

# Use Of Excel

Essential skills in research



# Why is the use of Excel important?

For Data Entry



For helping us understand simple statistical concepts [Click here](#)

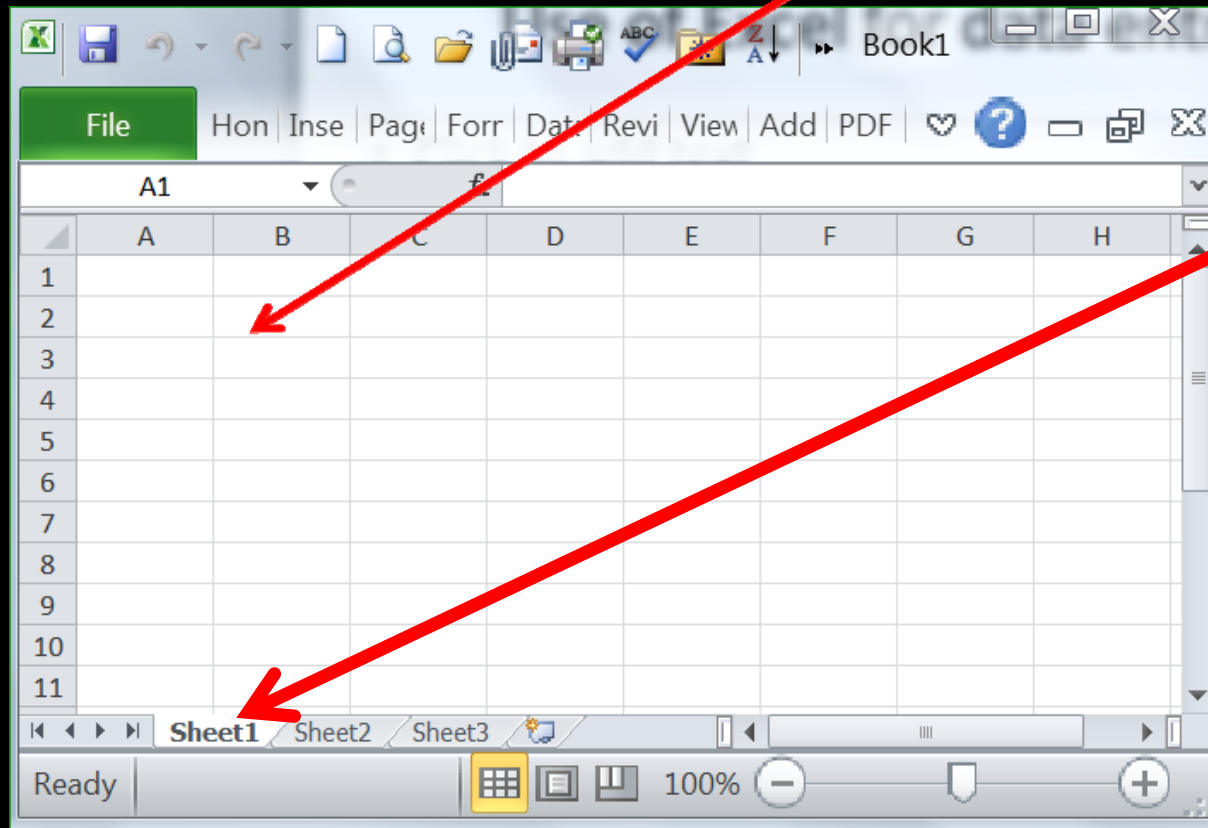
For making a data sheet for your study [Click here](#)

Saving data and keeping information [Click here](#)

Saving and saving as a .csv file [Click here](#)

# Use of Excel for data entry

The spreadsheet is made up of cells



We have  
Worksheet  
labelled  
sheet 1  
and 2

Data can be  
neatly entered  
in columns  
with labels at  
the top

# Use of Excel for data entry

The first column is an ID variable, the second a design variable and the other columns the measurements

