kg? If so, how many do?

Question 7

The average hourly rate charged by a Mathematics editor is R280 with a standard deviation of R58, by a Business Studies editor R230 with a standard deviation of R23, and an Arts and Culture editor R180 with a standard deviation of R69. A Mathematics editor charges R350 per hour, a Business Studies editor R195, and an Arts and Culture editor R210. Which editor is relatively more expensive?

Question 8

A group of student bookkeepers is tested on the time it takes them to type 3 000 words. Their scores, in seconds, are given by:
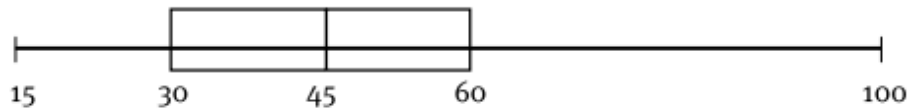
125, 99, 134, 149, 138, 124, 133, 146, 117, 137

8.1 Calculate the mean time taken to type 3 000 words.

8.2 Calculate the standard deviation of the time taken to type 3 000 words.

8.3 How many of the student bookkeepers completed the 3 000 within two standard deviations of the mean?

Question 9

Consider the box-and-whisker plot below.

15 30 45 60 100

9.1 Write down the five-number summary.

9.2 Determine the semi-quartile range.

9.3 Comment on the spread of the data. What kind of data, do you think, might this represent?

9.4 Comment on the skewness of the data.

Question 10

Draw scatter plots for the following sets of pairs. Indicate any outliers.

10.1

x	3	2	5	1	4	6	8	5	4	5	4	5
y	1	2	3	2	1	2	3	2	1	2	3	2

10.2

x	4	2	5	8	1	2.5	5	6	8.5	2	9	4
y	1	1	1	0	0	0	3	7	2	9	5	0

10.3

x	1	5	2	3	6	4	5	6	2	3	1	2
y	3	6	9	5	6	9	3	5	6	9	6	5