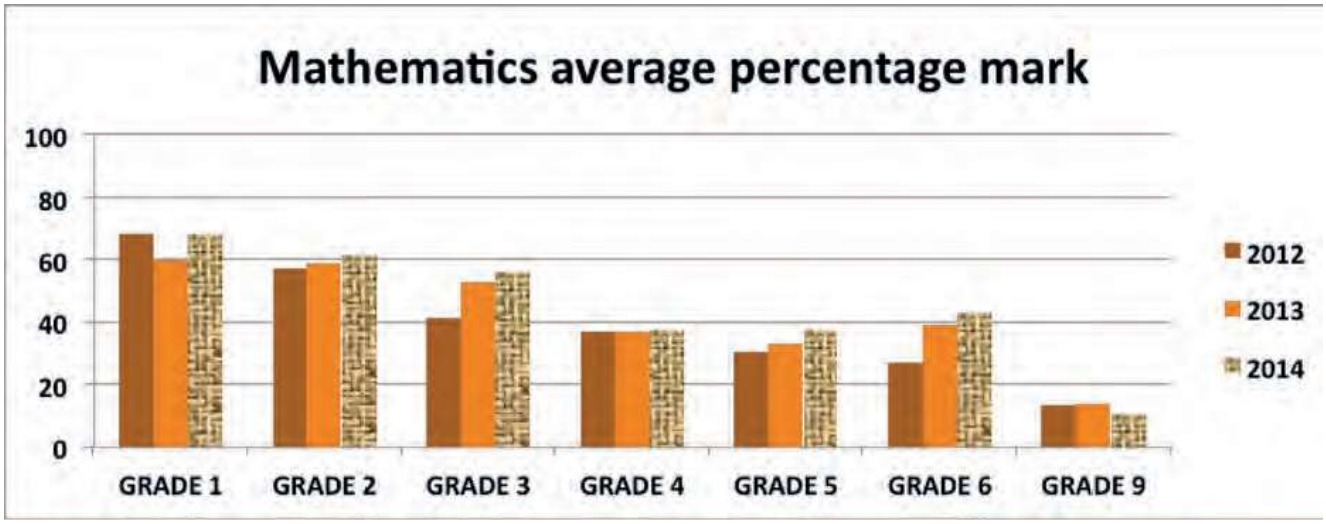
SHARP

Worksheet 5: Data Handling (2)

Grade 12 Mathematical Literacy

1. The 2014 national ANA results for mathematics are given below in the bar graph. Study the bar graph carefully before answering the questions that follow.



a) What is the general trend of the mathematics marks from grade 1 to grade 9?

b) Why do you think this trend happens?

c) In which two grades did the mathematics average percentage mark not improve in 2014?

d) According to the bar graph, which grade experienced the most improvement?

e) What is the approximate average mark for

i) grade 1?

ii) grade 4?

iii) grade 9?

f) Do you think that the mathematics marks in 2015 will improve per grade, or decrease? Give a reason for your answer.

g) Do you think the scale used on the bar graph was an accurate scale and a good representation of the data? Give a reason for your answer.

2. Below is a table giving the percentage of learners per grade and year who achieved 50% or more for the mathematics ANA exam. Study the table carefully before answering the questions that follow.

