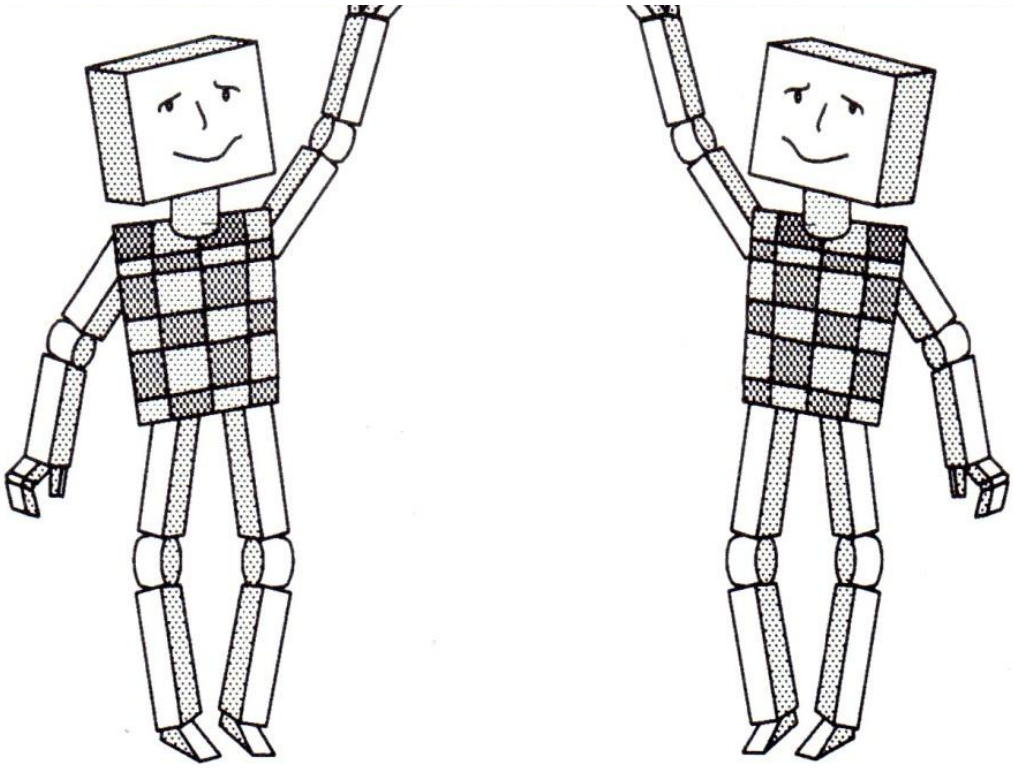
Fun with Spreadsheets



Introductory spreadsheet activities for Key Stage 2 and 3

By

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Fun With Spreadsheets

by

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&
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Thanks
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Fun with Spreadsheets

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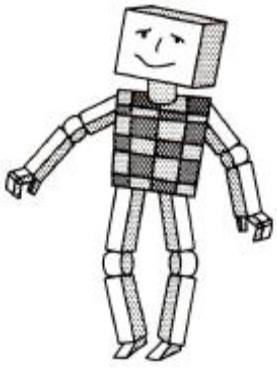


Introduction

The aim of this book is to provide teachers and children with some introductory opportunities for mathematical exploration which spreadsheets can provide. The activities were developed with the help of Years 5 and 6 children, and their teachers, as part of a project which focussed on developing mathematical understanding through data handling. Although the teachers involved in the project used databases as well as spreadsheets, they did find that children gained more benefit from using the latter.

One of the main advantages with the spreadsheet was that the children could obtain meaningful answers to their questions from a comparatively small amount of data. This could provide a starting point for extending their enquiries by using a larger sample. The activities have been used with pupils throughout Key Stage 2 and early Key Stage 3.

We were particularly interested in developing activities which would encourage children's natural curiosity. The starting point for an activity was usually to pose an initial question and ask pupils what data they might require and how they might use a spreadsheet to find the answer. Then as they became more aware of the potential of the spreadsheet ask them to formulate further questions.

Although the book contains both teachers' and pupils' pages we have usually introduced the activities to the pupils through discussion. In the early stages of using the spreadsheet children merely used it for 'blank sheet' recording but we soon found that we could introduce them to writing their own simple formulae, then copying and pasting the formulae to other cells. An alternative introduction was to give the pupils a spreadsheet which had been set up in advance by the teacher and encouraging them to explore what was happening.

It is not intended that the activities should be worked through systematically but that teachers should select those suggestions which support their mathematics scheme of work. In this way the use of spreadsheets should become an integral part of the mathematics curriculum and not a 'bolt-on' activity that takes place because the teacher feels obliged to do work using IT. In this way teachers can support pupils' mathematical understanding with ICT as required by the programmes of study for both elements of the National Curriculum.

On each of the teachers' pages an indication is given of the intended learning outcomes. This is our view of what the pupils could learn but, as every teacher will know, there can be a difference between the intention and what actually happens. The important thing is to introduce pupils to spreadsheets in an interesting way so that they become intrigued by trying to find answers to their own questions.

