

A Bit More Microsoft Excel

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New Skills

- Data Validation
- Checking if something is or is not empty
- Auto Fill
- IF function
- COUNTIF function
- Calculating an average
- Using AVERAGEIF to calculate an average, but only if not zero

The Goal for Today

Student Attendance Sheet

Student	29/10/2018	5/11/2018	12/11/2018	19/11/2018	26/11/2018	3/12/2018	10/12/2018	17/12/2018	24/12/2018	Attendance	Completion	Percentage
Abe Anderson	P	P	P	P	P	P	P	P	P	9	9	100.0%
Billy Bobson	P	P	A	A	A	A	A	A	A	2	9	22.2%
Clare Cotton	P	P	AP	P	P	P	P	P	P	7	9	77.8%
Dian Daily	A	P	A	P	AP	P	P	P	P	6	9	66.7%
Elon Easton	AP	P	P	AP	P	A	AP	P	P	5	9	55.6%
Frank Fudgey	P	P	P	P	P	P	P	P	P	9	9	100.0%
Grettle Gauker	AP	P	P	P	P	P	P	P	P	7	9	77.8%
Henry Hoffster	N/A	AP	A	W	P	W	W	W	W	0	9	0.0%
Jenny Jones	P	A	P	P	AP	P	P	P	AP	6	9	66.7%
										0	0	#DIV/0!
										0	0	#DIV/0!
										0	0	#DIV/0!
										0	0	#DIV/0!
Total Enrolled Students	9	9	9	9	9	9	9	9	9			
Active Students	9	9	9	8	8	8	8	8	8			
P - Present	5	5	5	6	6	6	6	6	6			
AP - Absent with Permission	2	1	1	1	2	0	1	1	1			
A - Absent	1	1	3	1	1	2	1	1	1			
W - Withdrawn	0	0	0	1	1	1	1	1	1			
N/A - Not Applicable	1	0	0	0	0	0	0	0	0			
Check (should be 'zero')	0	0	0	0	0	0	0	0	0			
Percentage (based on Active)	55.56%	77.78%	55.56%	75.00%	62.50%	62.50%	75.00%	75.00%	75.00%	68.21%	Average Attendance	

The goal of today's activity is to create a "Student Roster" system that is intelligent and adaptive. The finished product will count how many students are enrolled in a course, allow you to mark each student's attendance and return statistics for attendance.

The idea is that; a system you make for yourself will always work better for you than one made by someone else. For me, this is true of to-lists, reminders and enrolment forms. If this one is of no use to you, that's ok, you'll have learnt some useful skills and perhaps you can apply it to something that will make your life easier.

I'd love to see what things you make, if you do, so feel free to send me things you make if you would like to. I also plan to make a few more like this for things like; an automated shopping list and a personal to-do list/ reminder system. I'd also be open for suggestions and requestes as well. Did I mention I'm a nerd for Excel?

A quick run down of the new Functions

Note: On this page, you do not need to type the functions listed. This will be done on page 5

IF Function

- Checks to see IF something is true then does something or something else if it is false.

=IF(criteria, if true, else)

COUNTIF Function

- Count a range of cells if a criteria is true. E,g.

In cell **B18** we will write on page 5;

=COUNTIF(B2:B14,"P")

- This will check the range of **B2** to **B14** and count how many time the letter 'P' appears.
- A clever way to use this is to count cells that have 'something' in them. To do this we set the criteria to be a wildcard which is done using the asterisk. E,g.

=COUNTIF(\$A2:\$A14,"*")

- We will use this function in cell **B16** we can count how many students we have. The '\$' symbol is new, it denotes 'absolute references' which we will now discuss.

Types of References in Excel

There are three types of references in Excel:

Relative, Absolute and Mixed

- In relative references, you don't use a dollar (\$) sign in the references at all
- In mixed references, you use the dollar sign (\$) only once (such as \$C3 or C\$3)
- In absolute reference, you use the dollar sign in twice in a reference (such as \$C\$3)

Calculating an Average

- We can use simple math to calculate and average when only two numbers are concerned. We take the smaller number and divide it by the larger number. In our example we are going to divide 'Present' students by the 'Active Students.'