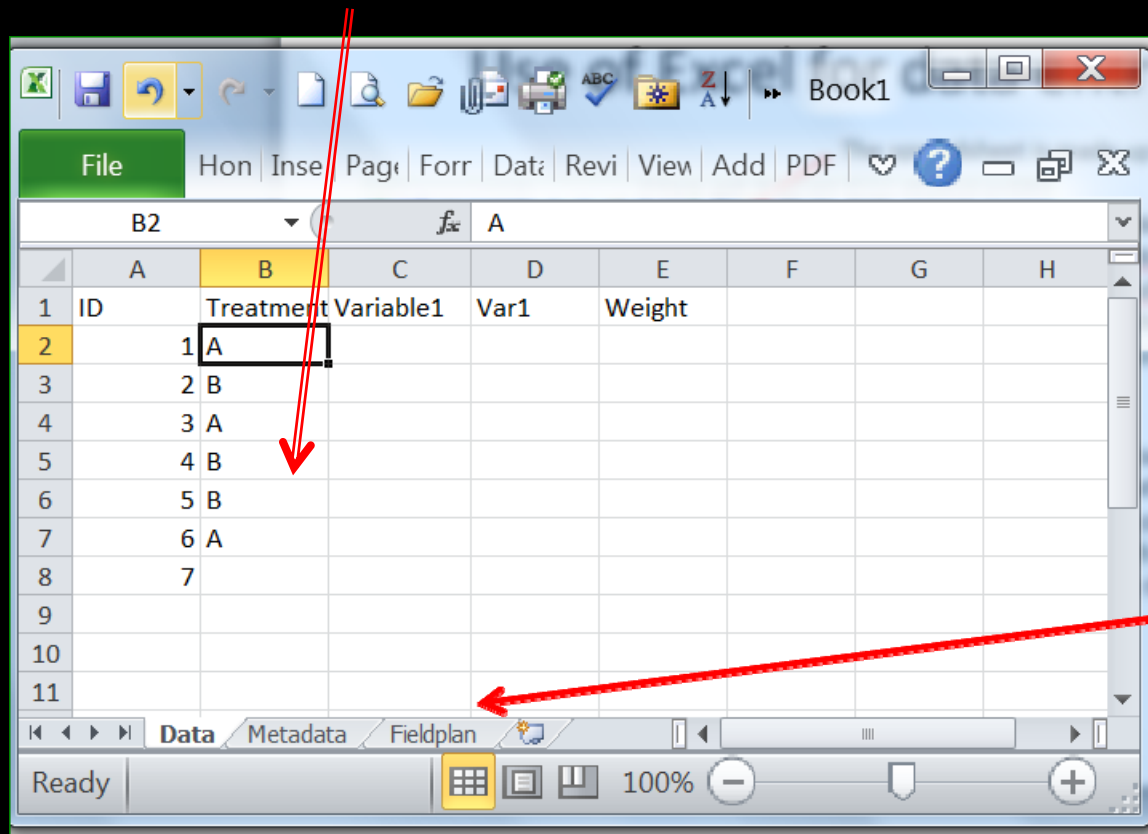
	B	C	D	E	F	G	H
1	ID	Treatment	Variable1	Var1	Weight		
2	1	A					
3	2	B					
4	3	A					
5	4	B					
6	5	B					
7	6	A					
8	7						
9							
10							
11							

Data can be neatly entered in columns with labels at the top

We can label the worksheets as Data, Metadata and field plan

# Use of Excel for data entry

The data sheet can be saved as a csv file



The Excel file is saved with all the sheets including extra metadata and field plan

# Looking at statistical concepts

Data is entered, as it may have been collected, as two rows

The screenshot shows an Excel spreadsheet with the following data:

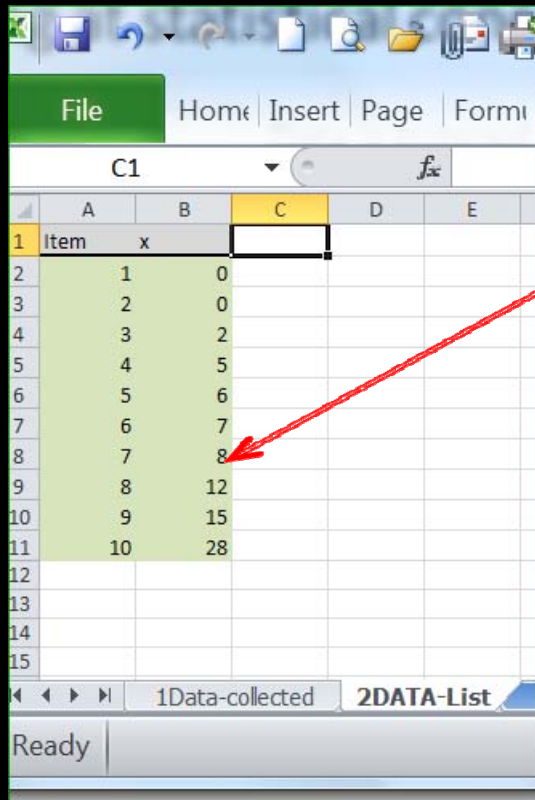
Item	1	2	3	4	5	6	7	8	9	10	
THE DATA	x	0	0	2	5	6	7	8	12	15	28

Text in the spreadsheet:

- Row 1: A small example to demonstrate 2 methods for calculating variance and sample standard deviation, and the excel commands
- Row 6: Days absent of some workers.
- Row 7: Item is the worker
- Row 8: X is the variable of the work days lost (absent days)

A red arrow points from the top right towards cell C13, which is currently empty.

