There is more than one way to write a formula. In a spreadsheet, there are many ways to write a formula. Try them all! I'll show you how. Which way do you like the best?
Directions:

1. Create a new Google Sheet. Use the example below.
2. Rename the first tab as Master.

	A	B	C	D	E
1			**Color Survey**		
2					
3	**Colors**	**Votes**	**Class Average**		
4	Blue				
5	Red				
6	Yellow				
7	Orange				
8	Green				
9	Purple				
10	Black				
11	Brown				
12	Pink				
13					
14	Totals				
15					
16	Notes:				
17	Format Column C as a percentage with one decimal place				
18	Resize row 13 after you add color and a bottom border.				
19					

3. Get up collect data per my instructions. If you were absent quietly go around the class and gather information using the directions below.
    a. Survey **ALL** of your classmates to find which color of candy they like best. Use only the colors listed on the example. I expect each person to provide an answer using the colors on the example.
    b. Keep track of the number of people for each color.
    c. You have 10 minutes.

4. Enter all your data into your master sheet.
5. After you have entered your data, Duplicate your MASTER sheet and name the new tab "METHOD 1"
    a. To Duplicate - Click on the "master" tab and choose Duplicate.
    b. Duplicate "METHOD 1' and Name the new tab "METHOD 2"
    c. duplicate the new sheet and name it "METHOD 3", then once more and name it "METHOD 4"

   d. You will then have 5 sheets named Master, Method 1 through Method 4. Delete any other sheets that are in your workbook.
6. Using each of your new sheets use the different methods on the following page to calculate your survey results.
7. Let me know when you are done and I will come around to grade your different methods - SHOW ME NO PRINTING, NO SHARING --- SHOW ME!!
   a. I will check your methods and your charts.

Use four different methods to sum your total data in cell B14 (or where ever you have your total).
Complete each method on the corresponding named sheet. Method 1,

Method 2, etc.

1. ***Method 1 - 5 points***
   a. ***Sum with the plus sign between each cell:***
      i. Select cell B14.
      ii. Type the formula **=B4+B5+B6+B7+B8+B9+B10+B11+B12**
2. ***Method 2 - 5 points***
   a. ***Sum with a comma between each cell:***
      i. Select cell B14.
      ii. Type the formula **=SUM(B4,B5,B6,B7,B8,B9,B10,B11,B12)**
3. ***Method 3 - 5 points***
   a. ***Sum with a cell range:***
      i. Select cell B14.
      ii. Type the formula **=SUM(B4:B12)**
4. ***Method 4 - 5 points***
   a. ***Sum by naming a cell range:***
      i. Select the cells with the votes (B4:B12).
      ii. From the Data menu, select *Named ranges*.
      iii. Replace *NamedRange1* with **votes**. Click *Done*.
      iv. Select cell B14.
      v. Type the formula **=SUM(votes)**

How to calculate the color averages - Two ways - IF WE DID THIS IN CLASS ALREADY, then, SKIP TO CHARTS!!

1. **First way: Go back to the "Method 1" sheet and calculate the Student percentages for each color.** *5 points*
   a. In column C:
   b. **Format column C as a percentage**
   c. Use a formula to calculate the percentage (divide the total by the votes). Like this =B4/B14.
   d. Do this for every color.
   e. Change the decimal to one decimal place.

f. Total the averages in cell C14. (sum all the averages you just finished) Percentages will add up to 100% if you did the formula correctly. If it does not add up to 100%, check your formula.

2. **Second way: Go back to the "Method 2" sheet and calculate the Student percentages for each color using a fixed reference cell.** *5 points*
   a. In column C:
   b. Format column C as a percentage
   c. Use the dollar signs as shown in this formula. By using a fixed cell B14 your result works out even if you copy it to a new cell.
   d. Total by the vote (fixed reference) percentages. Like this =B4/B14.
   e. Use the fill handle to copy the formula to all the colors.
   f. Total the averages in cell C14. (sum all the averages you just finished) Percentages will add up to 100% if you did the formula correctly. If it does not add up to 100%, check your formula
   g. Change the decimal to one decimal place.

Creating Charts - There are examples of these charts on the last page.
Finally, Create two charts showing your survey results. Move them their own sheets. Name the new sheets "Chart Votes" & "Chart Percentages" ***- 10 points***

1. ***NOTE: It is much easier to work on charts full screen then the ½ screen that many of you do so you can work and see the instructions at the same time.***
   a. Go to your *Method 1* sheet
   b. Select the **data for votes** including the headings "Colors" & "Votes". **Select this range A3: B12**
   c. Choose Insert, then choose a chart.
   d. Choose a bar or column chart as the type
   e. Your chart appears on your sheet.
   f. Use the chart editor on the right of the screen to customize your chart. (if this is not present, double-click on your chart to bring up the chart editor).
   g. Try using the chart editor to customize your chart.
      i. There are two tabs where you can poke around to change colors, styles, etc. Kinda cool if you give it a chance.
   h. Move the chart to its' own sheet by:
      i. Click on the chart
      ii. Choose the three vertical dots (this is a menu)
      iii. Choose move to its' own sheet. Name it **"Chart Votes".**

Create the second chart

1. Go to your method 2 sheet

a. Select the **data for percentages** including the headings “Colors” & “Color Average By Student”. Select the two ranges A3: A12 + C3: C12 (remember to hold the control key when you select the second range!!) DO it LIke THIS!!
   i. Select the range A3: A12
   ii. Hold down the CTRL while you select the second range C3: C12
   iii. Release the CTRL key
b. Choose Insert, choose Chart
c. Your chart appears on your sheet.
d. Choose the chart editor to change it to a pie chart.
e. Try using the chart editor to customize your chart.
   i. There are two tabs where you can poke around to change colors, styles, etc.
f. Move the chart to its’ own sheet by:
   i. Click on the chart
   ii. Choose the three vertical dots (this is a menu)
   iii. Choose move to its’ own sheet. Name it **“Chart Percentages”.**