In cell **B24** type;

=B18/B16

Using AVERAGEIF

- Average If will give the average of numbers inside a range IF a condition/ criteria is met. For our example we want to only do the average of days that are not zero.

In **K24** cell type;

=AVERAGEIF(B24:J24,"<>0")

Note: the *less than* "<" and *greater than* ">" symbols can be found by holding down the [shift] key and pressing the buttons to the right of the [M] key which are the comma [,] and full stop [.] keys

- The criteria "<>0" tells the function "NOT zero"

Creating a student roster that keeps track of individual attendance and overall class attendance

Step 1. Recreate the sheet as per below. Use whatever names you like (the ones provided or your own)

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Student	29/10/2018									Attendance	Completion	Percentage
2	Abe Anderson												
3	Billy Bobson												
4	Clare Cotton												
5	Dian Daily												
6	Elon Easton												
7	Frank Fudgey												
8	Grettle Gawker												
9	Henery Hoffseter												
10	Jenny Jones												
11													
12													
13													
14													
15													
16	Total Enrolled Students												
17	Active Students												
18	P - Present												
19	AP - Absent with Permission												
20	A - Absent												
21	W - Withdrawn												
22	N/A - Not Applicable												
23	Check (should be 'zero')												
24	Percentage (based on Active)											Average Attendance	
25													
26													

Step 2. Below is the information to enter to get started. Anything typed inside of quotation marks (" ") should be typed as is. **NOTE:** in cell **B1**, type the date for last week

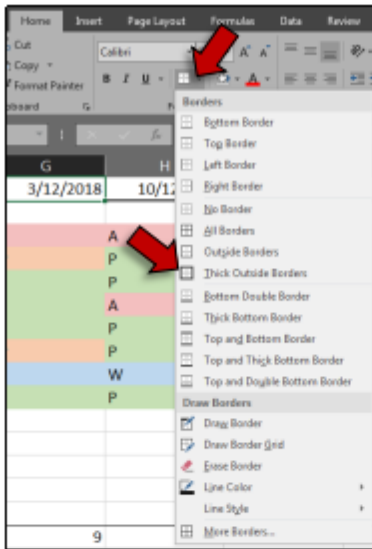
A1 "Student"	B1 "29/10/2018"
A2:A10 <i>Names of students</i>	K1 "Attendance"
A16 "Total Enrolled Students"	L1 "Completion"
A17 "Active Students"	M1 "Percentage"
A18:A22 <i>The five option we will use to count attendance</i>	L24 "Average Attendance"
A23 "Check (should be 'zero')"	
A24 "Percentage (based on Active)"	

Step 3. Enter the formulas and functions as listed below

Formulas and Functions to count attendance per week	What does it mean?
In cell B16 =COUNTIF(\$A2:\$A14, "*")	Counts if within the range but only if the cells have something typed in them
In cell B17 =B16-(B21+B22)	Total enrolled students minus <u>withdrawn</u> and <u>not applicable</u> students
In cell B18 =COUNTIF(B2:B14, "P")	Count if within the range contains the letter 'P'
In cell B19 =COUNTIF(B2:B14, "AP")	Count if within the range contains the letters 'AP'
In cell B20 =COUNTIF(B2:B14, "A")	Count if within the range contains the letter 'A'
In cell B21 =COUNTIF(B2:B14, "W")	Count if within the range contains the letter 'W'
In cell B22 =COUNTIF(B2:B14, "N/A")	Count if within the range contains the letters 'N/A'
In cell B23 =SUM(B18:B22)-B16	Adds the range of counted attendance types and subtracts total enrolled students. Check attendance against enrolled, if not zero a student was missed
In cell B24 =B18/B17	<u>Present</u> students divided by <u>Active</u> gives the percentage of attending students

Formulas and Functions to count attendance per student	What does it mean?
In cell K2 =COUNTIF(B2:J2, "P")	Counts the range but only if the student was <u>P</u> resent
In cell L2 =COUNTIF(B2:J2, "*")	Counts 'if' within the range if something is entered. Works out how many classes have been attended
In cell M2 =K2/L2	Performs the calculation of <u>a</u> ttendance divided by <u>completion</u>
In cell K24 =AVERAGEIF(B24:J24, "<>0")	Calculates the <u>a</u> verage of all <u>a</u> ttendance but only if the average is NOT zero