GRADE	PERCENTAGE OF LEARNERS ACHIEVING 50% OR MORE		
	2012	2013	2014
3	36	59	65
6	11	27	35
9	2	2	3

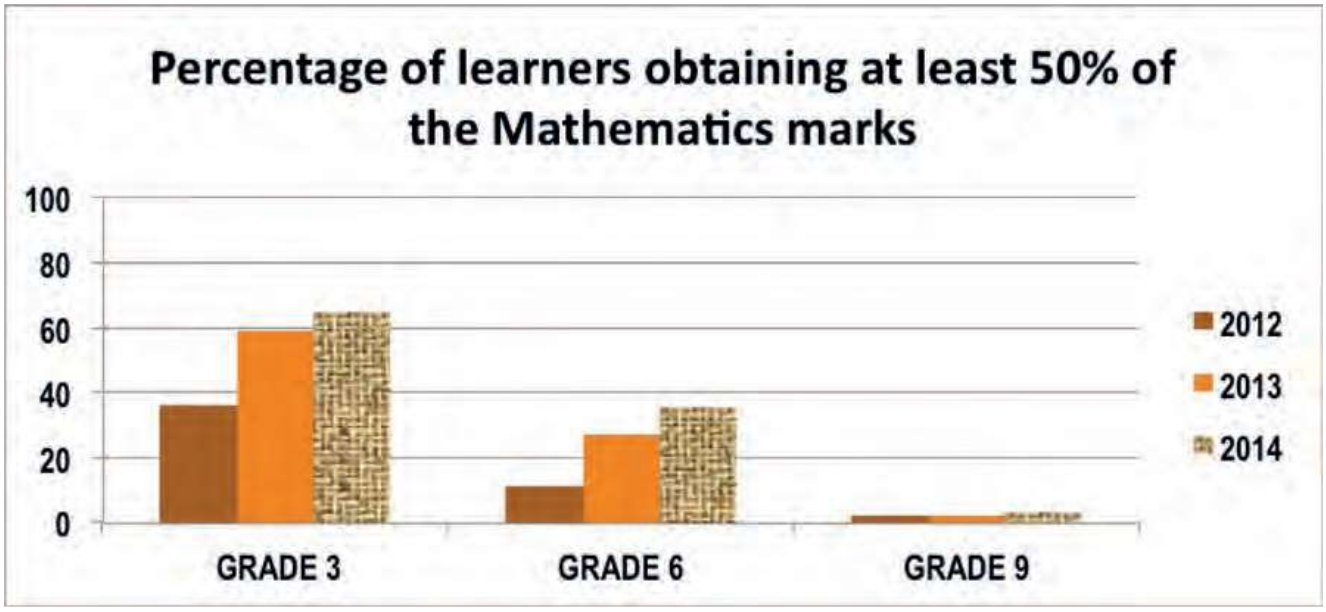
a) Draw a multiple broken line graph (each line to represent each grade) to represent the data in the table above.

b) What general trend can you see for grades 3 and 6?

c) Do you think the trends for grades 3 and 6 are the same for the grade 9 results?

d) If 1 042 133 grade 9 students wrote the ANA exams in 2014, how many of them achieved more than 50% for the exam?

e) Given below is a bar graph representing the information in the table above:

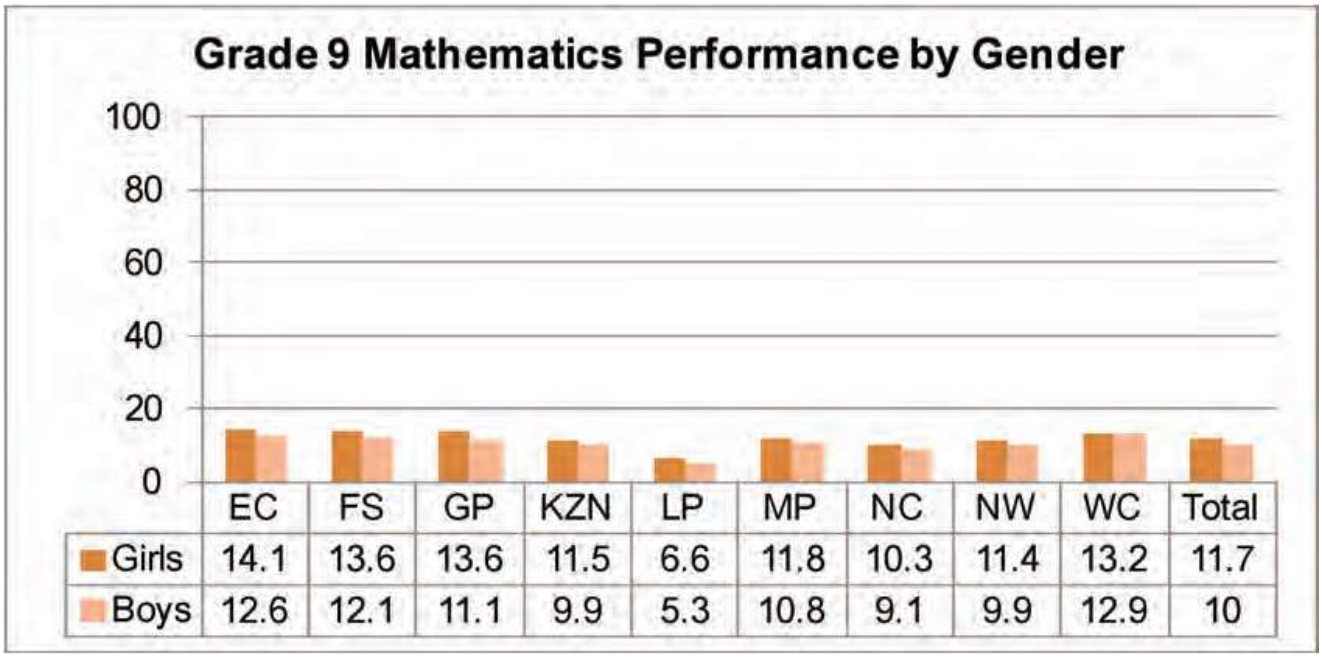


i) Do you think your broken line graphs or the bar graph represents the information in the table better? Give a reason for your answer.

ii) Do you think it is easier to compare the performance per grade on the bar graph or the line graphs? Give a reason for your answer.

iii) Do you think it is easier to compare the performance in each grade per year on the bar graph or the line graphs? Give a reason for your answer.

