Scott Kallal

Weighted Averages Compared to Non-Weighted Averages
What's the Difference?

In this Excel worksheet we will be looking at what's so different about weighted averages as compared to non-weighted averages. For this activity we will look at a typical student's grade records for an entire year in one particular class. First, before we begin, what is a weighted average? A teacher may hand out a syllabus with a grading policy that looks like this:

Mr. Kallal's 9th Grade Algebra Grading Policy:

3 Tests	30%	Each Test	10%
5 Quizzes	30%	Each Quiz	6%
7 Homework Assignments	28%	Each Homework	4%
Participation	12%	Participation	12%
TOTAL:	100%		

This is a weighted average. One test is worth 10% of your grade while one quiz is worth almost half of that. Let's look at what a grading policy might look like if nothing was weighted.

Mr. Kallal's 9th Grade Algebra Grading Policy:

3 Tests	18.75%	Each Test	6.25%
5 Quizzes	31.25%	Each Quiz	6.25%
7 Homework Assignments	43.75%	Each Homework	6.25%
Participation	6.25	Participation	6.25%
TOTAL:	100%		

Each test, quiz, and homework assignment are all worth 6.25%. No one thing is weighted as being more important than the rest. The activity will look at the grades from one student found both ways.
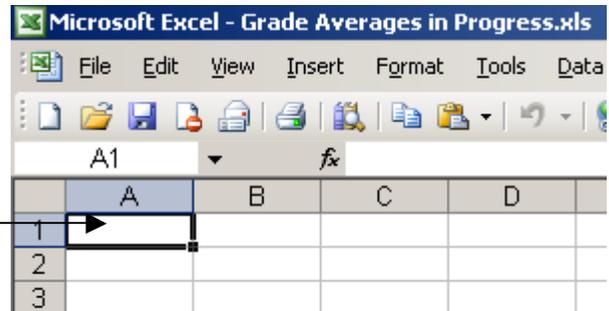
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Getting Started:

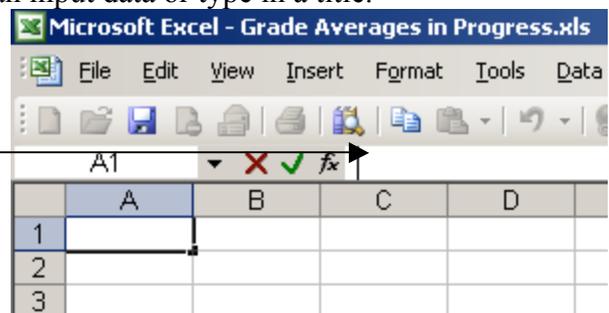1. Open up Microsoft Excel and maximize the window.

Creating a Spreadsheet for a Student's Grades: (if you are fairly familiar with Microsoft

Excel, then you may be able to skip to

step 3).

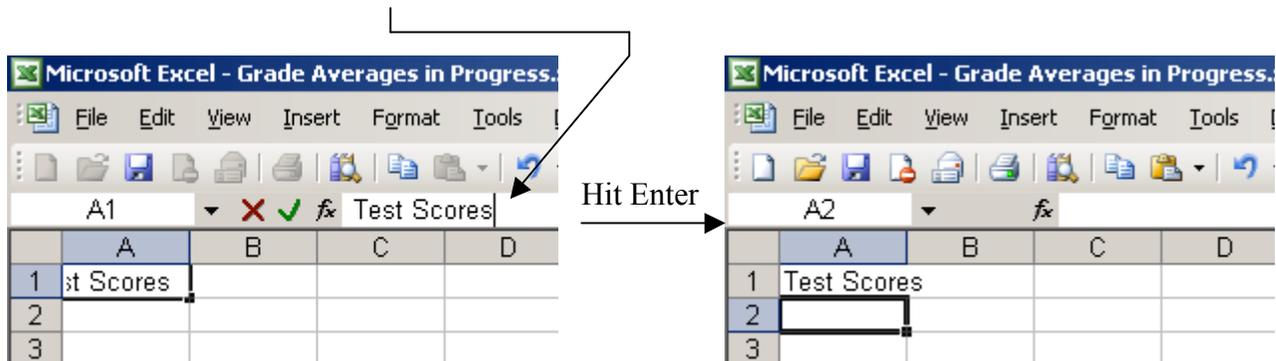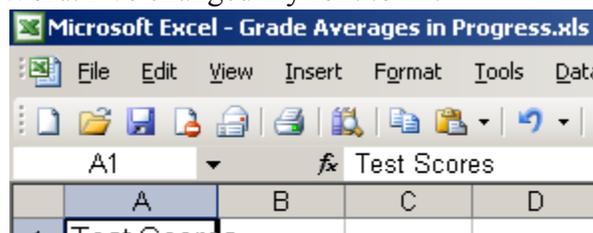2. Inputting Data and Creating Titles

a. Click on the Excel cell labeled A1.

b. Click in the Formula Bar where you can input data or type in a title.