Hint; use the 'Borders' tool on the 'Home' tab on selected cells to draw boxes

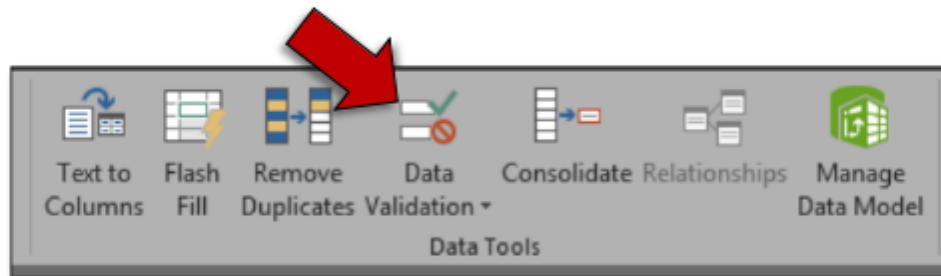


Once you have entered in all of your text, formulas and functions, you can use the steps below to add the other features.

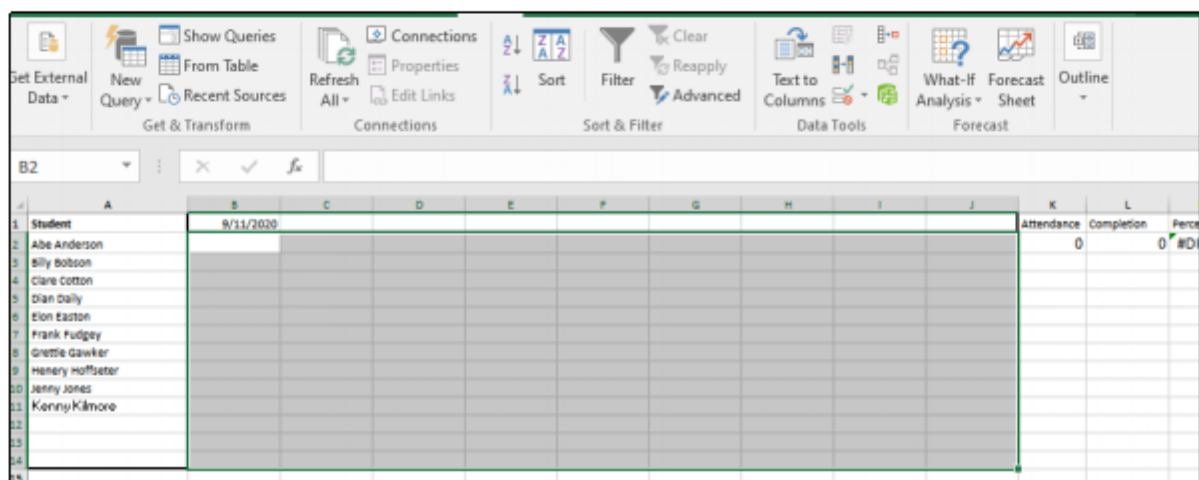
Once you have entered in all of your text, formulas and functions, you can use the steps below to add the other features.

Data Validation

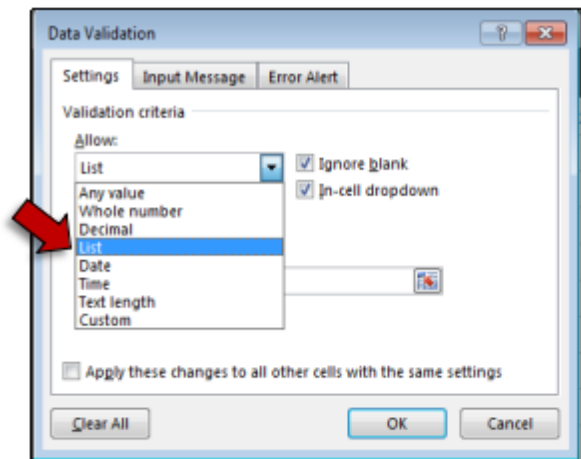
- Data Validation allows you to make rules to restrict the type of data or values that others can enter into a cell.
- You can find it under the 'Data' tab in the 'Data Tools' group



