Comparing Boxplots
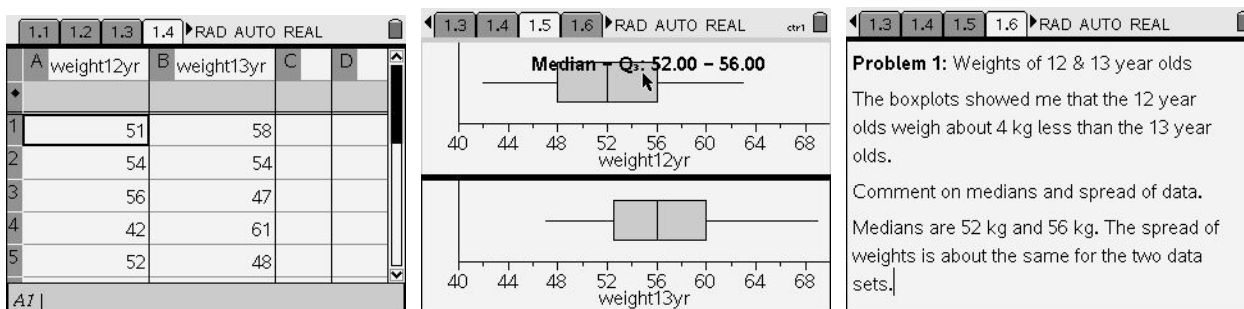
Teacher Notes

Introduction

The document entitled **CompareBoxPlots** contains five pairs of data sets. It is set up to enable students to draw and compare pairs of boxplots and to record conclusions about the distributions of the data.

Three introductory pages in Problem 1

Pages with the data sets, their boxplots, and conclusions

This document has been developed from an initial idea by Martin Hole and Debbie Johnson of Wildern School, Southampton.
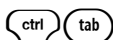

In addition to the following notes, there is also a short video tutorial showing the process of drawing and comparing the boxplots with identical axes.
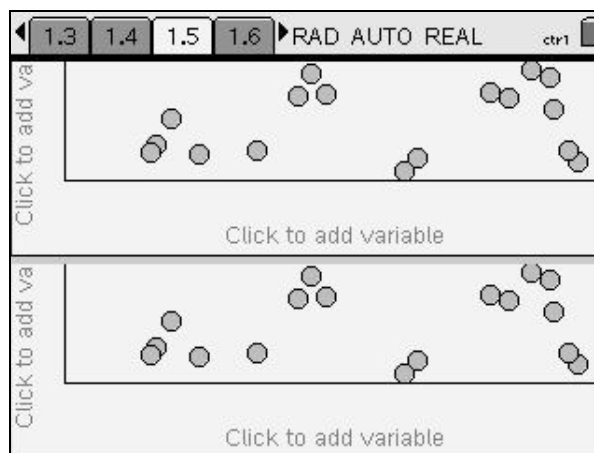
The boxplots page

Each problem has a page with a split screen where two boxplots can be drawn. Initially data points are distributed entirely at random.

To move between the two parts of the screen press

ctrl   tab

Notice there is highlighting around the current area.

Often you can also just move between the two parts of the screen using the NavPad.

A split screen with points drawn at random

How to assign the variables

Navigate to where it says
Click to add variable
Click on 🖱 and you will see the list of
variables defined in the current problem.
Press ▾ or ▴ to select the one you want and
🖱 or ⏎ to confirm your choice.
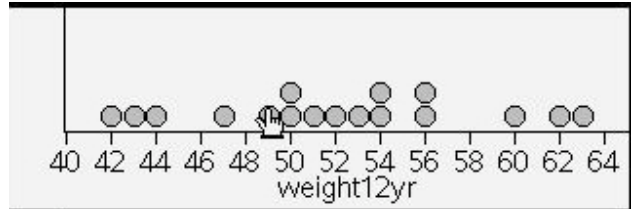
Choose from this problem's variables

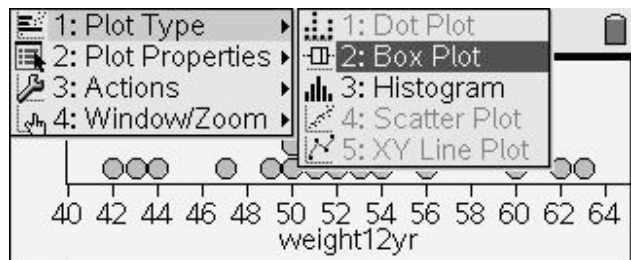## How to choose a boxplot

At first you see a dot plot.

Select Box Plot from the Plot Type menu by
pressing
(menu)(1)(2).