# Looking at statistical concepts



A screenshot of an Excel spreadsheet. The spreadsheet has two columns: 'Item' in column A and 'x' in column B. The data is as follows:

Item	x
1	0
2	0
3	2
4	5
5	6
6	7
7	8
8	12
9	15
10	28

A red arrow points from the text on the right to the cell containing the value 8 in the 'x' column for Item 7.

For this demonstration I have entered it in a second sheet as **two columns**.

**(Item and x)**

The **Item** in this case a person

and the **x**

is the number of days absent from work (defined for a 6 month period)

# Looking at statistical concepts

Item	x	Deviations (x-xbar)	Squared Deviations from the mean (x-xbar)^2
1	1	-8.3	68.89
2	2	-6.3	39.69
3	3	-5.3	28.09
4	4	-4.3	18.49
5	5	-3.3	10.89
6	6	-2.3	5.29
7	7	-1.3	1.69
8	8	-0.3	0.09
9	12	3.7	13.69
10	15	6.7	44.89
11	28	19.7	388.09
sum of deviations		0	
$\sum x$	83		
n	10		
n-1	9		
$\sum (x-xbar)^2$		642.1	642.100
mean	8.3		
s	8.446564061		
variance	71.34444444		
Excel Commands			
mean	8.3		
sd sample	8.446564061		
variance	71.34444444		

For this demonstration I am using a Method to show what the mean is and the variance and the standard deviation.

Next we calculate two columns the deviations from the mean and the squared deviations from the mean number of data points. The column of mean deviations is summed and is zero!

We sum the squared deviations so that we have an estimate of variance



# Looking at statistical concepts

Item	x	Deviations (x-xbar)	Squared Deviations from the mean (x-xbar)^2
1	1	-8.3	68.89
2	2	-6.3	39.69
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6	6	-2.3	5.29
7	7	-1.3	1.69
8	8	-0.3	0.09
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variance	71.34444444		
Excel Commands			
mean	8.3		
sd sample	8.446564061		
variance	71.34444444		

For this demonstration I am using Method 1 to show what the mean is and the variance and the standard deviation.

Next we calculate two columns **the deviations from the mean** and **the squared deviations from the mean** number of data points. The column of **mean deviations is summed and is zero!**

We sum the squared deviations so that we have an estimate of variance that is the squared deviations

# Looking at statistical concepts

Item	x	Deviations (x-xbar)	Squared Deviations from the mean (x-xbar)^2
1	1	-8.3	68.89
2	2	-8.3	68.89
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When we have calculated the sums of squares (642) we can divided by 10-1 to get the variance.

(71.3 for this data)

The square root of the variance gives us the standard deviation, which is back at the same scale as the data.

sum of deviatons		=SUM(C4:C13)	
$\sum x$	=SUM(B4:B13)		
n	=COUNT(B4:B13)		
n-1	=B16-1		
$\sum(x-xbar)^2$	=SUMSQ(C4:C13)	=SUM(D4:D13)	
mean	=B15/B16		
s	=SQRT(D18/(B16-1))		
variance	=(1/B17)*D18		

