A matter of interest

It's judgement day, and Stephen Wells works out what you owe and preaches the converted.

I recently had an email from Rakesh Mohan in New Delhi asking if there was any built-in function in Excel 97 to calculate the interest paid on a reducing loan balance. Yes, there is – but the results may not necessarily concur with a real-life situation. It very much depends on how the institution is calculating its loans. But you can see how Excel's available functions work for a fixed interest loan from the example in the screenshot opposite.

This loan is for £20,000 (entered in cell B1) to be repaid over 30 months (B2), with the payment at the end of each period, repaid and recalculated monthly. The annual interest rate is seven per cent (B4). If you wish to first calculate the monthly payment you would enter (in B5):

```
=-PMT(B4/12,B2,B1)
```

The minus sign is to compensate for the fact that Excel's payment (PMT) function provides a negative answer. The interest rate is divided by 12 because the interest payments are credited monthly in this example. Following the conditions specified for the loan in question, the monthly payment would be £728.64.

Excel offers the PPMT function, which calculates the amount devoted to repaying principal for any specific monthly payment. You could use this and deduct the result from the regular total monthly payment. But to find the portion of a particular payment devoted to interest, it is easier to use the IPMT (interest payment) function. Enter the completed months in which you're interested in row three. Then enter:

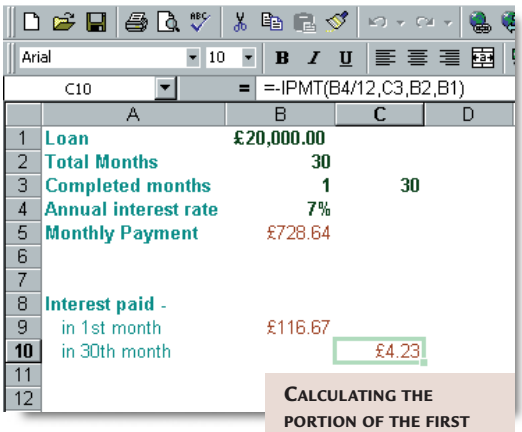
```
=-PMT(B4/12,B3,B2,B1)
```

in B9, and:

```
=-IPMT(B4/12,C3,B2,B1)
```

in C10.

Obviously, if the loan institution is seeing you right, with every monthly payment you make the amount of interest paid will decrease, because you will have paid off more of the principal loan. In the example given here, £116.67 of the first month's payment is for interest, whereas it's only £4.23 of the last month's payment.



CALCULATING THE PORTION OF THE FIRST AND LAST MONTH'S REPAYMENT OF A LOAN DEVOTED TO INTEREST

Price conversion

While we have gone with the European metric system, many other countries – such as the US – still adhere to the old Imperial measures. Obviously this means that some people are going to need a simple method to convert between the two systems, and a spreadsheet is the ideal tool to do the job.

Screenshot 2 opposite suggests one way of producing the conversions. As it's not easy to enter pounds and ounces in one cell, they have been divided between columns A and B.

The custom formatting in each cell is simply 0"lbs" in A and 0"oz" in B. Similarly, kilograms and grams are divided between columns D and E. The cells in D are custom-formatted 0.0 "kg" and in column E, ###"g". The space between the number and the text is optional.

The Imperial weights are shown randomly in the example, to demonstrate they don't have to be entered in numerical order. Column C is hidden and holds the primary formula, which in cell C2 is:

```
=CONVERT((A2*16)+B2↙
,"ozm","g").
```

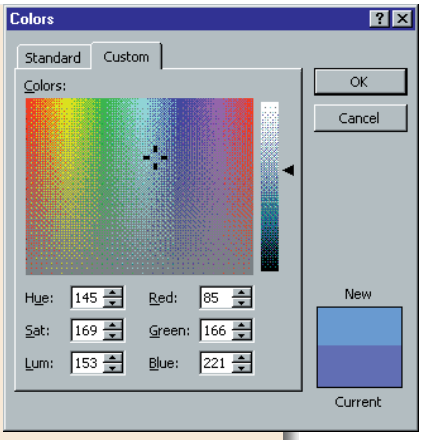
(*Key:* ↙ *code string continues*)

Colour-fill pages

When you choose the Fill Color tool in Excel, you are offered 40 colours, including black and white. This has always been more than adequate in the past, when you often only needed red, green, yellow or blue to make a point on a worksheet. But now that we are all getting used to the subtleties of colour on our home-made websites, we are tempted to be a bit more adventurous. It's easy to change one or more of those standard colours to reflect your new aesthetic sensibilities.

Choose Tools, Options and the Color tab. Click on the closest colour to the one you're shooting for, then the Modify button. Move around the colour chart until you find what you're looking for. A square at bottom right of the dialog box shows the standard colour in the lower half and your replacement above it.

When you're satisfied, click OK. The new colour will now be available in your current workbook. It will retain its old name when you hover over the Fill Color or Font Color tools, but will be called Color Scheme on both drop-down palettes.