Notice that the horizontal axis is chosen
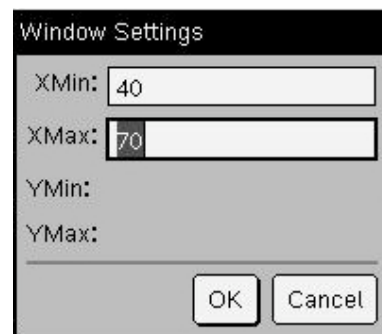automatically.

The default is a dot plot

Choosing from the Plot Type menu

How to adjust an axis

To alter the window settings press
(menu)(4)(1).

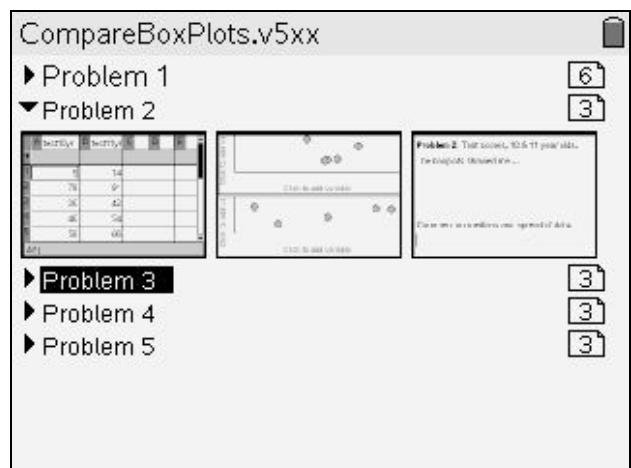Then type appropriate values and press (tab)
to move to the next box.

The structure of the document

Each of the five problems has three pages:
• a spreadsheet containing two data lists
• a split page for the boxplots
• a page for notes and comments.

In addition Problem 1 has three introductory
pages.

To see this structure and navigate around the
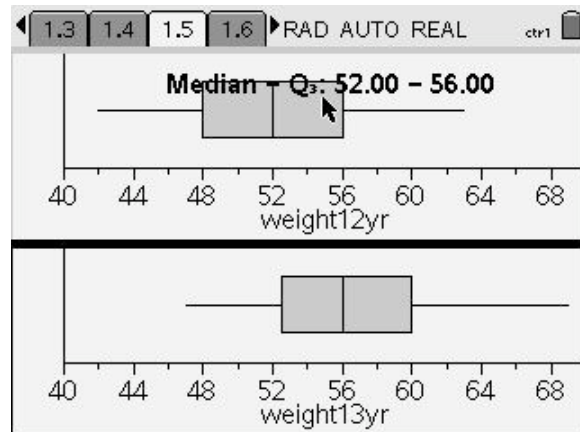document press (ctrl)▴.

The page sorter

Completed Boxplots

Problem 1:

Weights of 12 and 13 year olds

13 year olds generally about 4 kg heavier though spread very similar for these data.
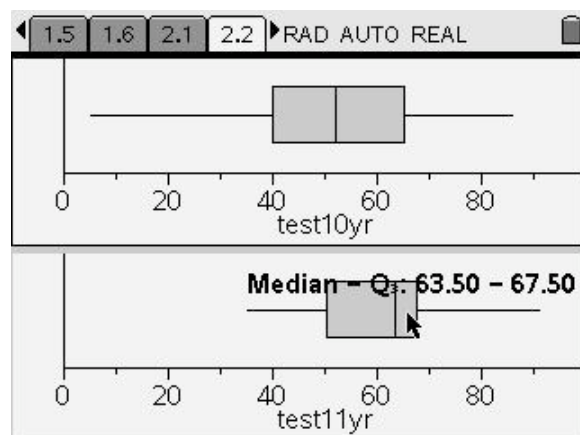
Median weights 52 kg. and 56 kg.

Problem 2:

Test scores of year 10 and year 11

Year 11 results generally higher and with less spread.
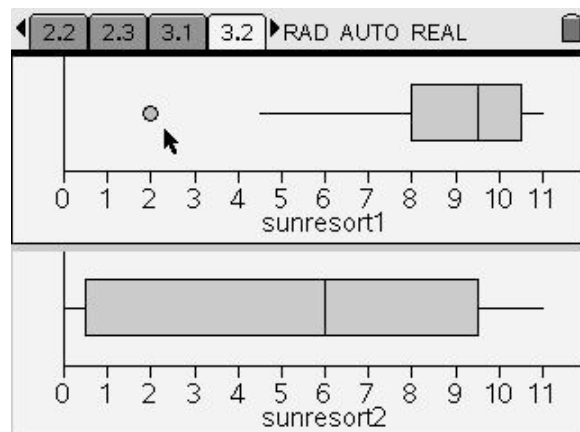
Median scores 52 and 63.5.