# Looking at statistical concepts

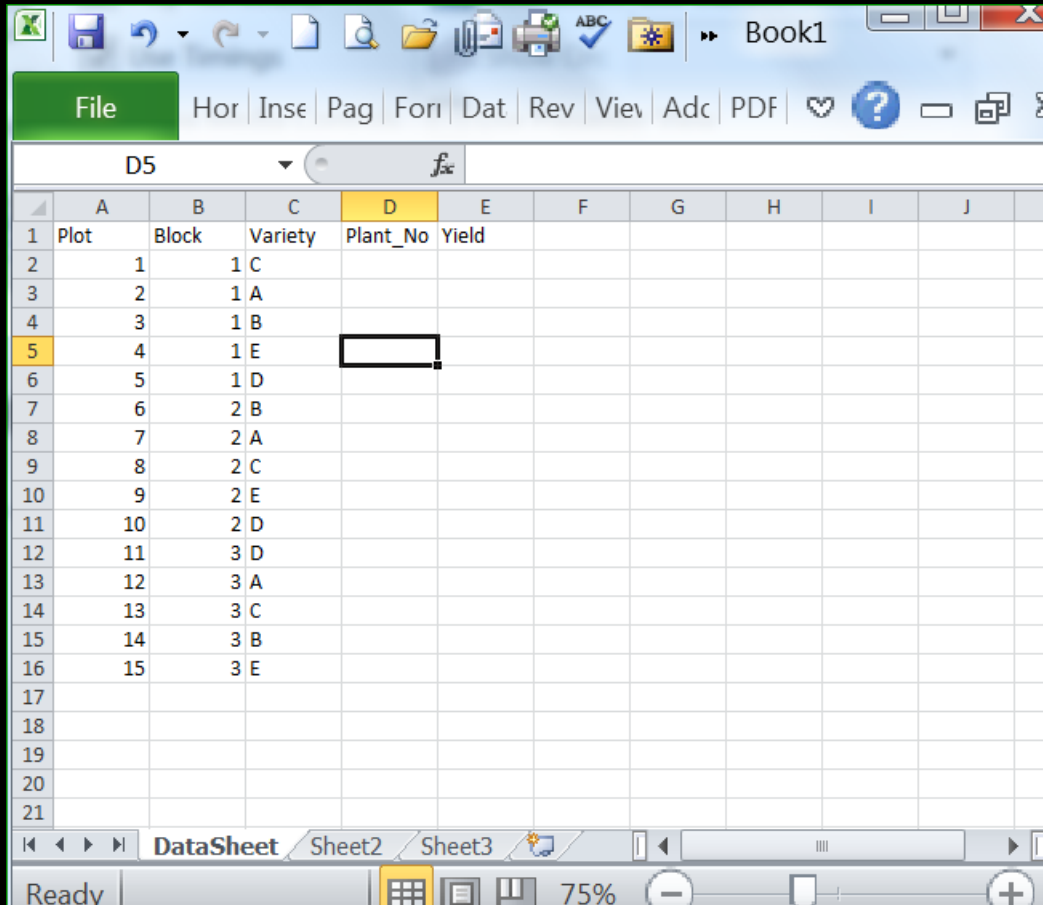
Item	Values of x	Deviations	Squared Deviations from the mean	
	x	(x-xbar)	(x-xbar)^2	
1	1	0	-8.3	68.89
2	2	0	-8.3	68.89
3	3	2	-6.3	39.69
4	4	5	-3.3	10.89
5	5	6	-2.3	5.29
6	6	7	-1.3	1.69
7	7	8	-0.3	0.09
8	8	12	3.7	13.69
9	9	15	6.7	44.89
10	10	28	19.7	388.09
sum of deviations			0	
$\sum x$		83		
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$\sum (x-xbar)^2$			642.1	642.100
mean		8.3		
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variance		71.34444444		
Excel commands				
mean		8.3		
sd sample		8.446564061		
variance		71.34444444		

For this demonstration I am using a Method 1 to show the mean, the variance and the standard deviation.

We can also use formulae in Excel to get these quickly for a small data set.

Excel Commands	
mean	=AVERAGE(B4:B13)
sd sample	=STDEV.S(B4:B13)
variance	=VAR.S(B4:B13)

