

CHRIS CHROME'S CAR WASH



BUSINESS PLANS

To use a spreadsheet to model the running of a small business. To be able to ask 'What if..?' and make decisions from conclusions drawn.

†† Pairs or small groups.

⌚ 45 minutes at the computer; 20 minutes demonstration.

Previous skills/knowledge needed

The children should have used a simple spreadsheet before and will need to be at Level 4 or above in Maths.

Key background information

Spreadsheets are a useful tool to monitor how a business is functioning. By entering all the income and expenditure, spreadsheets allow us to keep careful track of the flow of cash. Most importantly, spreadsheets enable us to model the consequences of any changes – by making a single change in one entry, all the values that depend on that entry are updated across the spreadsheet. Additional calculations can be made on the data through the use of various functions, such as 'sum' and 'average'. The only function required for this activity is the sum function. (The 'Party time' activity on page 92 explores this modelling aspect of spreadsheets in more detail.)

This activity is based on a spreadsheet for an imaginary car wash business, for which the children have to consider

expenditure and income to work out the profits, and model what would happen if certain changes took place to affect the cashflow. The children have the opportunity to use some of the formula options within the spreadsheet to help them with their calculations. Although the activity is based around the business figures provided on photocopiable page 146, the children could set up their own imaginary car wash business and produce appropriate figures for this to use in the activity.

Preparation

Photocopiable page 146 provides some sample figures for the first month of a car wash business, together with some questions which will encourage the children to make use of the spreadsheet facilities. Make one copy of the photocopiable sheet for each child. Prepare a spreadsheet based on this, perhaps asking the children to input the data as part of the main activity – a good test of their accuracy skills! If you wish, adapt the sheet or produce several of your own to suit the children's abilities. Alternatively, a more able group of children could sort out their own spreadsheet labels and enter some realistic data based on their perceptions of the possible business cashflow. In this case, you will need to produce your own question sheet to direct the activity.

A visit to the school office to see a real spreadsheet modelling the school's cashflow is a good way to prepare for this activity, if possible. A local business or shop may be willing to demonstrate how a spreadsheet is used in the running of their business.

Vocabulary

Cell, formula, calculation, cashflow, model, expenditure/ outgoings, income, profit.

Resources needed

A computer, spreadsheet software, a printer, paper, photocopiable page 146 or your own data/question sheets.

What to do

Provide each child with a copy of photocopiable page 146. Explain that this shows the income and expenditure for a car wash business and includes some questions which you would like them to answer. Tell them that these questions relate to various changes in the business, and they are going to use a computer spreadsheet to find out what would happen as a result of these changes.

Start by providing a small group demonstration to remind the children how the spreadsheet software operates and how data is entered and saved. Now show them how to enter a formula into the spreadsheet; for example, to find out the total amount of money made per day or week is 'cost per wash x number of cars'. In this function, the product of the two cells will be calculated and placed in a

Handling information



cell. The children will also need to know about the sum function. Show them how this adds up any number of values held within a column or part of a column and how the total can be placed into a cell. Next, point out how easily changes in circumstances can be modelled – for example, if the business costs were to rise or fall, the spreadsheet can show exactly how this would affect the profits once you have entered the relevant figures. Show them a few examples so that the children can see how the software updates the relevant values automatically. Then allow them access to the computer in pairs or small groups to complete the photocopiable sheet, inputting the data as part of the activity if you have not already done this for them. Most children are likely to need support in using the spreadsheet functions to answer the questions.

The children should enjoy using the different spreadsheet formulas to answer the 'What if ...?' type questions on the photocopiable sheet, and will start to appreciate the ease with which changes can be modelled.

Suggestion(s) for extension

Children who are confident with the spreadsheet's facilities could model more complex situations such as: 'The boss decides to give himself a 50% wage increase. How does this affect the weekly profit?', or 'The landlord decides to charge the car wash company one-fifth of its takings as rent. How many more cars must be washed to keep the profits level?'

Suggestion(s) for support

Less confident children will need much adult support during this activity, and it may not be appropriate for them to use a function. They could be asked, for example, to note down how well the business is doing from looking at the weekly profits. They could also be asked to alter the amount spent on advertising and see how that affects the weekly profits.

Assessment opportunities

This activity will enable you to make assessments as to how well the children interpret, analyse and check the plausibility of information held on the IT system, and in choosing elements required for specific purposes. Look to see how confidently the children use the spreadsheet facilities to model the cashflow. Do they fully understand how making a change in one cell of the spreadsheet will affect any total that relies on that cell?

Display ideas

Use an enlarged copy of the car wash spreadsheet as the central focus of your display, and ask the children to add explanations as to what the contents of specific cells mean and how the flow of cash is modelled. Word processed and graphic work could enhance the display.

Reference to photocopiable sheet

Photocopiable page 146 shows the income and expenditure for a small car wash business. It contains questions relating to various changes in the business, encouraging the children to use formulas in a computer spreadsheet to find out the consequences of these changes. As only the sum and product functions are used, the task is straightforward.

Chris Chrome's Car Wash

Name _____ Date _____

This spreadsheet shows a month's business figures for a small company

▲ Enter the data into a computer spreadsheet. Your teacher can help you with this.

	A	B	C	D	E
Chris Chrome's Car Wash					
		Week 1	Week 2	Week 3	Week 4
3	Cost per wash (£)	5	5	10	10
4	No. of cars	12	24	34	27
5	Total income (£)	60	120	340	270
6	Equipment (£)	5	10	20	5
7	Advertising (£)	10	5	10	5
8	Rent (£)	10	10	10	10
9	Wages (£)	0	0	50	50
10	Total outgoings (£)	25	25	90	70
11	Profit/week (£)	35	95	250	200
12	Profit carried fd. (£)	35	130	380	580

▲ Now answer the questions by using the appropriate formulas in the computer spreadsheet. Use the back of this sheet for your answers.

- 1 What is the profit after the first week?
- 2 Why hasn't Chris Chrome paid himself for the first two weeks?
- 3 How much in wages could Chris have paid himself for the last two weeks?
- 4 Why has expenditure on equipment gone from £20 to £5 from week 3 to week 4?
- 5 How might Chris get more cars through this car wash?
- 6 Is Chris's business succeeding?
- 7 What is the increase in profit if you double the charge per car?
- 8 If you can only clean 20 cars per day how can you maximise your profits?
- 9 If it rains for a whole week and your takings are zero, how does this affect the profits at the end of the month?
- 10 The rent doubles after two weeks, how does this affect your profit?

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