

Medians

The activities are related to the work in Ma4 Handling Data.

Pupils should be taught to calculate mean, range and median of small data sets with discrete then continuous data.



Organisation of the materials

The SMART Notebook™ file is saved as “Medians.notebook”.
It consists of nine pages of which the first is the title page.
There are six pages to support the activity and its extension.
Page 8 is a blank page.

Page 9 contains teacher notes which are amplified here.
The Year 7 column on page 258 (Y789 examples) of the Framework suggests some practical activities.


Notes

The first activity

This introduces the term 'order' in relation to a set of numerical data. You might invite pupils to come to the board to drag the digit cards and rearrange them in order of size.

The main task

Page 2 of the Notebook contains a set of digit cards that can be dragged, leaving a ghost behind. You might like to ask pupils to the board to order the numbers.

Page 3 asks for more information about the data. Again, invite pupils to physically re-order the numbers to support them to answer the questions. The coloured rectangles can be deleted to reveal the correct responses underneath. To do this tap the rectangle, followed by 'Delete'. 

Page 4 offers a different data set with one value that is much greater than the rest. Use this fact to discuss how the mean average is affected and how the median offers a better indicator of central tendency.

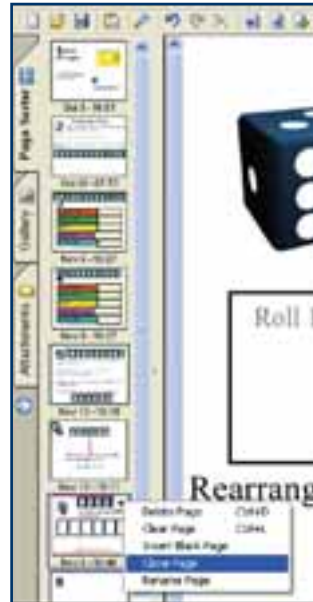
Page 5 asks pupils to consider how they would find the median of a data set containing an even number of numbers.

Page 6 suggests how the median of an even set of numbers could be found. Drag from the 'pack' of number cards at the top of the page to increase the data set and ask pupils to rethink what the median will become as the data set grows. Invite pupils to tap the text and correct it for the new data set.

Page 7 offers a single dice which is used to generate a random set of six numbers. It might be useful to 'Clone'

this page from within the page sorter to allow you to use the activity more than once.

The dice is one of the Flash resources from within the 'Statistics' section of the 'Gallery'.



Page 7

Notes

SMART specific

There are two useful techniques used in the design of this activity.

1. Creating a set of digit cards that can be dragged on the screen.
2. Creating a 'ghost' of an object that remains on the page when the object is dragged.

How to create a set of digit cards in SMART Notebook

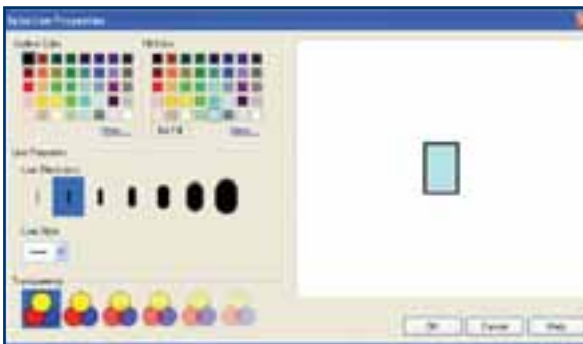
Begin by using the 'Shape' tool to tap and drag a rectangle shape, the size of the card that you want.

Shape Tool



Select the 'Card' and 'Properties' from the drop down menu. Choose a Fill colour.

Selection Properties

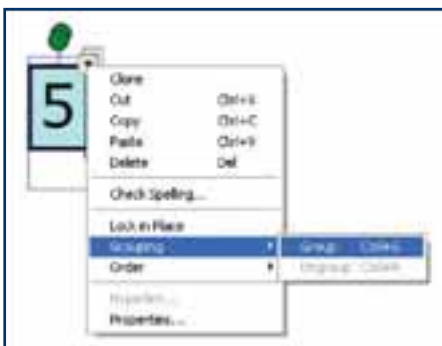


Use the 'text' tool to type the number and drag the number onto the rectangle. Choose an appropriate size of text - no smaller than font size 18 for whole class display.

You will then need to 'Group' the number and the card to stop them coming apart when you drag the card.

Do this by selecting both the rectangle and the text and tap 'Grouping' and 'Group' from the drop down menu.

Grouping



This is now a digit card than can be manipulated on screen by dragging. If you want to make sets of digits, make many copies of the cards before you group the rectangle and text. You can then edit the text.

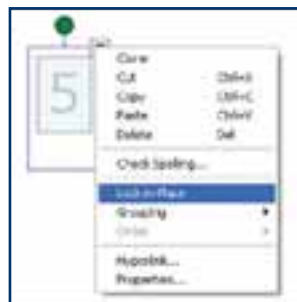
How to create a 'ghost' of an object

The 'ghost' card is a copy of the card that has been made translucent and then locked to the background so it cannot be dragged.

To do this, first make a copy of the card and move it to one side. Select one of the cards and 'Properties' from the drop down menu. Select the minimum transparency level.

Lock the 'ghost' to the background by selecting the shape and 'Lock in Place' from the drop-down menu.

Lock in Place



Finally drag the darker card on top of the ghost.

Notes

Teacher notes:

- The digit cards can each be dragged to support pupils to reorder the numbers in each data set. A 'ghost' of each number is left on the screen.
- On some pages a coloured rectangle contains the correct value. Select each rectangle followed by Delete  to reveal the answer underneath.
- The rolling dice is one of the Flash resources from the Gallery. It can be resized, copied and pasted on a Notebook page.

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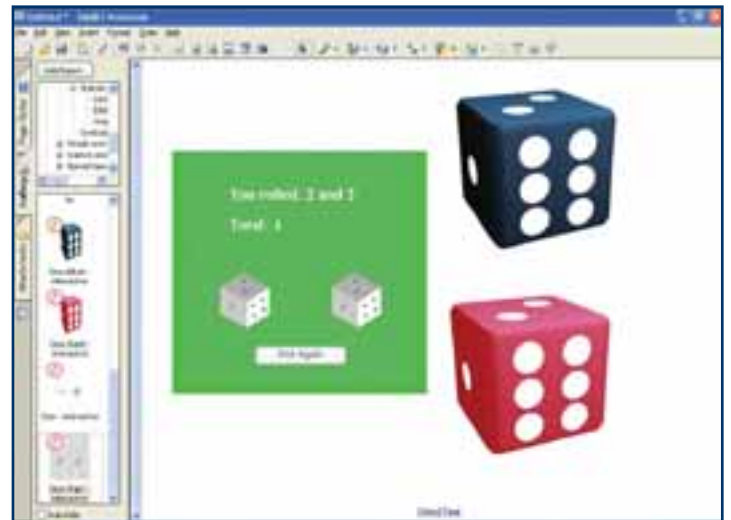
You can modify the "Medians.notebook" file in any way you like. If you do so, then save it with a different name in case you want to access the original again at some point.

The extension task

There are a range of interactive dice that can be used to generate interesting data for pupils to explore statistically. For example, there is a set of two dice, which would produce an unbiased set of data for exploration.

These can all be resized and repositioned on the SMART Notebook page.

Extended Page



Notes

Resources

Jones, K. (2005), 'Using Interactive Whiteboards in the Teaching and Learning of Mathematics: a research bibliography,' *Micromath*, V20(2) pp 5-7.

Nuffield Foundation (2005), 'Enhancing Mathematics Teaching Through New Technology. The Use of the Interactive Whiteboard.' *Mathematics in School*, V34(3) pp 4-6.

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