# Use for making a data sheet



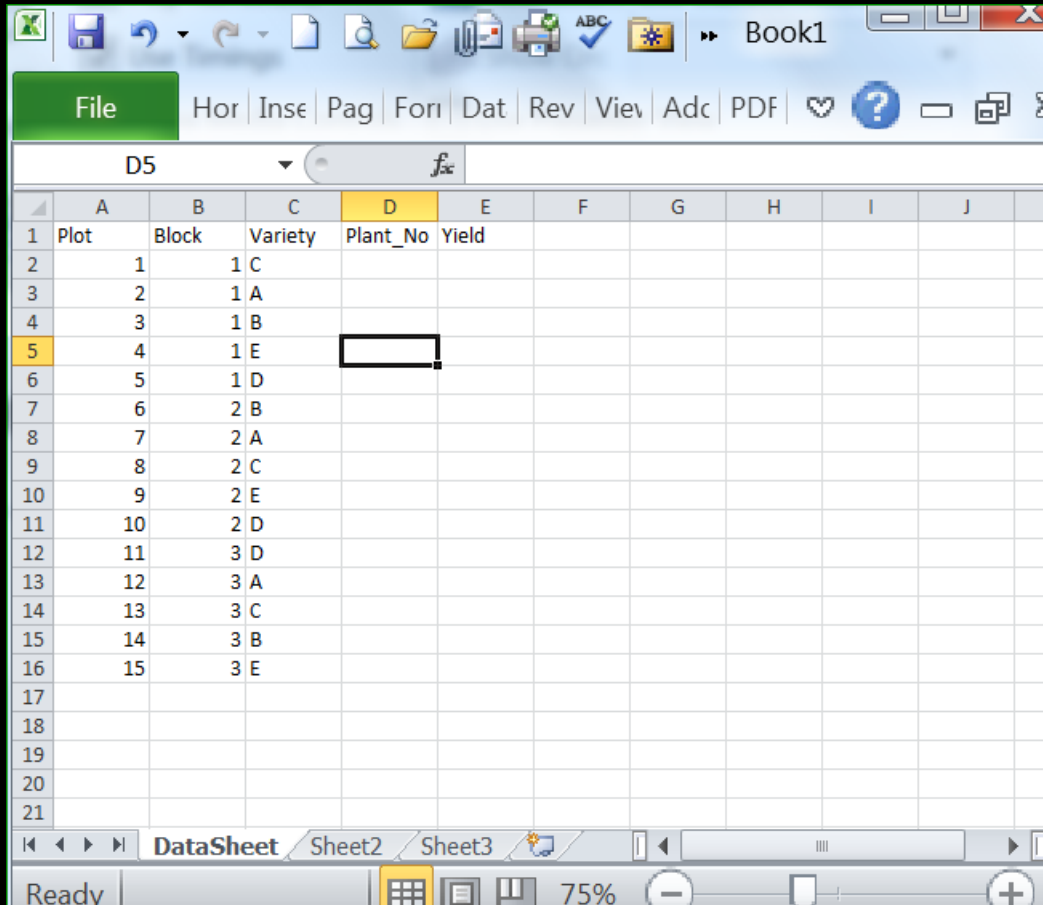
The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J
1	Plot	Block	Variety	Plant_No	Yield					
2		1	1 C							
3		2	1 A							
4		3	1 B							
5		4	1 E							
6		5	1 D							
7		6	2 B							
8		7	2 A							
9		8	2 C							
10		9	2 E							
11		10	2 D							
12		11	3 D							
13		12	3 A							
14		13	3 C							
15		14	3 B							
16		15	3 E							
17										
18										
19										
20										
21										

I have a column for Plot, a column for the Block, and a column for the treatment (in this case variety)

There is no spacing between columns  
No fancy merging of cells

# Use for making a data sheet



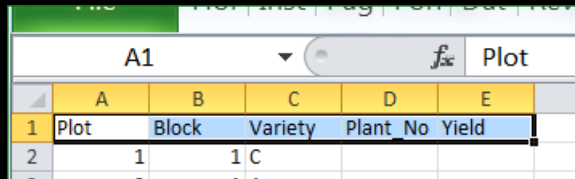
The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J
1	Plot	Block	Variety	Plant_No	Yield					
2		1	1 C							
3		2	1 A							
4		3	1 B							
5		4	1 E							
6		5	1 D							
7		6	2 B							
8		7	2 A							
9		8	2 C							
10		9	2 E							
11		10	2 D							
12		11	3 D							
13		12	3 A							
14		13	3 C							
15		14	3 B							
16		15	3 E							
17										
18										
19										
20										
21										

I have a column for Plot, a column for the Block, and a column for the treatment (in this case variety)

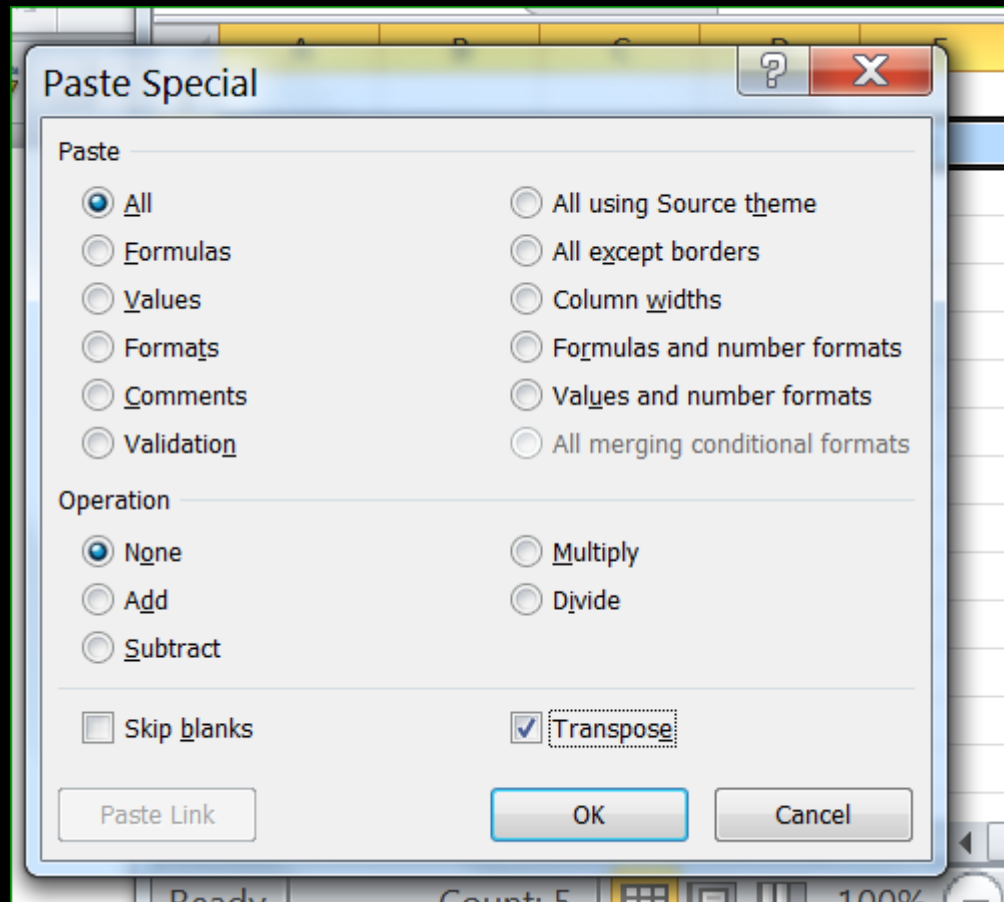
There is no spacing between columns  
No fancy merging of cells

