

Testing Times

You need: graph paper, a compass, a protractor, a computer

ACTIVITY

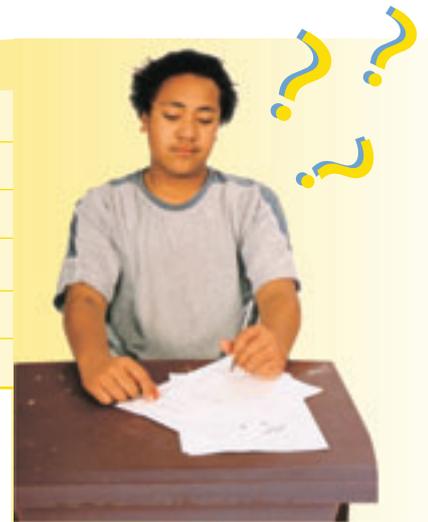
Ms Lewis tests her year 8 students on their mathematics achievement at the start of term 1 and again at the end of term 2.

- Here are the results from 30 students for the first test (listed in alphabetical order).

Test A: 95, 6, 89, 51, 100, 59, 97, 6, 19, 35, 89, 85, 65, 51, 70, 61, 80, 43, 51, 78, 25, 78, 51, 54, 78, 65, 39, 24, 20, 39

- Draw a stem-and-leaf graph of these results.
 - What is the range of marks?
 - Find the mean, median, and mode.
 - What are the outliers in this data?
 - Describe the shape and spread of this set of marks.
- Ms Lewis decides to group the students' test results. She draws a frequency table:

Mark range	Tally	Frequency
0–20		
21–40		
41–60		
61–80		
81–100		



- Complete the table.
 - Put the information from the table into a bar graph.
 - Which group of marks has the highest frequency?
 - Is this graph more useful or less useful than the graph in question 1? Explain.
- The results at the end of term 2 for the same 30 students (also listed in alphabetical order) are:

Test B: 100, 37, 42, 55, 68, 79, 85, 97, 100, 99, 80, 76, 61, 59, 49, 39, 100, 98, 81, 76, 67, 59, 45, 44, 57, 57, 76, 81, 81, 38

- Draw a back-to-back stem-and-leaf graph to compare the results in test A with those in test B.
- Find the range, mean, median, and mode of the test B results.
- Do you think Ms Lewis is pleased with the results for test B? Explain.

4. Enter the raw data for both tests in a computer spreadsheet program. Use the program to create a scatter plot where the x axis represents test A and the y axis represents test B.
5. Each plotted point represents a student in Ms Lewis's class.
- Find and label the point that represents the student who:
 - gained 100 percent in the first test
 - did best when both tests are taken into account
 - improved the most between tests
 - did really well in the first test but really badly in the second.
 - Where are the points that represent the students who did better in the second test? What is the shape of the area where you find them?
 - Did more or fewer students get a better result in the second test?
6. Which of the graphs that you have drawn in this activity is the most "data rich"? Explain.

A graph is said to be data rich if the reader can learn a lot from it.