Before we begin, select the cells between B2:J14



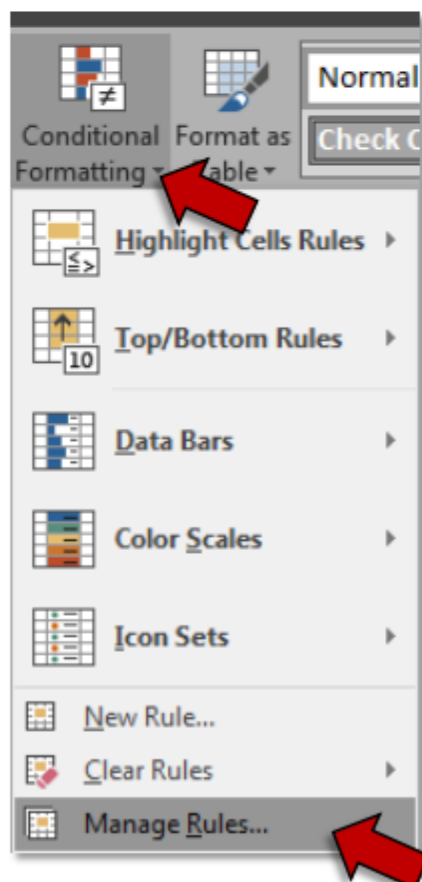
- To set up a rule for validation, select the range of cells and click 'Data Validation' from the 'Data' tab.
- We have quite a few options in here ranging from Whole Numbers and Decimal to Date and Time
- For our activity we will be specifying a 'List' of our own creation
- Now, let's add a list into the "Source:" box of; **P,A,AP,W,N/A** making sure they are separated with a comma
- Press [OK] after to complete



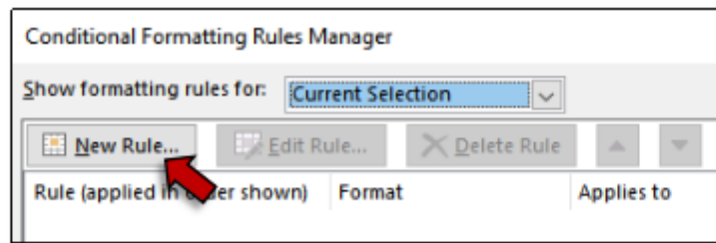
Conditional Formatting

First: select the cells to be have this applied to. In our example

Under the 'Home' tab in the 'Styles' group, we find the [Conditional Formatting] button click that and then click the [Manage Rules...] button at the bottom



Click the [New Rule] button on this screen and then follow and repeat the steps listed below, once for each



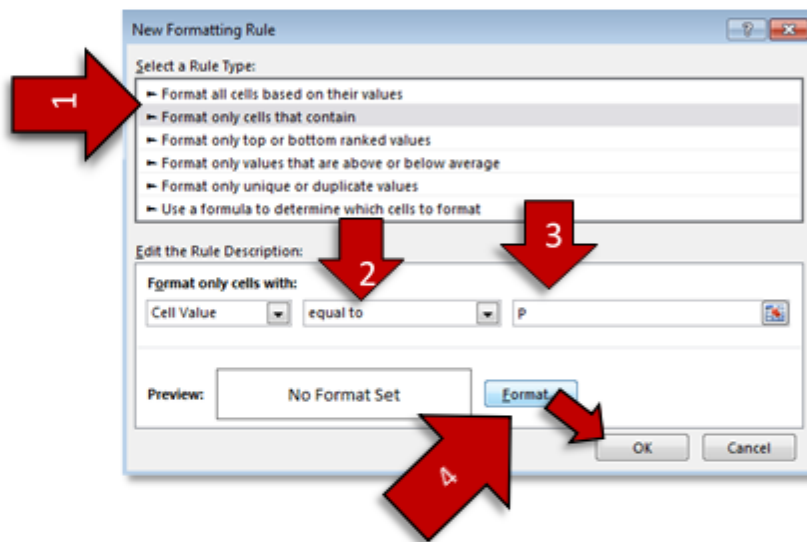
We will be using the;