# For saving data



	A	B	C	D	E
1	Plot	Block	Variety	Plant No	Yield
2	1	1	C		

Click the header rows and copy. Then move to the second sheet and Paste Special using transpose box ticked

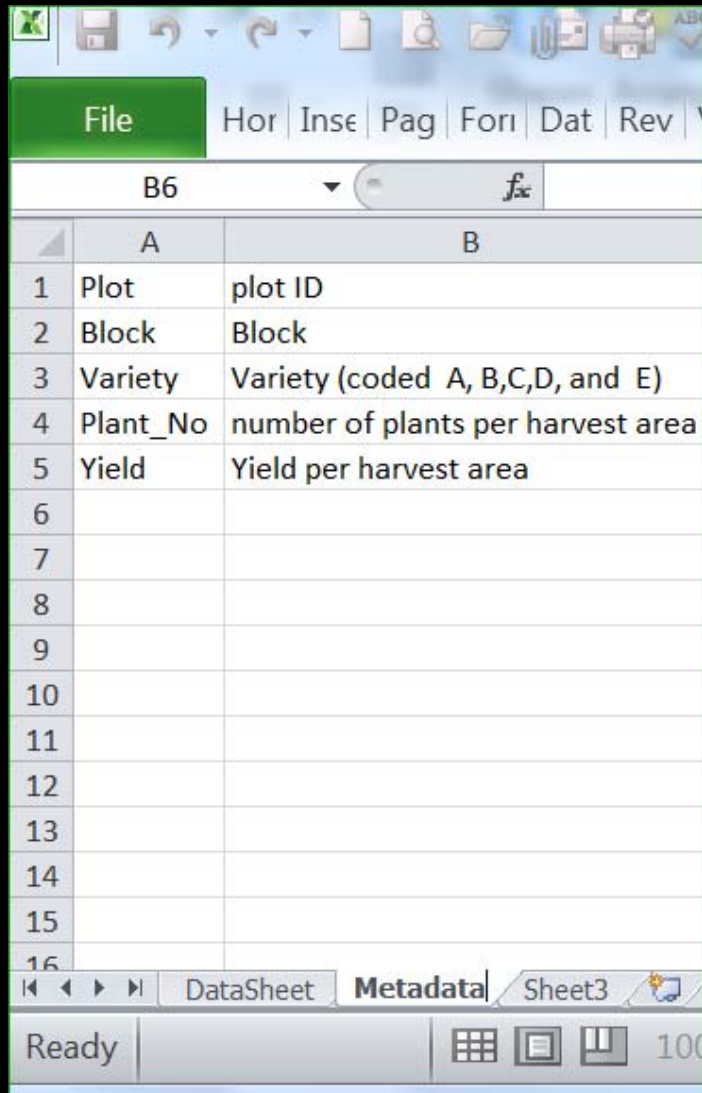


# For saving data

	A	B
1	Plot	plot ID
2	Block	Block
3	Variety	Variety (coded A, B,C,D, and E)
4	Plant_No	number of plants per harvest area
5	Yield	Yield per harvest area
6		
7		
8		

Click the header rows and copy.  
Then move to the second sheet and  
Paste Special using transpose ticked.  
This will paste the row as a column  
and you can use this as the metadata page  
For defining the variables very precisely

# For saving data

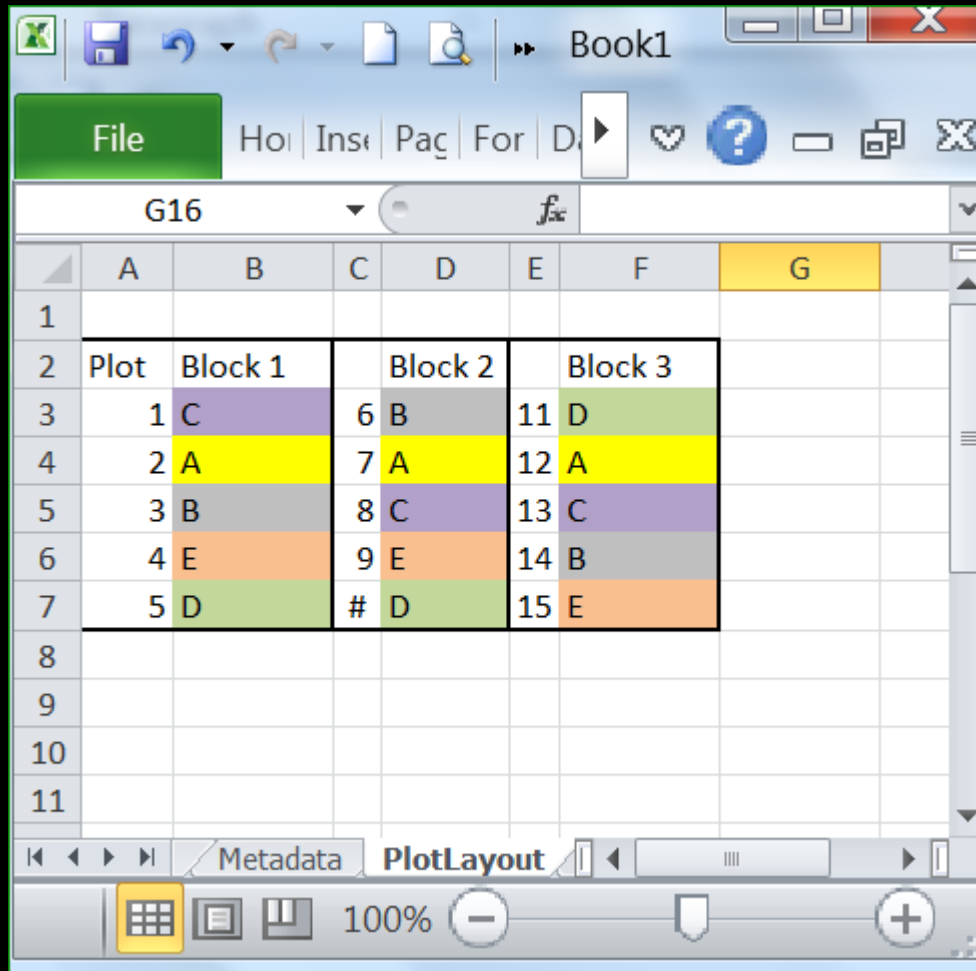


	A	B
1	Plot	plot ID
2	Block	Block
3	Variety	Variety (coded A, B,C,D, and E)
4	Plant_No	number of plants per harvest area
5	Yield	Yield per harvest area
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Rename the Worksheet tab, by clicking on it- and you can label it **Metadata**



# For saving data



The screenshot shows an Excel window titled 'Book1' with a worksheet named 'PlotLayout'. The worksheet contains a table with the following data:

Plot	Block 1	Block 2	Block 3
1	C	6 B	11 D
2	A	7 A	12 A
3	B	8 C	13 C
4	E	9 E	14 B
5	D	# D	15 E

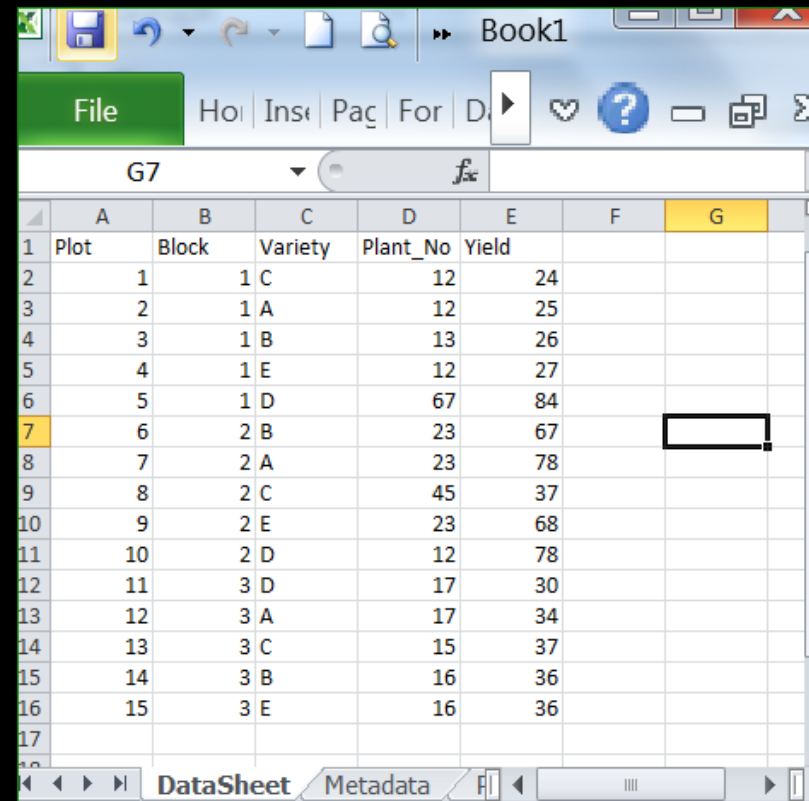
If you have the plot plan (field plan )

you can save this in the third Worksheet

Rename the Worksheet tab, by clicking on it- and you can label it **Plot Layout**

# Saving data as csv file

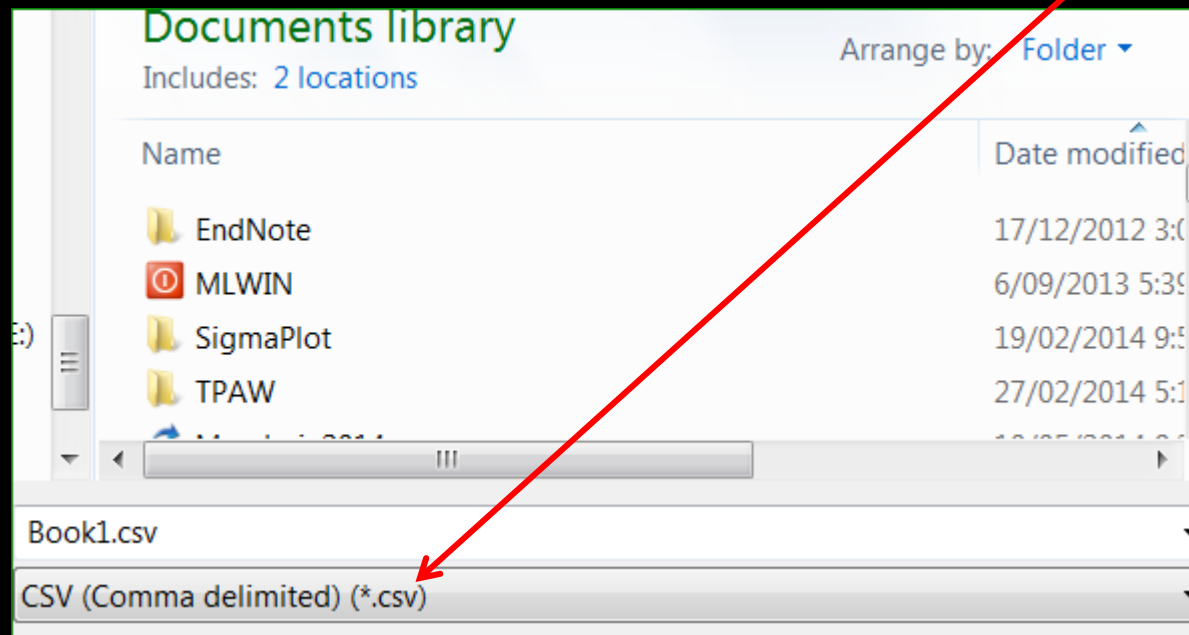
- Once you have saved the 3 or more worksheets for your experiment, save the data sheet only as a csv file.



	A	B	C	D	E	F	G
1	Plot	Block	Variety	Plant_No	Yield		
2	1	1	C	12	24		
3	2	1	A	12	25		
4	3	1	B	13	26		
5	4	1	E	12	27		
6	5	1	D	67	84		
7	6	2	B	23	67		
8	7	2	A	23	78		
9	8	2	C	45	37		
10	9	2	E	23	68		
11	10	2	D	12	78		
12	11	3	D	17	30		
13	12	3	A	17	34		
14	13	3	C	15	37		
15	14	3	B	16	36		
16	15	3	E	16	36		
17							

# Saving data as csv file

- Once you have saved the 3 or more worksheets for your experiment, save the data sheet only as a csv file.



# Next steps

- End of this introduction.
- If you need more Excel help Check the help in Excel, or request via the feedback
- Have a look at the use of Excel for randomisation as a screencast