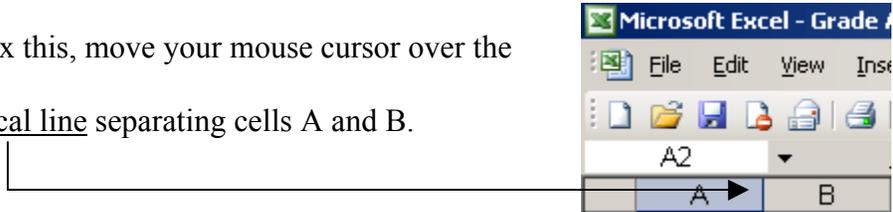c. Type in 'Test Scores' to label cell A1 and hit Enter on the keyboard.

Hit Enter

d. When you click on the cell you can change the font just like you would in

Microsoft Word. I've changed my font to 12.

e. Notice the word 'Scores' reaches outside cell A1.

    To fix this, move your mouse cursor over the

    vertical line separating cells A and B.

    You can either double click and Excel will automatically adjust the cell for

    you, or you can slide your mouse to the left or right to adjust it yourself.

f. Now that you know how to input data, you can open up a copy of Microsoft

    Excel – Grade Averages. The data sheet will look like this:

	A	B	C	D	E	F
1	Test Scores (%)	Weight %	Weighted Scores (Test)			Non-Weighted Scores (Test %)
2	95	0.1				95
3	85	0.1				85
4	89	0.1				89
5						
6	Quiz Scores (%)	Weight %	(Quiz)			(Quiz %)
7	90	0.06				90
8	95	0.06				95
9	97	0.06				97
10	85	0.06				85
11	87	0.06				87
12						
13	Homework (%)	Weight %	(Homework)			(Homework %)
14	97	0.04				97
15	95	0.04				95
16	90	0.04				90
17	88	0.04				88
18	95	0.04				95
19	93	0.04				93
20	85	0.04				85
21						
22	Participation (%)	Weight %	(Participation)			(Participation %)
23	95	0.12				95
24						
25	Total Percentage:					
26						
27		Weighted Grade:			Non-Weighted:	
28						

3. Understanding the Spreadsheet

   a. The spreadsheet is spilt apart into two main sections. The first section which
      takes up columns A, B, and C is the weighted averages. The second section,
      columns E and F, is the non-weighted averages.

   b. Column A shows all the student's percentage scores he/she received on tests,
      quizzes, homework assignments, and participation. Column B shows the
      percent that each test or assignment was weighted. Column C will show the
      scores after they have been weighted by the proper percentage.

   c. Column F shows the percentage scores of the student's grades without being
      weighted. Column F is exactly the same as column A.

4. Using the Spreadsheet

   a. First we need to check to make sure all
      the percentages in column B add up to
      100%. We are going to do this by
      inputting an equation in cell B25. Click
      on cell B25 then go up to the
      Formula Bar and click in there.

	A	B
	B25	
1	Test Scores (%)	Weight %
2	95	0.1
3	85	0.1
4	89	0.1
5		
6	Quiz Scores (%)	Weight %
7	90	0.06
8	95	0.06
9	97	0.06
10	85	0.06
11	87	0.06
12		
13	Homework (%)	Weight %
14	97	0.04
15	95	0.04
16	90	0.04
17	88	0.04
18	95	0.04
19	93	0.04
20	85	0.04
21		
22	Participation (%)	Weight %
23	95	0.12
24		
25	Total Percentage:	
26		

b. In the Formula Bar enter, =SUM(

c. At this point you need to input data. Do this by clicking on cell B2 and

dragging down to cell B4.