This book does not set out with the intention of using a particular spreadsheet program. There are several of these on the market and, although they have many things in common with each other, there may be differences. Therefore, teachers who wish to try the activities are recommended to consult their spreadsheet manual.

Teacher's Page

All Down Hill

Activity:

Rolling a toy car down a slope of different gradients is easy to set up in the classroom with the spreadsheet being used as a simple results table, but with the possibility of extension later on.

Children should be encouraged to look closely at any emerging patterns and to predict the distance of future rolls at different gradients and on different surfaces.
A suggested starting point might be a spreadsheet with the following headings.

a Number Of Blocks
b Distance Travelled (cm)

The height of the ramp can be supported by a number of Multilink cubes. The teacher can then focus the children on looking at the pattern of results rather than simply concentrating on distance travelled.

Intended Learning Outcomes:

* To carry out a fair test and record results on a spreadsheet.
* To be able to use results and data to predict future outcomes.
* To appreciate that there are a number of variables which affect the performance of a toy car.
* To realise that there is an optimum point at which a toy car can be released in order that it might travel the greatest distance.

Extension Activities:

* If a different car is used and rolled from a height of 2 and 4 multilink cubes and the results are given, predict the distance the car will travel at 6, 8,10, etc.
* Further investigations can be developed using other possible variables such as the floor surface and the type of ramp used.

Pupil's Page

All Down Hill

You need: A collection of toy cars
A board to roll the cars down
Some Multilink or some blocks of the same size to alter the gradient

Set up a ramp using the blocks and the board so that it is two centimetres high and make sure that the cars can roll to their fullest amount.

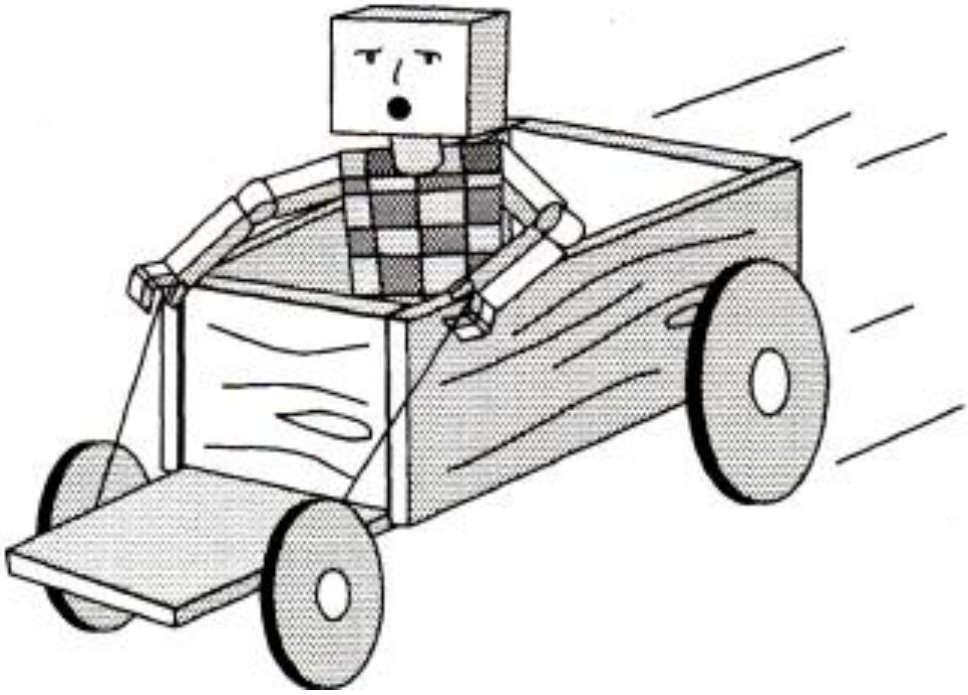
Your aim is to find out which car is the best at rolling down the ramp. The cars should not be pushed but just released from the top of the ramp.

Measure the distance that each car rolls down the 2cm gradient and enter the distance into your spreadsheet.

Next raise the ramp to 4cm and measure the distance each car rolls this time.

Repeat the activity raising the ramp by 2cm each time. Does the same car always win?

Could you time the run of each car and try to work out its speed?



Teacher's Page

Chocs Away!

Activity:

Starting with real chocolate bars is essential. This activity is open ended and pupils can tackle it in a number of ways at different ability levels. They need to be given the opportunity to decide which measurements to take and how a fair comparison will be made.

The cost of each gram or the cost of each cm^3 are possible avenues of investigation. The use of the spreadsheet greatly speeds up the maths by using a simple formula such as:

= price / grams.

Instant graphs make the data more relevant and meaningful. The test is always popular. Where else can you get to eat the data at the end of the lesson? Not in a pet survey!

Intended Learning Outcomes:

* To develop skills of measurement, including weight, length and volume.
* To be able to use simple formulae to enable comparisons to be made.
* To begin to appreciate the term "value for money".

