

## Charting M & M Data



When we accumulate data, as the numbers get bigger, the patterns in our data become clearer and more accurate. We can see this by analyzing the content of bags of M & Ms.

In today's spreadsheet, we will create graphs representing the colors of M & M candies in a small bag. Please carefully check that you completed the spreadsheet you see on the right entering the formulas/ functions exactly as shown (you may have this done already).

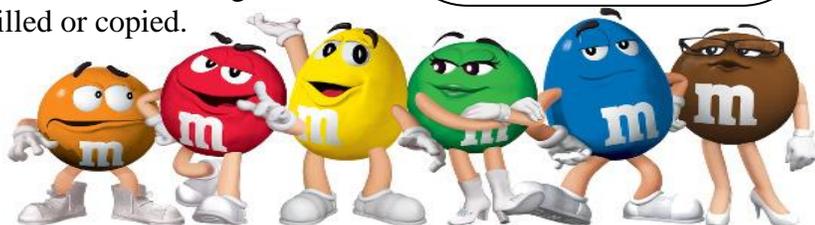
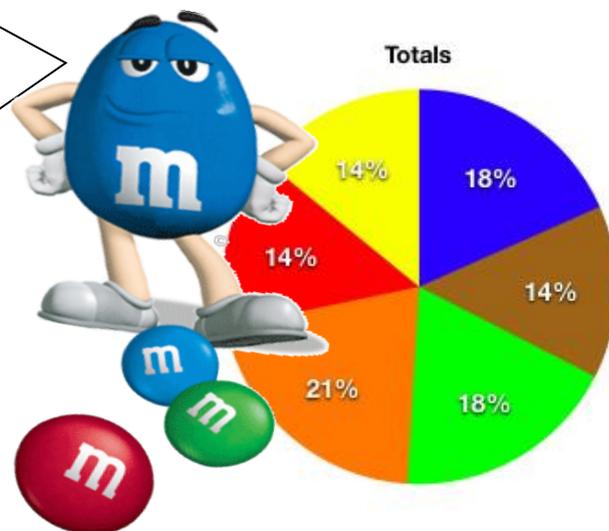
By default, all **cell references** are **relative references**. When copied across multiple **cells**, they change based on the **relative** position of rows and columns. For example, if you copy the formula =A1+B1 from row 1 to row 2, the formula will become =A2+B2.

When you use a cell reference with a letter and number (i.e B3), when that address is used in a formula or function and is copied or filled, MS Excel adjusts the cell address – this is a **RELATIVE** cell address. Using dollar signs (i.e. B3/\$B\$9) is an **ABSOLUTE CELL ADDRESS** and it will not change when it is filled or copied.

	A	B	C	D	E
1	<b>M &amp; Ms Analysis</b>				
2	Color of M & M	Bag #1	Bag #2	Bag #3	Total of 3 Bags
3	Blue	4	data	data	=SUM(B3:D3)
4	Orange	5	data	data	Fill Down
5	Green	3	data	data	Fill Down
6	Yellow	2	data	data	Fill Down
7	Red	4	data	data	Fill Down
8	Brown	1	data	data	Fill Down
9	Totals	=SUM(B3:B8)	Fill Right	Fill Right	Fill Right
10					
11	Percent of Each Bag	% Bag 1	% Bag 2	% Bag 3	% of ALL Bags
12	Blue	=B3/\$B\$9	=C3/\$C\$9	=D3/\$D\$9	=E3/\$E\$9
13	Orange	Fill Down	Fill Down	Fill Down	Fill Down
14	Green	Fill Down	Fill Down	Fill Down	Fill Down
15	Yellow	Fill Down	Fill Down	Fill Down	Fill Down
16	Red	Fill Down	Fill Down	Fill Down	Fill Down
17	Brown	Fill Down	Fill Down	Fill Down	Fill Down
18	Total	AutoSum	AutoSum	AutoSum	AutoSum
19					

It looks like each small bag of M & Ms contains about 20 pieces of candy. Some bags have more and some have less.

Let's compare graphs of 3 individual bags and then the content of all three bags of M & Ms. Are the colors evenly distributed?