A blue box will appear
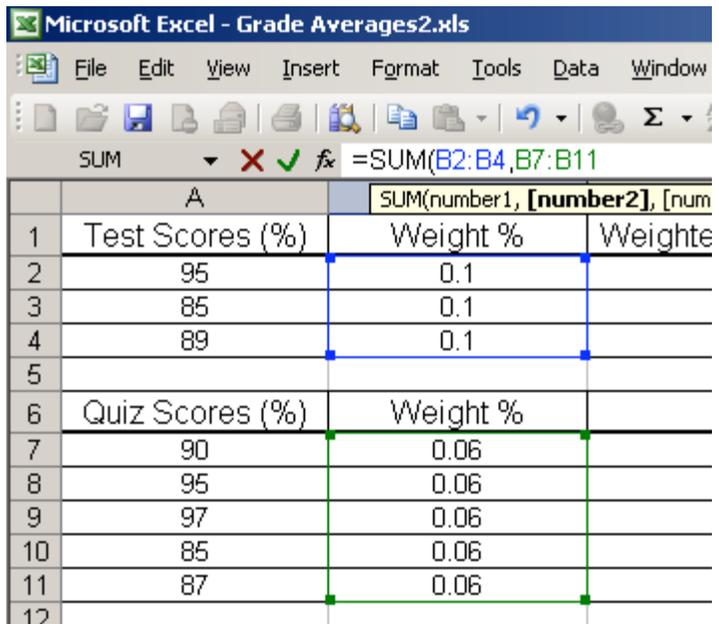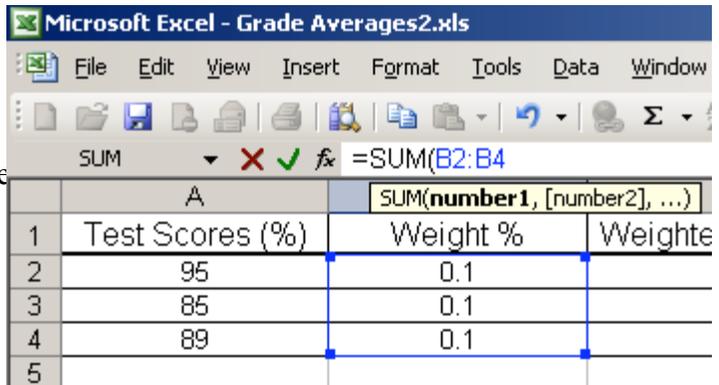
around the three cells. In the

Formula Bar it reads

=SUM(B2:B4

Now, enter a comma after

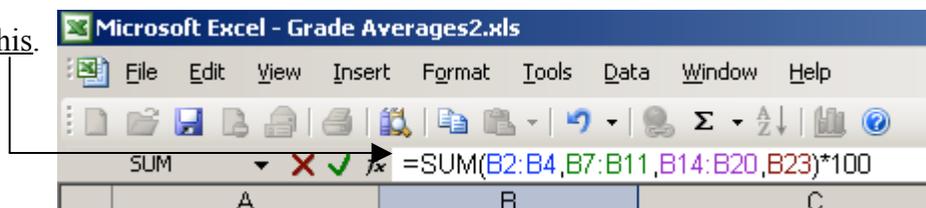B4, then click and drag from

Cells B7 to B11.

Enter another comma after B11, then click and drag from cells B14 to B20.

Enter another comma after B20, then just click on cell B23.

d. Put an end parenthesis after B23. Because we are working with percentages,

we need to multiple the entire formula by 100. Your final equation should

look like this.

e. Hit enter and the formula will be complete in cell B25 and should read 100.

f. Move over to Column F. We need to average all the student's scores in this column. Click on cell F27. Click on the Formula Bar and enter in this beginning formula, =AVERAGE(
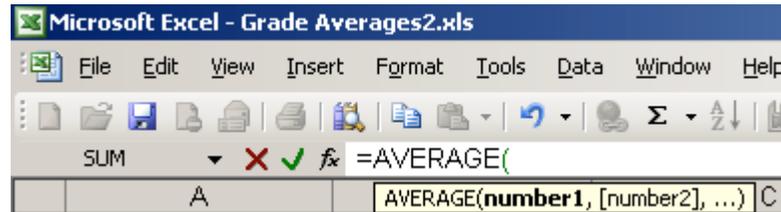
i. Using the same process as before, click and drag from cells F2 to F4 then enter a comma in the formula bar.

ii. Click and drag from cells F7 to F11 then enter a comma in the formula bar

iii. Click and drag from cells F14 to F20 then enter another comma.

iv. Click cell F23 and end with parenthesis. It should look like this.
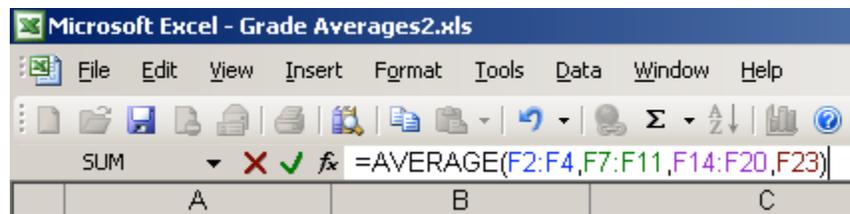

Hit enter. Cell F23 should now read an average score of about 91.31

g. Move over to Row C. We need to figure out what the weighted score is of each test or assignment.

h. Click on cell C2 and go to the Formula Bar and enter, =(

i. Click on cell A2 and it should appear in the Formula Bar.