Extension Activities:

* Use the information provided on the packaging to investigate the quantities of the various ingredients. Which choc bar has the highest fat content? Which one has the highest carbohydrate content? Does a Mars a day help you work, rest and play?
* Once the notion of value for money is grasped, the children could investigate other things like the price of crisps compared with a kilo of potatoes.
* Investigate multibuys? Is money saved by buying crisps in bulk? If multipacks of assorted flavours are bought, does the family eat all the different flavours?

	A	B	C	D	E	F
1	Name of bar	Price in pence	Weight in grams	Price/gram	KCals	Price/KCal
2	Twix					
3	Mars					

Enter the formula: =B3/C3 in cell D3 and fill down the column.
Set the format to 2 decimal places.

Pupil's Page

Chocs Away!

Yesterday my friend said she thought that:

"A Twix gives you best value for money."

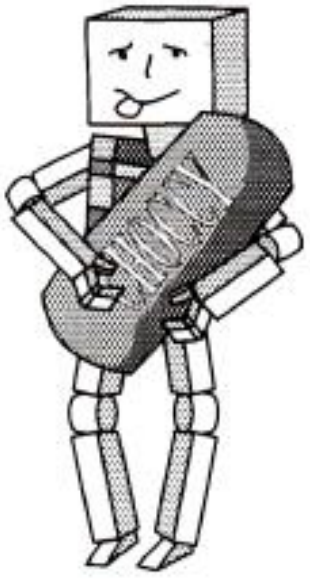
Do you think she is right?

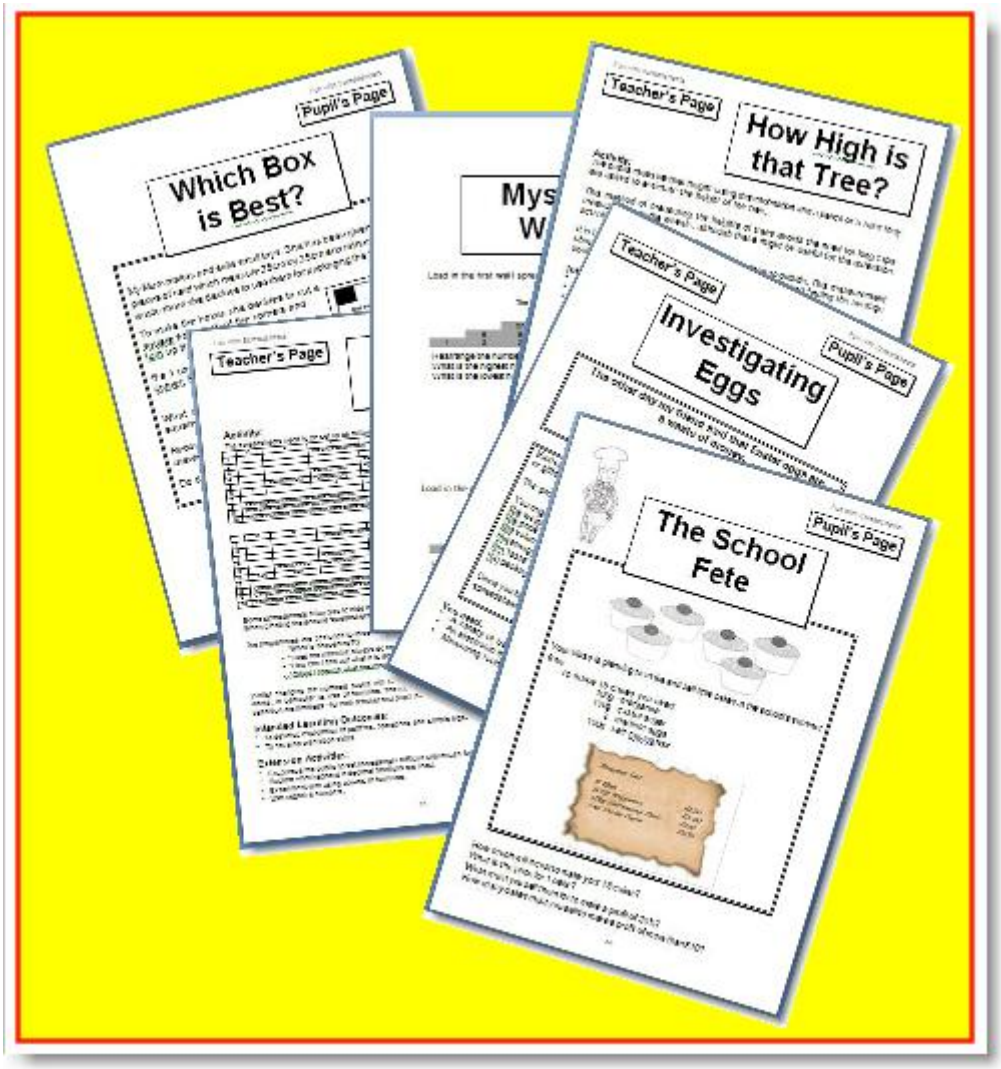
What data will you collect to prove whether she is right or wrong?

Enter your data into a spreadsheet to help you answer the question.

You might find out about:

- The weight
- The price
- The volume
- The energy value
- The taste value

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