M & Ms Analysis				
Color of M & M	Bag #1	Bag #2	Bag #3	Total of 3 Bags
Blue	4	data	data	=SUM(B3:D3)
Orange	5	data	data	Fill Down
Green	3	data	data	Fill Down
Yellow	2	data	data	Fill Down
Red	4	data	data	Fill Down
Brown	1	data	data	Fill Down
Totals	=SUM(B3:B8)	Fill Right	Fill Right	Fill Right
Percent of Each Bag	% Bag 1	% Bag 2	% Bag 3	% of ALL Bags
Blue	=B3/\$B\$9	=C3/\$C\$9	=D3/\$D\$9	=E3/\$E\$9
Orange	Fill Down	Fill Down	Fill Down	Fill Down
Green	Fill Down	Fill Down	Fill Down	Fill Down
Yellow	Fill Down	Fill Down	Fill Down	Fill Down
Red	Fill Down	Fill Down	Fill Down	Fill Down
Brown	Fill Down	Fill Down	Fill Down	Fill Down
Total	AutoSum	AutoSum	AutoSum	AutoSum

M & Ms Analysis				
Color of M & M	Bag #1	Bag #2	Bag #3	Total of 3 Bags
Blue	4	6	data	=SUM(B3:D3)
Orange	5	8	data	Fill Down
Green	3	1	data	Fill Down
Yellow	2	2	data	Fill Down
Red	4	1	data	Fill Down
Brown	1	2	data	Fill Down
Totals	=SUM(B3:B8)	Fill Right	Fill Right	Fill Right
Percent of Each Bag	% Bag 1	% Bag 2	% Bag 3	% of ALL Bags
Blue	=B3/\$B\$9	=C3/\$C\$9	=D3/\$D\$9	=E3/\$E\$9
Orange	Fill Down	Fill Down	Fill Down	Fill Down
Green	Fill Down	Fill Down	Fill Down	Fill Down
Yellow	Fill Down	Fill Down	Fill Down	Fill Down
Red	Fill Down	Fill Down	Fill Down	Fill Down
Brown	Fill Down	Fill Down	Fill Down	Fill Down
Total	AutoSum	AutoSum	AutoSum	AutoSum

M & Ms Analysis				
Color of M & M	Bag #1	Bag #2	Bag #3	Total of 3 Bags
Blue	4	6	3	=SUM(B3:D3)
Orange	5	8	6	Fill Down
Green	3	1	4	Fill Down
Yellow	2	2	1	Fill Down
Red	4	1	2	Fill Down
Brown	1	2	4	Fill Down
Totals	=SUM(B3:B8)	Fill Right	Fill Right	Fill Right
Percent of Each Bag	% Bag 1	% Bag 2	% Bag 3	% of ALL Bags
Blue	=B3/\$B\$9	=C3/\$C\$9	=D3/\$D\$9	=E3/\$E\$9
Orange	Fill Down	Fill Down	Fill Down	Fill Down
Green	Fill Down	Fill Down	Fill Down	Fill Down
Yellow	Fill Down	Fill Down	Fill Down	Fill Down
Red	Fill Down	Fill Down	Fill Down	Fill Down
Brown	Fill Down	Fill Down	Fill Down	Fill Down
Total	AutoSum	AutoSum	AutoSum	AutoSum

M & Ms Analysis				
Color of M & M	Bag #1	Bag #2	Bag #3	Total of 3 Bags
Blue	4	6	3	13
Orange	5	8	6	19
Green	3	1	4	8
Yellow	2	2	1	5
Red	4	1	2	7
Brown	1	2	4	7
Totals	19	20	20	59
Percent of Each Bag	% Bag 1	% Bag 2	% Bag 3	% of ALL Bags
Blue	21.05%	30.00%	15.00%	0.220338983
Orange	Fill Down	Fill Down	Fill Down	Fill Down
Green	Fill Down	Fill Down	Fill Down	Fill Down
Yellow	Fill Down	Fill Down	Fill Down	Fill Down
Red	Fill Down	Fill Down	Fill Down	Fill Down
Brown	Fill Down	Fill Down	Fill Down	Fill Down
Total	AutoSum	AutoSum	AutoSum	AutoSum

Creating charts in MS Excel is EASY if you carefully set up your data tables. Sometimes, we want to chart data from a worksheet that is not contiguous (cells touch each other). We need to highlight different ranges of cells then,

Do this by highlighting your first range of cells. Highlight additional ranges of cells, as shown here, by holding the CTRL key and then highlighting the next range of cells you need.

Then choose your chart type under the INSERT tab, editing the title and labels as needed. Insert each chart on your first data sheet and then cut and paste it to a second worksheet named CHARTS as shown below.

WOW! Even a ground hog can do it. This will be simple and quick for us tiny mice!

