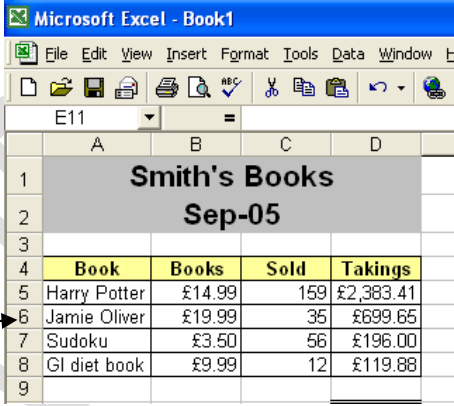

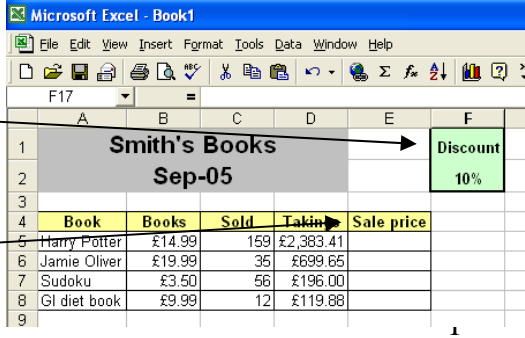


## Absolute Cell References Workbook 1

You have probably used mainly 'Relative Cell References' when you have been writing any formulae in your spreadsheets

Relative cell references are basic cell references that automatically adjust and change when copied or when using AutoFill.

### TASK 1

- Open a new worksheet
- Copy out the table on the right. 
- Write the correct formula to calculate the takings for Harry Potter.
- Copy the formula down using autofill.
- Click your mouse into cell D5. Look at the formula displayed in the formula bar 
- Click your mouse into cell D6. Notice how the formula has changed.
- Do the same for cells D7 and D8. When you used autofill, Excel 'knew' that it needed to adjust the row number by 1 each time.
- In cell B9, add up the total from cells B5:B8
- Use autofill to drag that formula across to cells C9 and D9.
- Click your mouse in cell B9 and look at the formula.
- Click your mouse into cells C9 and D9 and note how Excel has changed the formula by one column letter each time.
- In cell F1, type the word 'Discount' 
- In cell F2, type the discount to be given: 10%
- In cell E5, type 'Sale price'

- We now need to calculate the new selling price with the discount.

- In cell E5, multiply the book cost in Cell B5 by the discount value in Cell F2.

- Drag this formula down. What happened?

- Your results should look like this:

Book	Books	Sold	Takings	Sale price
Harry Potter	£14.99	159	£2,383.41	£1.50
Jamie Oliver	£19.99	35	£699.65	£0.00
Sudoku	£3.50	56	£196.00	£0.00
GI diet book	£9.99	12	£119.88	£0.00

- Normally, Excel would 'realise' that you are dragging a formula down, and adjust the formula for you each row you drag down.

- Click your mouse into cell E5 and look at the formula in the formula bar.

- It should be the same as this



- Click your mouse into cell E6 and see if the formula has changed.

- Repeat for cells E7 and E8.

- You should find that Excel did in fact change the row number for you. So what went wrong?

- Check the formulae again in cells E5 to E8. They change from F2 to F3 to F4 to F5.

- Now have a look at what is in cell F2. It is the 10% discount.

- So when you wrote the formula in cell E5, it worked out the discount correctly. The problem arose when you tried to drag this formula down.

- Check what is in cells F3 to F5 – Nothing! That is why your calculations didn't work, because you were trying to multiply by a blank cell. Excel was trying to be too helpful.

- What you need is some way to tell Excel not to move out of cell F2 even when you drag the formula down. This is called an 'Absolute Cell Reference'.

- When you use the dollar sign \$ in front of the letters or numbers in a formula, Excel realises that it should not try to change those, but keep them absolutely where they are.

