

# Using *Excel 2000* to Create a Weighted-Grade Grade Book

This handout assumes that you already have familiarity with creating and copying formulas in *Excel 2000*. If you do not, you should consult our handout *Using Excel 2000* before going any further! Don't say we didn't warn you.

As you become familiar with *Excel 2000*, one of the first things you may want to do is keep track of your grades. A grade book adding up scores, figuring out averages, etc., is fairly easy to do with rudimentary knowledge of *Excel 2000*. One aspect of grade keeping that can be frustrating for many instructors, however, is keeping track of grades when you have certain assignments that are weighted differently from others. This handout will go over some basic equations you may find useful. There are many ways of accomplishing the tasks outlined here; these are merely some suggestions you may want to use. You may eventually discover different ways of accomplishing the same thing. In any event, this handout is designed to assist those who are faced with figuring out how a 35-point test can eventually be worth 50% of the final grade, and a 90-point test can eventually be worth 15% of the final grade!

If you interested in using a grade book with existing scores and converting the scores to weighted percentages, check the section immediately following. If you are interested in creating a grade book that will *also* allow you answer the infamous question "*How am I doing so far and what is my current grade?*" you should consult the second or third sections. The third section is for those a bit more advanced in using *Excel* and who are comfortable having a multi-sheeted spreadsheet.

## Using an Existing Grade Book to Create Weighted Grades

If you have already recorded grades for specific activities in an *Excel* workbook, your first step is to determine how much weight each grade will have towards the final grade. The basic formula for this is to divide the student score by the total score for the activity, then multiply by the weighted percentage:

$$\frac{[\text{Student Score}]}{[\text{Total Possible}]} * [\text{Weight}]$$

So, if you give a 35 point test that is worth 50% of the grade, and a student scores 30 on it, the weighted score will be:

$$30/35 * .50 = .4285 \text{ or } 42.8\% \text{ [Remember, 50\% is actually .50 mathematically.]}$$

### EASY TO OVERLOOK TIP #1

Not to state the obvious, but it is worth pointing out that a good "test" of any such equation is to assume a student gets a perfect score. The perfect score should, therefore, equal the total weighted percentage:

$$35/35 * .50 = .50 \text{ or } 50\%$$

*Excel* allows you to include actual percentages (rather than the decimal equivalent) within formulas in the formula bar, as we will see in the next example.

### Converting Existing Grades to a Final, Weighted Percentage

Assume we have a grade book in *Excel* that looks like this:

	A	B	C	D	E	F
1						
2		Quiz One	Quiz Two	Homework	Final Examination	Total Score
3	<b>Total Points</b>	75	60	50	150	335
4	Badenov, Boris	70	45	45	70	230
5	Brown, Charlie	53	50	44	103	250
6	Dahl, Barbie	75	60	50	150	335
7	Fatale, Natasha	71	49	39	112	271
8	Fudd, Elmer	68	55	44	125	292
9	Rabbit, Jessica	63	60	37	145	305
10						

Note we have the total possible points on each item in row 3 (**Total Points**) with the student's score beneath it. We have four graded items, Quiz One, Quiz Two, Homework, and Final Examination. The **Total Score** column (column F) is simply a sum of all previous graded columns, as you can see by looking at the formula in the formula bar. (The **Total Score** column is not even necessary to compute weighted grades, though you may still want a column for raw point totals.)

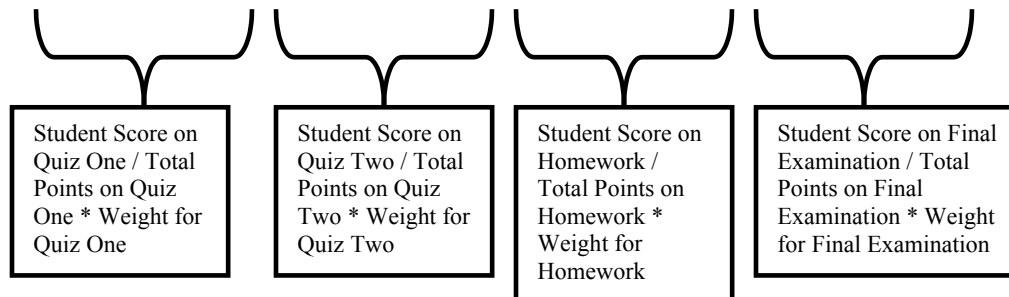
The first thing we need to determine is what the weight will be for each of these graded items. Let's say that the following are the weights we decide on for each assignment:

Grade Book Item	Weight
Quiz One	20%
Quiz Two	20%
Homework	15%
Final Examination	45%

**EASY TO OVERLOOK TIP #2**  
Your weighted scores DO add up to 100%, don't they??

Next, we need to embed this information within a formula in our spreadsheet. First, we add a column over to the right and label it **Weighted Score**. Then, taking the formula outlined above, we create a formula that will add together *all* of the weighted scores. This is a rather lengthy formula, but if you look at each part of it you'll see we are merely taking the basic formula shown on the previous page and adding them together so that the full 100% weight is the result. We type this formula in cell **G4** for our first student, so that we can copy it down the column:

$$=(B4/\$B\$3*20\%)+(C4/\$C\$3*20\%)+(D4/\$D\$3*15\%)+(E4/\$E\$3*45\%)$$



Here is a look at the same formula as it appears on the spreadsheet:

	A	B	C	D	E	F	G
1							
2		Quiz One	Quiz Two	Homework	Final Examination	Total Score	Weighted Score
3	<b>Total Points</b>	<b>75</b>	<b>60</b>	<b>50</b>	<b>150</b>	<b>335</b>	
4	Badenov, Boris	70	45	45	70	230	
5	Brown, Charlie	53	50	44	103	250	
6	Dahl, Barbie	75	60	50	150	335	
7	Fatale, Natasha	71	49	39	112	271	
8	Fudd, Elmer	68	55	44	125	292	
9	Rabbit, Jessica	63	60	37	145	305	
10							
11							

### WHY THE DOLLAR SIGNS IN THE FORMULA?

Remember that if you do *not* want part of the formula to change when copying a formula to another cell in *Excel*, you must precede both the column letter and the row number with a dollar sign (\$) to make that part of the formula an *absolute reference*. Since you will always want to divide each student's score by the same number (in this case, the Total Points for the activity) the cell reference containing the divisor must remain constant. In the example above, all references in row 3 to what the activity was worth must therefore be an absolute reference.

### TIPS FOR THOSE WHO HATE TYPING

- Don't forget you can *point and click* in a cell while constructing a formula to save yourself from the aggravation of typing in a cell reference precisely.
- The very second after you input a cell reference in the formula bar--whether you typed it in or just used the point and click method above--press the **F4** key (function key four). This will put dollar signs in the cell reference to make it an absolute reference.

After entering the formula, we see the first student's result:

	A	B	C	D	E	F	G
1							
2		Quiz One	Quiz Two	Homework	Final Examination	Total Score	<b>Weighted Score</b>
3	<b>Total Points</b>	<b>75</b>	<b>60</b>	<b>50</b>	<b>150</b>	<b>335</b>	
4	Badenov, Boris	70	45	45	70	230	0.68166667
5	Brown, Charlie	53	50	44	103	250	
6	Dahl, Barbie	75	60	50	150	335	
7	Fatale, Natasha	71	49	39	112	271	
8	Fudd, Elmer	68	55	44	125	292	
9	Rabbit, Jessica	63	60	37	145	305	

Use fill handle to easily copy formula

Now it's a matter of taking the fill handle (shown above) and copying the formula down the column:

	A	B	C	D	E	F	G
1							
2		Quiz One	Quiz Two	Homework	Final Examination	Total Score	<b>Weighted Score</b>
3	<b>Total Points</b>	<b>75</b>	<b>60</b>	<b>50</b>	<b>150</b>	<b>335</b>	
4	Badenov, Boris	70	45	45	70	230	0.68166667
5	Brown, Charlie	53	50	44	103	250	0.749
6	Dahl, Barbie	75	60	50	150	335	1
7	Fatale, Natasha	71	49	39	112	271	0.80566667
8	Fudd, Elmer	68	55	44	125	292	0.87166667
9	Rabbit, Jessica	63	60	37	145	305	0.914

Since *Excel* expresses the results in decimal style by default, you will want to show these figures as percentages. With the cells still selected, simply click the **Percent Style** button on the toolbar ( **%** ) and then the increase decimal button ( **+0.00** ) as many times as you'd like to show greater precision:

	A	B	C	D	E	F	G
1							
2		Quiz One	Quiz Two	Homework	Final Examination	Total Score	<b>Weighted Score</b>
3	<b>Total Points</b>	<b>75</b>	<b>60</b>	<b>50</b>	<b>150</b>	<b>335</b>	
4	Badenov, Boris	70	45	45	70	230	68.17%
5	Brown, Charlie	53	50	44	103	250	74.90%
6	Dahl, Barbie	75	60	50	150	335	100.00%
7	Fatale, Natasha	71	49	39	112	271	80.57%
8	Fudd, Elmer	68	55	44	125	292	87.17%
9	Rabbit, Jessica	63	60	37	145	305	91.40%

That's it! You now have weighted scores. Notice that one of our students, Barbie Dahl, helps provide the benchmark for how reliable our weighted score column is. Since Barbie had perfect scores on everything, her weighted score should be 100%--which it is.

### **WANT FINAL LETTER GRADES TO APPEAR, TOO?**

Consult our separate handout, *The VLOOKUP Function in Excel*, for information on how you can automatically generate final grades in a column based on scores or percentages. It's not that difficult to do. Besides, we just hate making up handouts that no one reads.

## **Using a Weighted Grade Book to Determine Current Grades; or, Creating a Weighted Grade Book from Scratch**

While the method outlined above provides an overview for creating a grade book based on existing grades, it will not be of much help during a semester when every student inevitably would like to know how they are doing so far. This involves a bit more work. The good news is that this method will be a terrific time-saver at the end of the semester, since final percentages will be calculated for you instantaneously, just when you need those final numbers quickly!

The procedure for this grade book involves using the same basic formula outlined on page one of this handout. However, you must also provide some method for *adding* together all the grades completed so far in the semester, but keeping that ongoing tally weighted properly.

For this example, we will assume we are about halfway through the semester. Once you understand the principles involved, you will be able to create a full, blank spreadsheet with all formulas in place before the semester begins.

Let's say you have had two quizzes and one homework assignment so far. Quiz One is worth 20% of the final grade for the semester, and Quiz Two is worth 15% of the final grade for the semester. Your two homework assignments together will be worth 10% of the final grade, but you have only assigned one so far. With this in mind, a student who has scored perfectly on all of the assignments should have a weighted grade of 100% *so far*, since they have done perfect work and would be earning an A to this point. With that, let's go to the initial setup. (Again, bear in mind that what is outlined below is but one of several similar ways to do this. Once you get accustomed to the way weighted grades work, you may well come up with your own formulas that work just as well.)

### **Setting Up Your Weighted Grade Book**

For this weighted grade book, let's say we have settled on the following weighted scores for the semester:

<b>Grade Book Item</b>	<b>Weight</b>
Quiz One	20%
Quiz Two	15%
Homework	10%
Final Examination	55%

For this grade book, since we ultimately want to see how the student is doing so far, each graded assignment should immediately tell us what the weighted score is once the assignment is finished. Therefore, each graded assignment will have two columns in the spreadsheet--one for the point total, the other for the weighted grade, using the formula on page one of this handout. To avoid having to place the weight directly within the formula (as done in the preceding example), in this spreadsheet we will have that information on the spreadsheet itself. Then, if you decide to change the weights, you can change the weight directly on the spreadsheet without ever altering the formula again. (Remember, you ideally want to set up a spreadsheet so that you can use it over again after deleting the names involved but not the formulas.)

We will build this spreadsheet step by step. First, you want to have the student's names in one column, the raw scores in another column, and finally a third column for the weighted scores:

	A	B	C
1			Quiz One
2		Quiz One	Weighted Score
3	<b>Total Points</b>	<b>50</b>	<b>20%</b>
4	Badenov, Boris	30	
5	Brown, Charlie	49	
6	Dahl, Barbie	50	
7	Fatale, Natasha	40	
8	Fudd, Elmer	42	
9	Rabbit, Jessica	50	
10			

Take advantage of *Excel's* ability to wrap text by clicking the **Format** pull-down menu, then clicking **Cells**, then going to the **Alignment** tab and clicking **Wrap Text**.

*Excel 2000* will allow you to type a percentage directly into a cell if you want to. When doing calculations with it, it will properly convert it to its decimal equivalent.

After putting the raw point total for each student in column B, you are ready to type in the formula that will appear in cell C3:

$$=B3/B\$2*\$C\$2$$

If you look carefully at the screen shot above, you will see that this does not deviate from our original formula: **[Student Score]/[Total Possible] \* [Weight]**

Note the use of absolute cell references for the items that will remain constant when you copy the formula down the column: the total possible points on Quiz One (in cell B2), and the weight of the grade (in cell C2). The one cell for which you will use a relative address (B3 in this case) is the one that contains the student's score. When you copy the formula down the column, you will see something like the screen shot shown on the following page.

### Why Not Just Include the Weight in the Formula, Like We Did Earlier?

We want to be able to change the weight directly in the spreadsheet if we want to. Doing it this way will make it easier in the long run to maintain this spreadsheet, since the formula contains reference to a cell containing the weighted percentage.

		A	B	C	D
1			Quiz One	Quiz One	
			Score	Weighted	
2	<b>Total Points</b>		<b>50</b>	<b>20%</b>	
3	Badenov, Boris		30	0.12	
4	Brown, Charlie		49	0.196	
5	Dahl, Barbie		50	0.2	
6	Fatale, Natasha		40	0.16	
7	Fudd, Elmer		42	0.168	
8	Rabbit, Jessica		50	0.2	
9					
10					

After clicking the **Percent Style** button on the toolbar and increasing the decimal places (if you want to), you can see your progress so far:

		A	B	C	D
1			Quiz One	Quiz One	
			Score	Weighted	
2	<b>Total Points</b>		<b>50</b>	<b>20%</b>	
3	Badenov, Boris		30	12.00%	
4	Brown, Charlie		49	19.60%	
5	Dahl, Barbie		50	20.00%	
6	Fatale, Natasha		40	16.00%	
7	Fudd, Elmer		42	16.80%	
8	Rabbit, Jessica		50	20.00%	
9					

Note that in this case, those who made a perfect score (Barbie Dahl and Jessica Rabbit) have a weighted score that reflects the highest possible *weight*. This is important because (as we shall see) we will be adding these weights together in order to assess how the student is progressing in the class so far.

Let's do one more similar example. Below, we have the scores for Quiz Two, with a raw point value of 35, and a weight of 15% for the semester:

		A	B	C	D	E
1			Quiz One	Quiz One	Quiz Two	Quiz Two
			Score	Weighted	Score	Weighted
2	<b>Total Points</b>		<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>
3	Badenov, Boris		30	12.00%	30	
4	Brown, Charlie		49	19.60%	27	
5	Dahl, Barbie		50	20.00%	35	
6	Fatale, Natasha		40	16.00%	29	
7	Fudd, Elmer		42	16.80%	14	
8	Rabbit, Jessica		50	20.00%	17	
9						

In cell E3, we type a formula similar to that earlier used:

$$=D3/DS$2*ES$2$$

Here is the result after copying the formula down, converting to the percentage format, and increasing the decimal places:

E3		=D3/DS\$2*ES\$2			
	A	B	C	D	E
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>
3	Badenov, Boris	30	12.00%	30	12.86%
4	Brown, Charlie	49	19.60%	27	11.57%
5	Dahl, Barbie	50	20.00%	35	15.00%
6	Fatale, Natasha	40	16.00%	29	12.43%
7	Fudd, Elmer	42	16.80%	14	6.00%
8	Rabbit, Jessica	50	20.00%	17	7.29%
9					

### Running Totals for Multiple Exercises

Before we discuss setting up the grade book to get a cumulative weighted score, there is another thing you may want to set up. Earlier, we stated that all homework assignments should have a cumulative weight of 10% for the semester grade. We have seen how to establish a single graded assignment and give it a weighted score, but how does one go about setting up a weighted score for a graded item that, itself, may have multiple individual scores, such as homework assignments?

In the example below, we have a score for Homework One, but not for Homework Two:

	A	B	C	D	E	F	G	H
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>		
3	Badenov, Boris	30	12.00%	30	12.86%	10		
4	Brown, Charlie	49	19.60%	27	11.57%	9		
5	Dahl, Barbie	50	20.00%	35	15.00%	8		
6	Fatale, Natasha	40	16.00%	29	12.43%	9		
7	Fudd, Elmer	42	16.80%	14	6.00%	7		
8	Rabbit, Jessica	50	20.00%	17	7.29%	10		
9								

We have not yet assigned Homework Two, and in fact may not even know what its total raw point value will be. Therefore, instead of next creating a column of numbers showing the weighted score, we instead create a column for the **Total Score on Homework** so far. More importantly, the contents of this column will be the **sum** of the previous two columns. We can

simply click the **AutoSum** button on the toolbar and click with the mouse the appropriate cells for the formula:

	A	B	C	D	E	F	G	H
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>		=SUM(F2:G2)
3	Badenov, Boris	30	12.00%	30	12.86%	10		
4	Brown, Charlie	49	19.60%	27	11.57%	9		
5	Dahl, Barbie	50	20.00%	35	15.00%	8		
6	Fatale, Natasha	40	16.00%	29	12.43%	9		
7	Fudd, Elmer	42	16.80%	14	6.00%	7		
8	Rabbit, Jessica	50	20.00%	17	7.29%	10		

Now, we copy the formula down:

	A	B	C	D	E	F	G	H
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>		10
3	Badenov, Boris	30	12.00%	30	12.86%	10		10
4	Brown, Charlie	49	19.60%	27	11.57%	9		9
5	Dahl, Barbie	50	20.00%	35	15.00%	8		8
6	Fatale, Natasha	40	16.00%	29	12.43%	9		9
7	Fudd, Elmer	42	16.80%	14	6.00%	7		7
8	Rabbit, Jessica	50	20.00%	17	7.29%	10		10

Excel will allow you to sum cells that do not yet have data in them. This allows you to construct formulas that use the SUM function ahead of time, as we will see again.

Now that we have established a *running total* for our homework assignments, we can create a column that reflects the weighted score, as we have before. In this case, however, the column reflecting the weighted score will look at our newly created column that **sums** the homework thus far. For the example above, the formula (which will be in column I) will look like this:

$$=H3/SH$2*$I$2$$

Here is what our spreadsheet looks like after copying the formula down and converting to percentage formatting:

	A	B	C	D	E	F	G	H	I
1		Quiz One	Quiz One Weighted Score						Homework Weighted Score
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>		10	<b>10%</b>
3	Badenov, Boris	30	12.00%	30	12.86%	10		10	10.00%
4	Brown, Charlie	49	19.60%	27	11.57%	9		9	9.00%
5	Dahl, Barbie	50	20.00%	35	15.00%	8		8	8.00%
6	Fatale, Natasha	40	16.00%	29	12.43%	9		9	9.00%
7	Fudd, Elmer	42	16.80%	14	6.00%	7		7	7.00%
8	Rabbit, Jessica	50	20.00%	17	7.29%	10		10	10.00%
9									

Value typed in, since regardless of total points the weighted grade will be 10%.

Note that we added the weighted score for the homework in cell **I2**, as we did in earlier examples. The formula in column I looks at our **summed** figures just created in column H. Because column H contains the sum of columns F and G, we will later be able to add in the figures for Homework Two (column G) and our weighted scores in column I (**Homework Weighted Score**) will be updated properly without have to change anything in the formulas.

### Adding Columns for Non-Graded Material

Our final step before creating a column to show the student's weighted grade so far is to add in any column for material we have not yet graded. In this case, our non-graded item is for the Final Exam. We add the necessary columns to our spreadsheet as shown below:

	A	B	C	D	E	F	G	H	I	J	K
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>		10	<b>10%</b>		
3	Badenov, Boris	30	12.00%	30	12.86%	10		10	10.00%		
4	Brown, Charlie	49	19.60%	27	11.57%	9		9	9.00%		
5	Dahl, Barbie	50	20.00%	35	15.00%	8		8	8.00%		
6	Fatale, Natasha	40	16.00%	29	12.43%	9		9	9.00%		
7	Fudd, Elmer	42	16.80%	14	6.00%	7		7	7.00%		
8	Rabbit, Jessica	50	20.00%	17	7.29%	10		10	10.00%		
9											

You do not have to add any formulas--yet. However, once this material is recorded, you will have to create the necessary formula to appear in column K in order for the total weighted score (outlined below) to work properly. The formula for column K should come as no surprise to you if you've been able to keep up so far:

$$=J3/SJ\$2*\$K\$2$$

In order for the cumulative weighted score formula that we add later to work properly, do NOT put in the Total Points for the Final Exam or the Total Weight until *after* the exam has been graded! We add the columns now to save work later!

## Formula for Determining Weighted Score So Far

After all this preparation, we at last come to the heart of the spreadsheet--creating the formula for determining the weighted grade so far. First, you want to create a column indicating the total percentage the student has received so far. This column will simply add together the **weighted percentages** that the student has for the semester. Here is what the formula will be, using the spreadsheet we've been working on so far:

$$=C2+E2+I2+K2$$

It is important that we have a value in the Total Points row of the spreadsheet (row 2) for this column indicating the total percentage of all assignments so far, since we will need it for the next formula.

This column is why it was necessary to ensure that the columns for weighted percentage for each student reflected the total possible percentage in light of the weight, rather than the total percentage (such as 100%) for the assignment itself. This is also why you do *not* want to include the weighted percentage for any graded exercise (such as the final exam) on the spreadsheet that has not been completed yet. Fortunately, Excel is forgiving of blank cells so long as we do not try dividing with them. If we merely try *adding* blank cells, *Excel* essentially adds nothing. Here is our new column once the formula is copied down:

L2		=C2+E2+I2+K2									
	C	D	E	F	G	H	I	J	K	L	
1	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far	
2	20%	35	15%	10		10	10%			45.00%	
3	12.00%	30	12.86%	10		10	10.00%			34.86%	
4	19.60%	27	11.57%	9		9	9.00%			40.17%	
5	20.00%	35	15.00%	8		8	8.00%			43.00%	
6	16.00%	29	12.43%	9		9	9.00%			37.43%	
7	16.80%	14	6.00%	7		7	7.00%			29.80%	
8	20.00%	17	7.29%	10		10	10.00%			37.29%	
9											

Be sure to have a cell containing the total weight so far

If you need to see the "big picture" so far, here it is, but we've had to reduce the font a bit to get everything to fit on one screen!

L8		=C8+E8+H8+K8										
	A	B	C	D	E	F	G	H	I	J	K	L
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>		<b>10</b>	<b>10%</b>			45.00%
3	Badenov, Boris	30	12.00%	30	12.86%	10		10	10.00%			34.86%
4	Brown, Charlie	49	19.60%	27	11.57%	9		9	9.00%			40.17%
5	Dahl, Barbie	50	20.00%	35	15.00%	8		8	8.00%			43.00%
6	Fatale, Natasha	40	16.00%	29	12.43%	9		9	9.00%			37.43%
7	Fudd, Elmer	42	16.80%	14	6.00%	7		7	7.00%			29.80%
8	Rabbit, Jessica	50	20.00%	17	7.29%	10		10	10.00%			37.29%
9												

In the final additional column, **Total Weighted Score So Far**, we will want to take the student's results in the column just created (**Total Percentage So Far**), and divide it by the total weight so far for the semester to give us the student's weighted percentage so far.

For example, using the spreadsheet we have, let's assume a student has a total percentage so far of 40%. Using the above formula, we will have these results:

Student's Total Weighted Score So Far = [Student's Total % So Far] / [Total % So Far]

Student's Total Weighted Score So Far = 40% / 45%

Student's Total Weighted Score So Far = 88.8%

Using another example of our student who has scored a perfect score on everything so far, it will look something like this.

Student's Total Weighted Score So Far = 45% / 45%

Student's Total Weighted Score So Far = 1.0 or 100%

which is precisely what a student who has done perfectly so far should be getting!

Now that we've figured out the formula, let's do it in the spreadsheet. Using the spreadsheet we've been using so far, this is what the formula will look like in our new column, **Total Weighted Score So Far**:

=L3/\$L\$2

	D	E	F	G	H	I	J	K	L	M
	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far	Total Weighted Score So Far
1	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far	Total Weighted Score So Far
2	35	15%	10		10	10%			45.00%	
3	30	12.86%	10		10	10.00%			34.86%	=L3/\$L\$2
4	27	11.57%	9		9	9.00%			40.17%	
5	35	15.00%	8		8	8.00%			43.00%	
6	29	12.43%	9		9	9.00%			37.43%	
7	14	6.00%	7		7	7.00%			29.80%	
8	17	7.29%	10		10	10.00%			37.29%	
9										

Note the use of the absolute reference of cell **L2** in the formula, since it represents the total percentage so far, which we will always want to use as the divisor to obtain every *student's* total percentage so far.

After entering the formula and copying it down, don't be surprised if you see a series of pound signs (#####) in the cells. It simply means the cell width is too narrow to accommodate the full number:

	E	F	G	H	I	J	K	L	M
1	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far	Total Weighted Score So Far
2	15%	10		10	10%			45.00%	
3	12.86%	10		10	10.00%			34.86%	#####
4	11.57%	9		9	9.00%			40.17%	#####
5	15.00%	8		8	8.00%			43.00%	#####
6	12.43%	9		9	9.00%			37.43%	#####
7	6.00%	7		7	7.00%			29.80%	#####
8	7.29%	10		10	10.00%			37.29%	#####
9									

Increase the column width slightly, and decrease the decimal as many times as you want to, and you'll see our final results. *Excel* should automatically format for percentage, since the cell references in the formula are already formatted that way. (If not, you know by now how to format it on your own!)

	E	F	G	H	I	J	K	L	M
1	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far	Total Weighted Score So Far
2	15%	10		10	10%			45.00%	
3	12.86%	10		10	10.00%			34.86%	77.46%
4	11.57%	9		9	9.00%			40.17%	89.27%
5	15.00%	8		8	8.00%			43.00%	95.56%
6	12.43%	9		9	9.00%			37.43%	83.17%
7	6.00%	7		7	7.00%			29.80%	66.22%
8	7.29%	10		10	10.00%			37.29%	82.86%
9									
10									

Our final screen shot for this section shows what the spreadsheet may look like at the end of the semester--all without altering our established formulas, but making sure we filled in the possible points rows, weighted scores, and created the necessary weighted formula for our Final Exam column. (We changed some font sizes to accommodate this screen shot). Again, note that for those students who did perfectly on a given assignment the weighted score does indeed reflect the highest possible weighted score for that assignment.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Homework One	Homework Two	Total Score on Homework	Homework Weighted Score	Final Exam	Final Exam Weighted Score	Total Percentage So Far	Total Weighted Score So Far
2	<b>Total Points</b>	<b>50</b>	<b>20%</b>	<b>35</b>	<b>15%</b>	<b>10</b>	<b>15</b>	25	<b>10%</b>	60	<b>55%</b>	100.00%	
3	Badenov, Boris	30	12.00%	30	12.86%	10	9	19	7.60%	40	36.67%	69.12%	69.12%
4	Brown, Charlie	49	19.60%	27	11.57%	9	11	20	8.00%	52	47.67%	86.84%	86.84%
5	Dahl, Barbie	50	20.00%	35	15.00%	8	15	23	9.20%	60	55.00%	99.20%	99.20%
6	Fatale, Natasha	40	16.00%	29	12.43%	9	13	22	8.80%	43	39.42%	76.65%	76.65%
7	Fudd, Elmer	42	16.80%	14	6.00%	7	14	21	8.40%	52	47.67%	78.87%	78.87%
8	Rabbit, Jessica	50	20.00%	17	7.29%	10	15	25	10.00%	60	55.00%	92.29%	92.29%

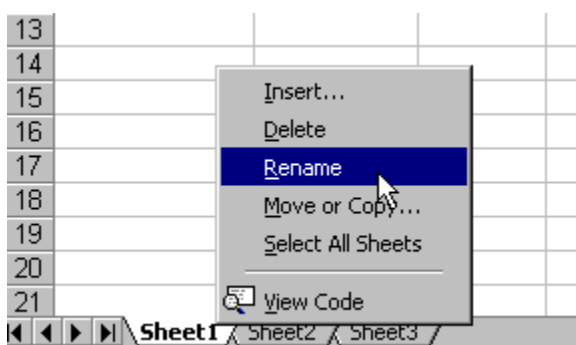
With these formulas in mind, you can be well on your way to creating your own spreadsheet with weighted assignments!

## Using Weighted Grades in a Multiple-Sheet Spreadsheet

If you thought the last spreadsheet was a bit confusing and you are comfortable using formulas between more than one sheet, you may want to consider setting up your spreadsheet so that each assignment "type" appears on its own sheet. You can then tally a running total on each sheet, having the total weighted percentage so far appearing on its own sheet.

### Naming Sheets

Your first step (for your own sanity, if nothing else) is to rename the sheets in *Excel* by *right clicking* over the sheet tab at the button, then left-clicking **R**ename:



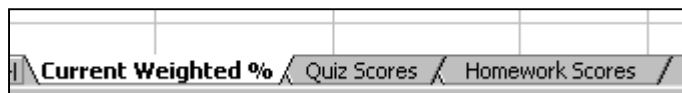
#### Need More Sheets?

If *Excel's* default of three sheets is not enough, click **I**nsert in the menu illustrated above to add another sheet to the *left* of the current sheet. This, of course, leads to the next question . . .

#### How Many Sheets Can I Add?

According to Microsoft, the number of sheets you can have in one workbook is "limited by available memory." (That's the computer's memory--not yours!)

Here is what one may look like. This spreadsheet contains a sheet for all quizzes (**Quiz Scores**), another sheet for all homework assignments (**Homework Scores**), and a separate sheet tallying the totals from the other two (**Current Weighted %**):



#### SANITY SAVING TIP

As you will find when creating the final formulas on the **Current Weighted %** sheet, it is best to consistently have the student names in the *same relative locations on each sheet*. In other words, the student names should consistently begin in cell **A2** (for example) on each of your sheets. As a result, when you copy a formula on the final sheet, you will be assured that you are referring to cells from the same student on each sheet. (You'll see why in two pages.)

## Formulas on Separate Sheets

With this method, each of our sheets take into account the same type of formulas already covered earlier.

In the **Homework Scores** sheet, shown below, we know ahead of time that *all* of our homework assignments--regardless of their individual point values--will be worth 10% of the final grade:

J3      = =I3/\$I\$2\*\$J\$2

	A	B	C	D	E	F	G	H	I	J
1		Exer. 1	Exer. 2	Exer. 3	Exer. 4	Exer. 5	Exer. 6	Exer. 7	Total Points	Homework Weighted Score
2	<b>Points Possible</b>	5	7	8	4	10			34	<b>10%</b>
3	Badenov, Boris	0	3	4	3	7			17	5.00%
4	Brown, Charlie	5	5	6	3	6			25	7.35%
5	Dahl, Barbie	5	7	8	4	10			34	10.00%
6	Fatale, Natasha	1	4	5	2	4			16	4.71%
7	Fudd, Elmer	2	5	7	2	8			24	7.06%
8	Rabbit, Jessica	3	6	4	1	9			23	6.76%

Value typed in, since regardless of total points the weighted grade will be 10%.

Column I (**Total Points**) sums all point totals from previous columns. Column J uses our usual formula to calculate the student's weighted grade.

$$[\text{Student's Score}] / [\text{Total Points Possible}] * [\text{Weight}]$$

Since column I sums all previous columns, we can continue adding homework scores to this sheet without having to worry about altering the formula. The weight is typed into cell J2, so it will stay at 10% regardless of how many exercises we give throughout the semester. Note our perfect student, Barbie Dahl, has the proper weighted score of 10%, since she has scored perfectly on all homework exercises.

The example shown above will suffice for any type of exercise that has a given, set weight for the semester. This is not true for our quizzes, however, as each has a different weight. Here, then, is what our Quiz Scores sheet looks like after a few quizzes have been taken but before the final:

J2      = =C2+E2+G2+H2

	A	B	C	D	E	F	G	H	I	J
1		Quiz One	Quiz One Weighted Score	Quiz Two	Quiz Two Weighted Score	Quiz Three	Quiz Three Weighted Score	Final Exam	Final Exam Weighted Score	Total Weight for Quizzes
2	<b>Total Points</b>	50	10%	45	10%	40	15%			<b>35.00%</b>
3	Badenov, Boris	31	6.20%	29	6.44%	30	11.25%			23.89%
4	Brown, Charlie	30	6.00%	40	8.89%	32	12.00%			26.89%
5	Dahl, Barbie	50	10.00%	45	10.00%	40	15.00%			35.00%
6	Fatale, Natasha	34	6.80%	37	8.22%	27	10.13%			25.15%
7	Fudd, Elmer	41	8.20%	39	8.67%	35	13.13%			29.99%
8	Rabbit, Jessica	48	9.60%	41	9.11%	39	14.63%			33.34%

In the sample above, we have given quizzes one, two, and three, but not the final exam. The weighted scores for each quiz follow our standard formula of:

**[Student's Score] / [Total Points Possible] \* [Weight]**

Our column for **Total Weight for Quizzes** simply adds together the total quiz weights:

$$=C2+E2+G2+I2$$

Note that the **Final Exam Weighted Score** must be kept blank until the exam is administered, or else it would throw off the total in the final column.

The **Current Weighted %** sheet adds together the appropriate weighted percentages for each student from the respective sheets and adds them together in a column called **Total % So Far**:

B3		= 'Quiz Scores'!J3+'Homework Scores'!J3			
	A	B	C	D	E
1		<b>Total % So Far</b>	<b>Current Weighted Percentage</b>	<b>Current Grade</b>	
2	<b>Total Possible</b>	45.00%			
3	Badenov, Boris	28.89%			
4	Brown, Charlie	34.24%			
5	Dahl, Barbie	45.00%			
6	Fatale, Natasha	29.85%			
7	Fudd, Elmer	37.05%			
8	Rabbit, Jessica	40.10%			

Since you are gathering a formula from multiple sheets, it is easiest to construct this formula using the "point and click" method in *Excel*. After typing in the equals sign in the formula bar, we simply click the sheets and cell references that we want in the formula, then the green checkbox in the formula bar. The syntax is:

**'[Sheet Name]'![Cell Reference]**

Looking at our previous screen shots, the total % possible so far (cell **B2** above) is:

**'Quiz Scores'!J2 + 'Homework Scores'J2**

while the first student's **Total % So Far** is therefore

**'Quiz Scores'!J3 + 'Homework Scores'J3**

#### **Reference to Previous Sanity Saving Tip**

NOW do you see why it's best to have the student names in the same relative location on each sheet? You can copy the first student's score down and ensure that the cell references are the same for each student on the different sheets.

The column for **Current Weighted Percentage** divides each student's score by the total possible percentage so far, as seen on the next screen shot:

C3		= =B3/\$B\$2		
	A	B	C	D
1		<b>Total % So Far</b>	<b>Current Weighted Percentage</b>	<b>Current Grade</b>
2	<b>Total Possible</b>	<b>45.00%</b>		
3	Badenov, Boris	28.89%	64.21%	
4	Brown, Charlie	34.24%	76.09%	
5	Dahl, Barbie	45.00%	100.00%	
6	Fatale, Natasha	29.85%	66.34%	
7	Fudd, Elmer	37.05%	82.33%	
8	Rabbit, Jessica	40.10%	89.11%	
9				
10				

Again, note that our perfect-scoring student, Barbie Dahl, indeed has a current weighted percentage of 100%

With a little knowledge of VLOOKUP, we can even give our students an idea of their letter grade so far. The **Current Grade** column will always be up to date, since it will rely on the **Current Weighted Percentage** column we just created:

D3		= =VLOOKUP(C3,\$A\$11:\$B\$20,2)			
	A	B	C	D	E
1		<b>Total % So Far</b>	<b>Current Weighted Percentage</b>	<b>Current Grade</b>	
2	<b>Total Possible</b>	<b>45.00%</b>			
3	Badenov, Boris	28.89%	64.21%	D	
4	Brown, Charlie	34.24%	76.09%	C	
5	Dahl, Barbie	45.00%	100.00%	A	
6	Fatale, Natasha	29.85%	66.34%	D	
7	Fudd, Elmer	37.05%	82.33%	B-	
8	Rabbit, Jessica	40.10%	89.11%	B+	
9					

### