

## Lesson 3-12: Understand absolute and relative cell references

You've seen how useful Excel's AutoFill is when copying formulas. Most of the time things work perfectly, as you normally want to increment row and column references when you AutoFill down and across.

Sometimes AutoFill can be a little too helpful when it adjusts cell references that you would like to be left alone. This lesson will illustrate the type of worksheet that requires *absolute cell references* as you convert USD (US Dollar) prices to GBP (Great Britain Pounds).

1 Open *The World's Fastest Cars-12* from your sample files folder (if it isn't already open) and select the *World Cars* worksheet.

2 Insert a column to the left of column H.

This skill was covered in: *Lesson 3-1: Insert and delete rows and columns.*

3 Type **Price (GBP)** into cell H3.

4 Type **USD/GBP** into cell G1.

5 Type **0.51195** into cell H1.

If you want more realism you can get the current exchange rate from [www.oanda.com](http://www.oanda.com). If you are not in England or America it might be fun to change the exchange rate to match your own currency.

6 Place a formula in cell H4 that will calculate the price of a Shelby SSC Ultimate Aero in GBP (Great Britain Pounds).

Formulas were covered in: *Lesson 2-12: Create your own formulas.*

The correct formula is:

**=G4\*H1**

You can now see that the Shelby costs £335,020 in Great Britain Pounds.

	G	H	I
1	USD/GBP	0.51195	
2			
3	Price (USD)	Price (GBP)	Country
4	654,400	335,020	USA

7 Consider what will happen if you AutoFill this formula.

AutoFill was covered in: *Lesson 2-15: Use AutoFill to adjust formulas.*

As the formula is AutoFilled downward the number part of each formula will be incremented like this:

**The World's Fastest  
Cars-12**

	H
1	0.51195
2	
3	Price (GBP)
4	=G4*H1
5	=G5*H2
6	=G6*H3

Consider cell H5 (the price of the Bugatti Veyron). The formula in this cell is =G5\*H2.

AutoFill has done a wonderful job with G5. It has changed the reference from the Shelby's price to the Bugatti, and that's exactly what you wanted.

But AutoFill has seriously messed up with the H2 reference. The exchange rate is always in cell H1. It never moves.

To express this in Excel terminology: G4 is a **relative reference** (ie we want AutoFill to adjust it) while H1 is an **absolute reference** (ie we want AutoFill to leave it alone).

**8** Change the formula in cell H4 to make H1 into an absolute reference.

To make a reference absolute you simply add a dollar sign in front of both the letter and number.

So: H1 becomes \$H\$1.

Click cell H4 and then edit the formula (shown in the formula bar) so that it now reads:

=G4\*\$H\$1

**9** AutoFill the formula in cell H4 to the end of the list.

(AutoFill was covered in: *Lesson 2-15: Use AutoFill to adjust formulas*).

The price of each car is now displayed in both US Dollars and Great Britain Pounds.

	G	H	I
3	Price (USD)	Price (GBP)	Country
4	654,400	335,020	USA
5	1,444,000	739,256	Germany
6	695,000	355,805	Sweden

Click on each of the GBP prices and observe the formula shown in the formula bar at the top of the screen.

In each cell Excel has adjusted the G4 part of the formula but left the H1 part of the formula alone.

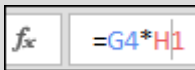
H5		✕ ✓ fx		=G5*\$H\$1		
	C	D	E	F	G	H
3	MPH	KM/H	0-60	BHP	Price (USD)	Price (GBP)
4	257	414	2.7	1183	654,400	335,020
5	253	407	2.5	1001	1,444,000	739,256

**10** Save your work as *The World's Fastest Cars-13*.

**tip**

**A faster way to add those dollar signs**

1. Click on the formula bar so that the cursor is touching the cell reference you want to convert to absolute:



2. Press the <F4> key on the keyboard. Be careful that you see two dollar signs after pressing the key

If you see only one dollar sign it is because you have pressed the key twice and inadvertently created a mixed cell reference.

You'll learn about mixed cell references later, in: *Lesson 3-13: Understand mixed cell references*.

If this happens, just keep on pressing the <F4> key until you see the two dollar signs again.