- Generally if you are dragging down and only the numbers are changing, as in this case, the \$ is only needed in front of the number part of the formula i.e. =B5\*\$F2

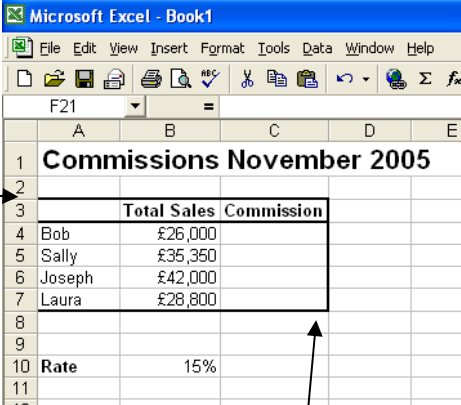
- If you are dragging the formula across and the column letters are the ones that will change, then you would only need the \$ in front of the letter part of the formula =B5\*\$F2.
- However, to save you having to remember this, you can put the dollar sign in front of both parts every time i.e. =B5\*\$F\$2. The exam board will accept this as an answer.
- Delete the formula that you wrote in cell E5 and write it again with the dollar signs in front of the F and the 2.
- Now drag down your formula and see if it has worked this time.
- Click into cells E5, E6, E7 and E8 and you should see that the reference \$F\$2 did not change in any of the formulae.
- Congratulations, you have written your first Absolute Cell Reference formula!

**Summary of absolute cell reference uses:**

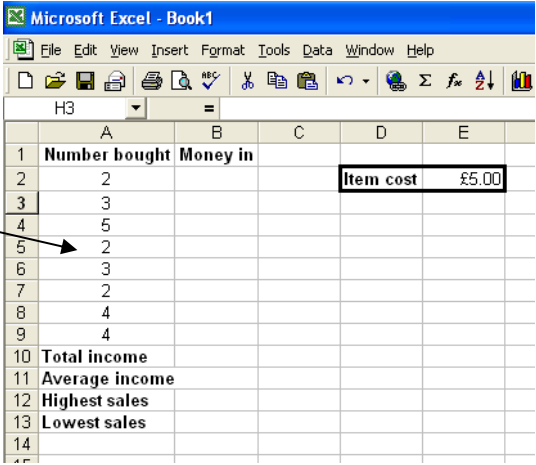
\$A1	Allows the row reference to change, but not the column reference.
A\$1	Allows the column reference to change, but not the row reference.
\$A\$1	Allows neither the column nor the row reference to change.

An absolute cell reference is one that refers to a constant cell and therefore overrides relative cell referencing (which is the default in spreadsheets)

## TASK 2

- Open a new worksheet
- Set up this table. 
- Merge cells A1 to E1
- Make the heading bold and size 16
- Make the text in cells B3, C3 and A10 bold
- Ensure that the column widths are correctly sized to view all of the data.
- Format cells B4:B7 as currency with 0 decimal places.
- Place a thick border around the outside of the main table and also under the titles as shown above.
- Write a formula in cell C4 to calculate the commission earned by Bob – remember to use an absolute cell reference.
- Drag this formula down for cells C5:C7.
- Did this work? Check the formula in each cell and make sure that it always referenced cell B10.

## TASK 3

- Open a new worksheet
- Set up the table like the one on the right. 
- Make cells A1, B1, D2, A1:A13 bold text
- Format cells E2 and B2:B9 as currency to 2dp
- Place a thick border around cells D2:E2
- Write a formula using an absolute cell reference in Cell B2 to calculate the money earned.
- Drag this formula down for cells B3:B9.

- Check that your formula is correct.
- Write a formula in cell B10 to calculate the total amount of money in cells B2:B11 (remember to use a SUM formula)
- Write a formula in cell B11 to calculate the average of cells B2:B11
- Write a formula in cell B12 to calculate the Maximum value in cells B2:B11
- Write a formula in cell B12 to calculate the Minimum value in cells B2:B11

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