Problem 3:

Hours of sun in two resorts

Resort 1 has a consistently high number of hours of sun, but notice an outlier. Resort 2 has either lots of sun or very little resulting in a very wide inter-quartile range. NB The dot plots may provide a better overview than the boxplots in this case.
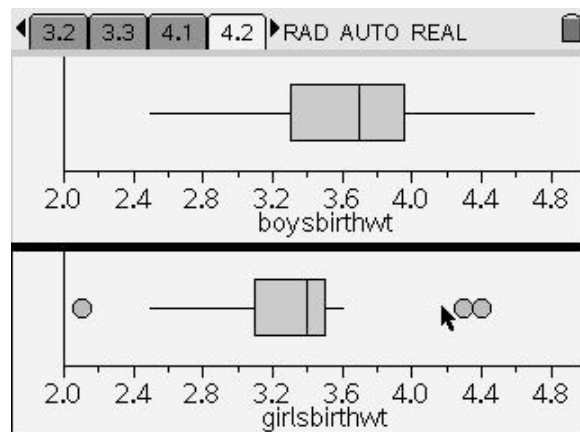
Medians 9.5 hours and 6 hours.

Problem 4:

Birth weights of boys and girls

For this data set boys are generally heavier than girls. However, the spread of boys' weights is quite wide whereas the girls' weights are more closely grouped apart from the three extreme outliers.

Median weights 3.7 kg. and 3.4 kg.

Problem 5:

Goals scored in 2006 and 2007.

The team scored no goals more frequently in 2006 than 2007, though there were also slightly more high scores that year. Both medians are 1 goal. Again the boxplots are not too helpful in comparing these data.

It may be interesting to work out the total goals scored in each year. One way to do this is on any vacant cells on the spreadsheet page to enter e.g. =sum(goals2006).
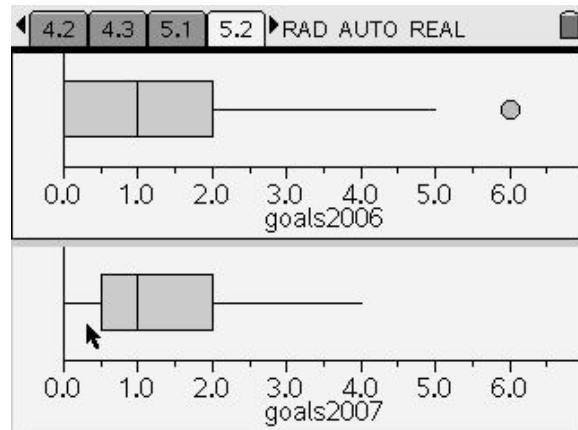
Ideas for using Comparing Boxplots

Full-class discussion

You may wish to go through the first problem with the whole class using the Viewscreen or the TI-Nspire computer software projected onto a screen or interactive whiteboard, concentrating in the first instance on discussing the data itself, rather than on how to create the boxplots and choose the window settings. The video tutorial may then provide a useful recap of what you have done and the processes involved in doing it.
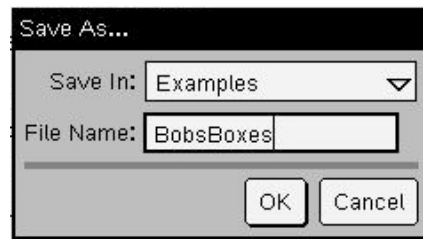
Individual work

The document invites students to enter their name on page 1.1 and their conclusions on pages 1.6, 2.3, 3.3 etc. This means they will be creating their own version of the document on the handheld, so a crucial first step will be for them to save the file under a new name. They will need the Save As option from the 🔧 File menu: press:
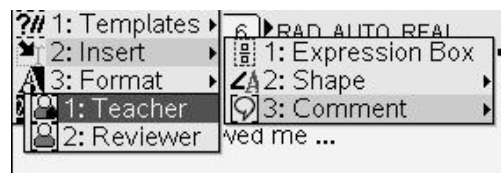
⬡(CAPS)⬡(🏠)⬡(1)⬡(4).

The Save As dialog box

There is a mechanism for teachers to insert comments on students' notes pages; press (menu)⬡(2)⬡(3)⬡(1).

Inserting a comment by the teacher

You may wish to consider photocopying the second page of these Teacher Notes if you feel students will need a reminder of the method used to draw boxplots and adjust the window settings.