3. Given below is a bar graph representing the performance per gender and province of grade 9 students who wrote the mathematics ANA exam.



	EC	FS	GP	KZN	LP	MP	NC	NW	WC	Total
Girls	14.1	13.6	13.6	11.5	6.6	11.8	10.3	11.4	13.2	11.7
Boys	12.6	12.1	11.1	9.9	5.3	10.8	9.1	9.9	12.9	10

a) Redraw the bar graph using a smaller scale to represent the data given above.

b) In which province did

i) the boys perform the best in the country?

ii) the girls perform the best in the country?

iii) the boys perform the worst in the country?

iv) the girls perform the worst in the country?

c) Which graph do you think is easier to read or analyze – the graph you drew or the graph given above? Give a reason for your answer.

d) If you were a person trying to sell a revolutionary new maths program, which graph would you use to show the bad results for mathematics in grade 9 – your graph or the graph given to you? Give a reason for your answer.

e) If you were a maths teacher and you wanted to show other teachers the difference between how well your province did when compared to other provinces, which graph would you use – the graph you drew or the graph given above? Give a reason for your answer.

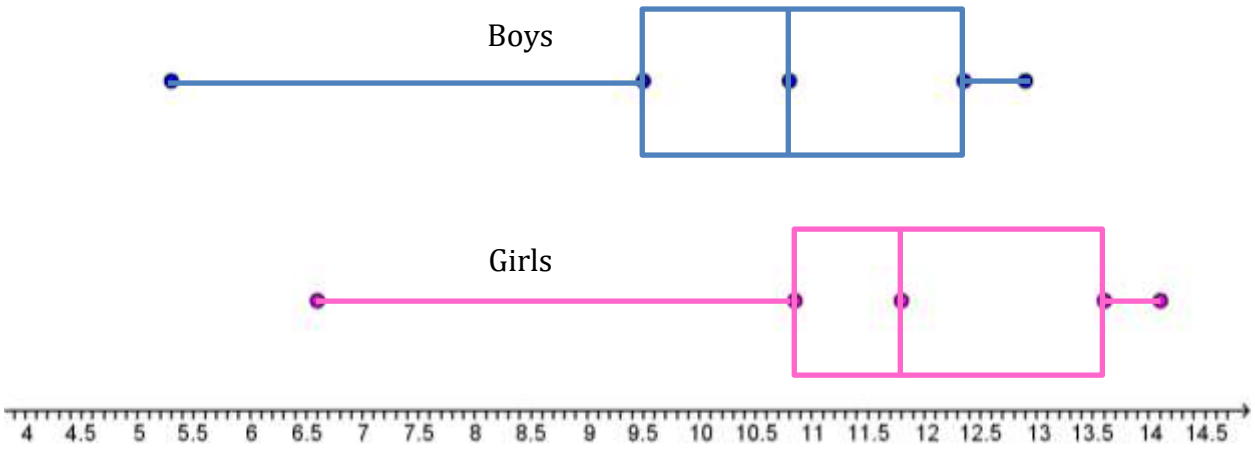
f) From the data above, give the modal mark for

i) girls

ii) boys.

g) What is the overall average for the entire country?

h) Given below are the box-and-whisker plots for the girls and boys grade 9 mathematics results for the different provinces. Study them carefully before answering the questions that follow.



i) Which group of students performed better as a whole?

ii) What was the median mark for both sets of data?

iii) Is the distance from the whisker to the first quartile the same for boys and girls?

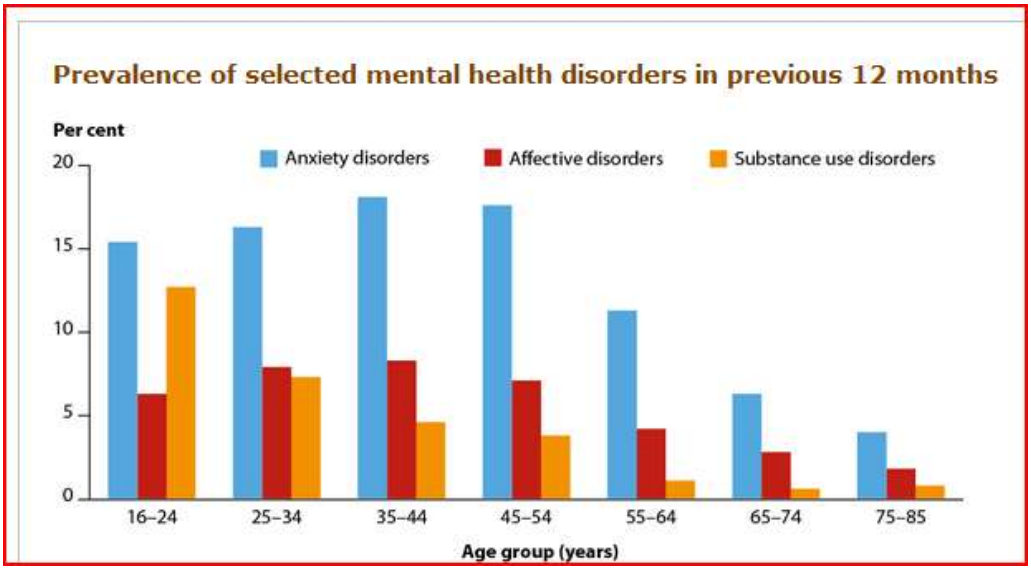
iv) Do you think the data in both box-and-whisker plots is evenly spread? Give a reason for your answer.

v) Give the range of marks for both boys and girls.

vi) Would gender be considered a categorical or numerical piece of data?

vii) Would maths marks be considered discrete or continuous data? Give a reason for your answer.

4. Given below is a bar graph of different mental health disorders for the Australian population in 2007 according to age group. An affective disorder is a mood disorder.



a) Which age group has the most mental health disorders?

b) What seems to be the most common mental health problem?

c) Which age group has the most people with an anxiety disorder?

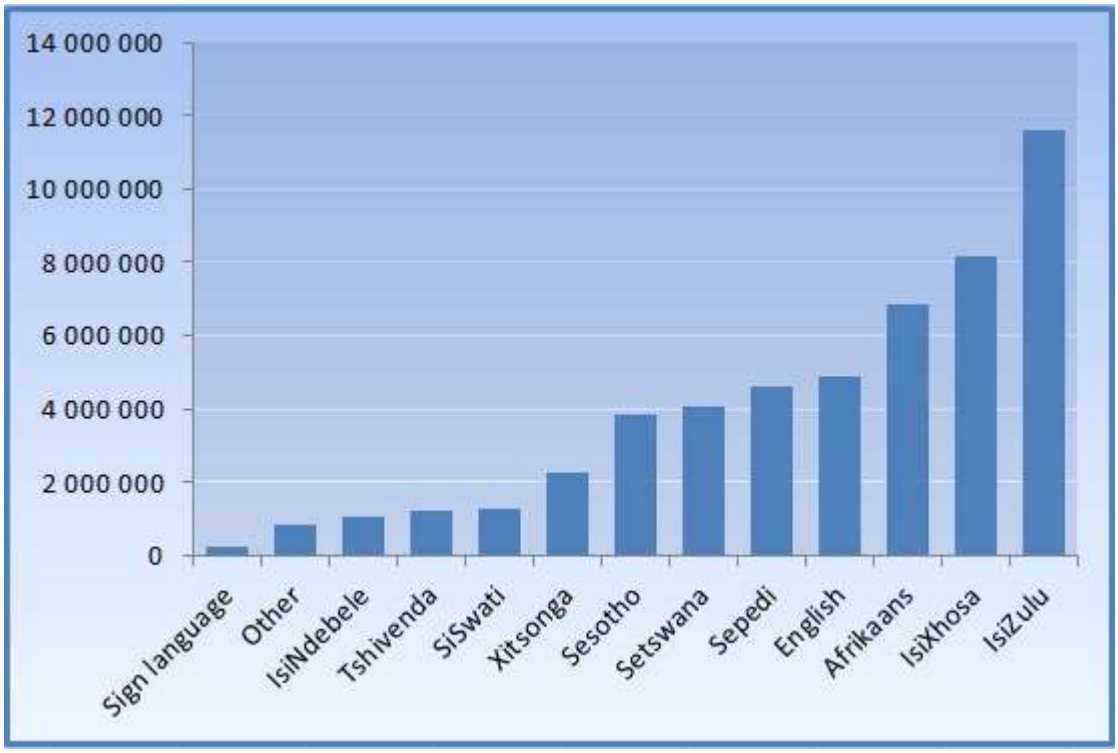
d) Why do you think the older age groups don't tend to have as many mental health problems?

e) What is the approximate percentage of the 35- 44 year age group that has an affective disorder?

f) Which age group has the highest substance abuse disorder? Why do you think this happens?

g) Do you think the results of the survey were accurate? Give a reason for your answer.

5. Given below is a bar graph of the number of people who speak one of the official 11 languages and sign language as their home language, in South Africa.



a) Which language is the most spoken home language in South Africa?

b) Give the approximate number of people who speak

i) English

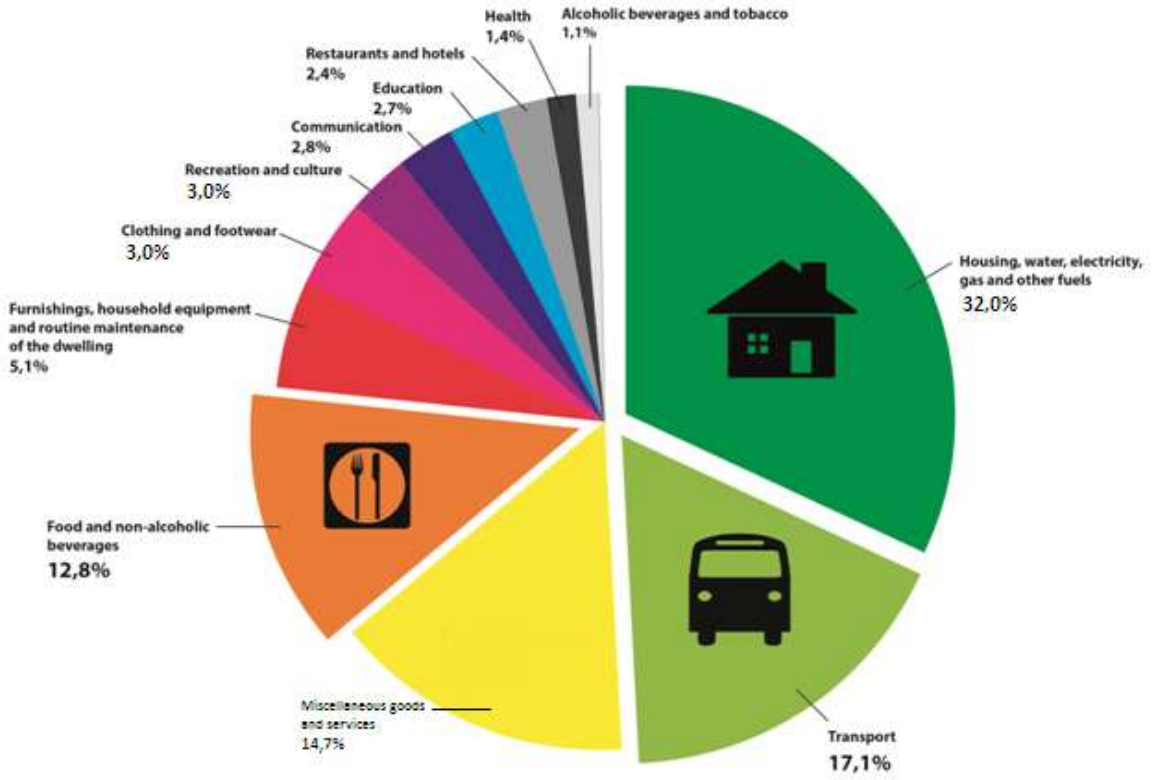
ii) IsiXhosa

iii) Xitsonga

c) What is the total number of people that speak the 5 most common home languages?

d) Which language is spoken half as much as IsiXhosa?

6. Given below is a pie chart which shows the typical South African's monthly household expenses. Study it carefully before answering the questions that follow.



a) Which household expense uses the most monthly income in a household?

b) If a household has a R25 000 monthly income, how much will they spend on

i) food and non-alcoholic beverages?

ii) education?

iii) transport?

c) If a household spends R1300 on housing, water, electricity, gas and other fuels, how much is their total monthly household income?

d) Do you think every household spends 3% on clothing and footwear every month? Give a reason for your answer.

e) How do you think the data used to generate this pie chart was collected?

f) If you had to set up a survey for this data, what kinds of questions would you use? For example, multiple choice questions, open-ended questions and so on.