Hints for Excel users

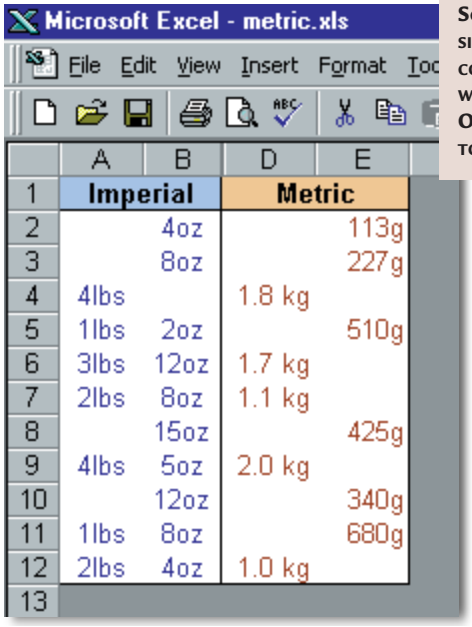
Copying headers and footers
Click on the worksheet that has the header and/or footer you want to copy. Choose File, Page Setup. Click OK in this dialog box. Hold down the Ctrl key and click on the tabs for the worksheets which are also to have this header or footer. Press F4. Then right-click on any of the grouped tabs and choose Ungroup Sheets.

Hiding data
If you have a block of data which is mostly monetary amounts but has some cells with text or zero values in them and you format the range with the Currency tool, the text or the currency mark (such as £ –) will be displayed. But if you wish the text and zero values not to display this you can use the following Custom format:
£0.00;-£0.00;; .

Journey times
As you're not likely to be driving for more than 24 hours at a stretch, here's a way to display the estimated time of a motoring trip. If the length of the journey (in miles or kilometres) is in cell B8 and the average speed (in mph or kph) is in B9, enter =(B8/B9)/24 in B10. Then Custom-format cell B10 with h "hrs" m "mins". As an example, if the distance is 345 (miles or kilometres) and the speed is 40 (mph or kph) then the journey time of 8 hrs 37 mins will be displayed.

Weeding out duplicates
It is easy to cull duplicates from a list. Say cell A1 has the heading, 'Names'. Below that is a list of people, with some of them duplicated. Click within the list. Choose Data, Filter, Advanced Filter. Choose, Copy to another location and Unique records only. You can ignore the Criteria range box. Click on the red arrow on the Copy to box and highlight the range where the second list is to appear. Click OK. The second list will then display each name only once.

Animation
If you like to see (or don't want to see) some animation of the process of inserting or deleting rows and columns, you can change it under Tools, Options, Edit, Provide feedback with Animation.



	A	B	D	E
1	Imperial		Metric	
2		4oz		113g
3		8oz		227g
4	4lbs		1.8 kg	
5	1lbs	2oz		510g
6	3lbs	12oz	1.7 kg	
7	2lbs	8oz	1.1 kg	
8		15oz		425g
9	4lbs	5oz	2.0 kg	
10		12oz		340g
11	1lbs	8oz		680g
12	2lbs	4oz	1.0 kg	
13				

SCREENSHOT 2: A SIMPLE TABLE FOR CONVERTING IMPERIAL WEIGHTS TO METRIC. OR YOU COULD MOVE TO CALIFORNIA

We are using the Convert function found within the Engineering category of Excel's Analysis ToolPak. This will change a number from one measurement system to another. The first argument is the number to be converted. Here we are adding the number of ounces in column B to 16 times the number of pounds in column A. This totals the number of ounces to be converted to grams. Then we specify we are converting ounces mass (not liquid) to grams. The formula in cell D2 is

```
=IF($C2>1000,↙
$C2/1000,0)
```

which says that if the answer in C2 is more than 1,000g, enter the result in kilos in D2. The formula in cell E2 is:

```
=IF($C2<1000,$C2,0)
```

which says that if the answer in C2 is less than 1,000g, enter it in E2. These formulas are then dragged down their columns.

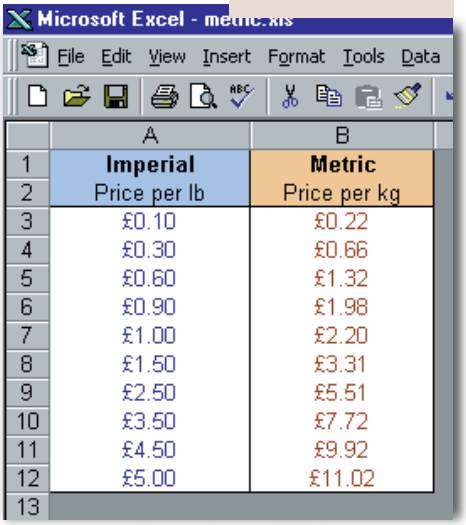
To change a number from one measurement system to another use Excel's Convert

If you wish to convert the price-per-pound of items to price-per-kilogram, you could use the example in screenshot 3. Here both columns use the standard built-in currency formatting, with the usual two decimal places. If you wish to use the current common divisor, enter:

```
=$A3/0.4536
```

in cell B3, then drag down the column.

The results of this conversion won't necessarily tally exactly with the prices that are displayed in your local supermarket (as they often round £5-per-pound to £11-per-kilo), but it will put you in the right area.



	A	B
1	Imperial	Metric
2	Price per lb	Price per kg
3	£0.10	£0.22
4	£0.30	£0.66
5	£0.60	£1.32
6	£0.90	£1.98
7	£1.00	£2.20
8	£1.50	£3.31
9	£2.50	£5.51
10	£3.50	£7.72
11	£4.50	£9.92
12	£5.00	£11.02
13		

SCREENSHOT 3: HAS THE PRICE OF APPLES GONE UP? THIS TABLE CONVERTS A PRICE PER POUND TO A PRICE PER KILO

PCW CONTACTS

Stephen Wells welcomes your comments on the Spreadsheets column. Contact him via the PCW editorial office or email spreadsheets@pcw.co.uk
◆ *Please do not send attached files unless they have been requested.*