ii. Enter in an asterisk (*)

iii. Click on cell B2 and end with parenthesis. It should look like this.

iv. Hit enter and cell C2 should show a weighted score of 9.5

i. With your mouse, move over the bottom right hand corner of cell C2 until a small black plus sign appears. Click and drag down to cell C4. This will move the formula you typed in for cell C2 down into the next to cells with the corresponding rows.

j. In cell C7, enter in the formula, =(A7*B7), then hit enter. Drag that formula down to cell C11 as you did in step i.

k. In cell C14, enter in the formula, =(A14*B14), then hit enter. Drag that formula down to cell C20.

l. In cell C23, enter in the formula, =(A23*B23), then hit enter.

m. Click on cell C27 and enter in the formula, =SUM(

i. Click and drag from cells C2 to C4 then enter a comma. Then drag from cells C7 to C11 and enter a comma. Then drag from cells C14 to C20 and enter a comma. Then click on cell C23 and end with parenthesis. Hit enter.
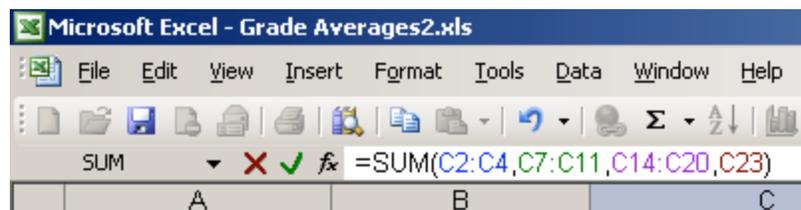
The cell should now read a Weighted Grade of about 91.26.

5. Understanding the Spreadsheet (Part 2).

   In this part of the activity, we will manipulate different scores and watch how they change the student's final grade. We will pay particular attention to the difference between the cell labeled Weighted Grade and the cell labeled Non-Weighted Grade.

   a. Both Column A and Column F have the student's exact same test scores. Column C weights these test scores while Column F simply averages them.

Question 1:   What is the final Weighted Grade? _____.

Question 2:   What is the final Non-Weighted Grade? _____.

Question 3:   What is the difference between the two? _____.

Question 4:   According to the teacher with the weighted grades, are there any scores that seem more important than the others? Explain, (which is most or least important and how do you know this?).

Questions 5:   According to the teacher with the non-weighted grades, are there any scores that seem more important than the others? Explain, (which is most or least important and how do you know this?).

b. Let's say that this student always studied for his test because he knew they were important, but usually forgot to study for his quizzes. Change the quiz scores (in both columns A and F) to the following: 80, 65, 64, 78, 60. Type the scores in column A. Click, and drag over those scores (from cells A7 to A11) and go to the menu bar, click Edit then Copy. Go to cell F7, go to the menu bar, click Edit then Paste.

Question 6:   Which final grade is higher, the Weighted Grade or the Non-Weighted Grade? By how much is the one higher?_____

_____.

c. Let's say that the student does study for both his tests and his quizzes, but hates doing homework. First, change the quiz scores (both columns A and F) back to the following: 90, 95, 97, 85, 87. Now change the Homework grades to the following: 60, 65, 70, 72, 75, 77, 80.

Question 7:   Which final grade is higher, the Weighted Grade or the Non-Weighted Grade? By how much is the one higher?_____

_____.

d. Change the homework scores back to the following: 97, 95, 90, 88, 95, 93, 85. Now let's say we have a very smart student, but he does not pay attention in class very much and he is a disruption most of the time. Change the Participation score to 75.

Question 8:   Which final grade is higher, the Weighted Grade or the Non-Weighted Grade? By how much is the one higher?_____

_____.

e. Change the Participation score back to 95. Let's say this student gets very nervous before tests and because of that he performs poorly on them. Change the test scores to the following: 60, 73, 70.

Question 9: Which final grade is higher, the Weighted Grade or the Non-Weighted Grade? By how much is the one higher?_____

_____.

Question 10: In a short paragraph or two, describe which grading system you like better so far and explain why.

f. Now let's change our student to one who does well on most of his assignments, but has really bad days where he either completely forgets to study or completely forgets to hand in an assignment. First, change the test grades back to the following: 95, 85, 89. Change the first quiz score to a 20. Change the first homework score to a 50 and the second score to a zero.

Question 11:   Which final grade is higher, the Weighted Grade or the Non-Weighted

Grade? By how much is the one higher?_____

_____.

Question 12:   In a short paragraph or two explain why would like or not like the

weighted grading system as this particular student.

Question 13:   In a short paragraph or two explain which system of grading you would

prefer and why. Explain why you would like the particular system you

chose and explain why you would not like the other.

Question 14: In a short paragraph or two explain why a teacher might choose to use a weighted averaging system of grading?