Rule Type **(1)** 'Format only cells that contain', selecting

(2) 'equal to' and typing a capital

(3) 'P' in the last box and clicking on the

(4) [Format] button

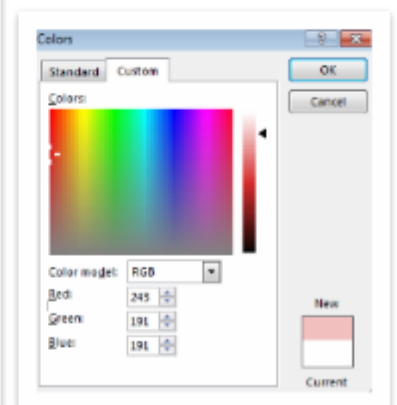
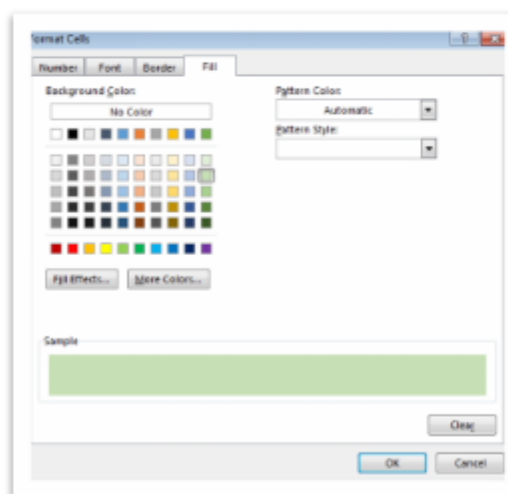


Here we can now select the colour we wish to appear when the condition is met. We can also change options like the 'font' and 'border' but for now we are just going to select this nice green colour

Note 1: lighter colours tend to work better

Note 2: if you do select a dark colour, consider changing the 'font' to a light colour

Note 3: Additional colours can be found by clicking the [More Colors...] button. Use this option when creating the format for 'Absent' students to find a nice shade of red.



Now, let's create a 'Rule' for Conditional Formatting **for each** of our attendance options. You will need to repeat steps 1 through 4 on page 7 for each of the following;

P = Present

A = Absent

AP = Absent with Permission

W = Withdrawn

N/A = Not Applicable

Use a different colour for each rule, feel free to choose a colour scheme that suits you.

B
29/10/2018
P
A
AP
W
N/A

Auto Fill

- A useful feature is available to us that allows us to fill a created formula (or values) across a range of cells.
- Select a cell and look for the tiny green square in the bottom right corner, Left Mouse Click, drag and release

8	8
8	8
4	0
2	0
1	0
0	0
1	0
0	-8
50.00%	0.00%

Auto Fill Options

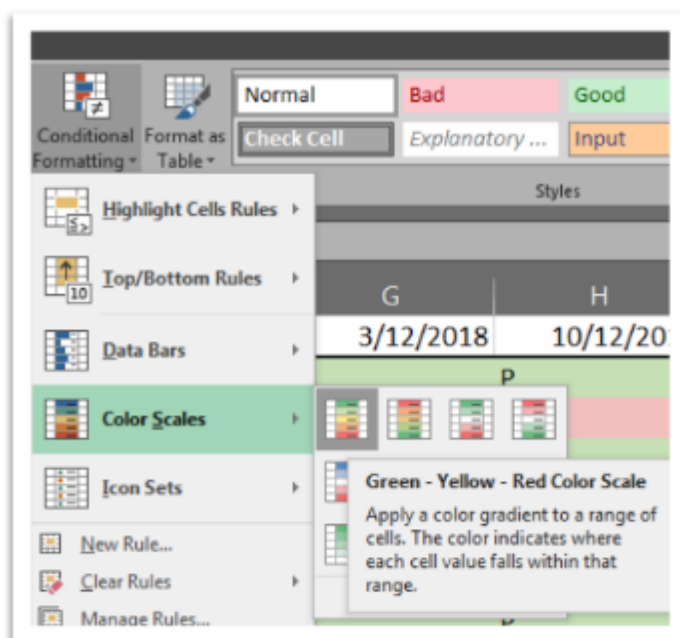
Note: Not always useful for all situations. Let's try this on the date in cell **B2**

	A	B	C	D	E	F	G	H	I	J
1	Student	29/10/2018	30/10/2018	31/10/2018	1/11/2018	2/11/2018	3/11/2018	4/11/2018	5/11/2018	6/11/2018
2	Abe Anderson	P								
3	Billy Bobson	A								
4	Clare Cotton	AP								
5	Dian Daily	W								
6	Elon Easton	N/A								

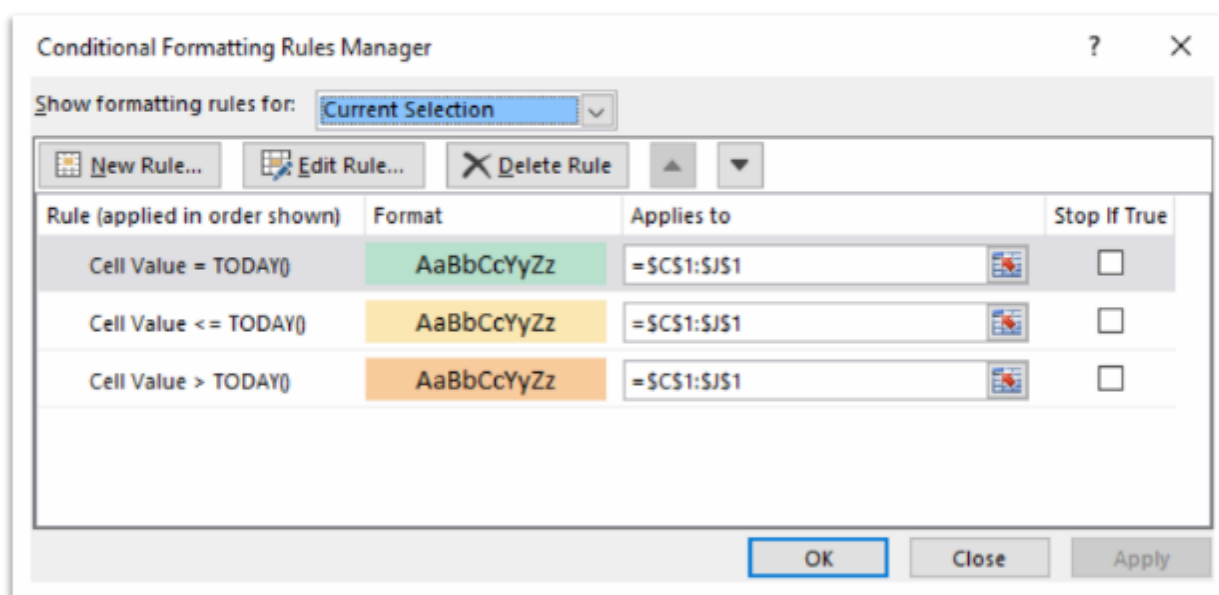
- This has not created the desired result. Our classes will be running once a week, not every day. Let us fix this
- In cell **C1** type;
=B1+7
- Now highlight cells **B1** to **C1**, find the tiny green box in the bottom right of your selected cells, Left Mouse Click and drag to **J1**

Some Additional Conditionals

- Earlier we setup our own conditional formatting rules. You can also select from some pre-made ones
- Highlight the column **M2** to **M14**
- Select 'Color Scale' from the Conditional Formatting button and select the first 'Color Scale' option



A clever one to use is setting the date along the top to change colour based on if the date is either; past, current or not happened yet.



Usage of the Roster

<<See video on HobStar Academy; [www.https://hobstaracademy.glide.page/](https://hobstaracademy.glide.page/)>>

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You can access it on any device, iPhone, Android phone, laptop or desktop computer with with the QR code below (some phones don't play nice) or, from the link below (type it into your browser). Finally, if you are still having issues, I can txt or email you a link.

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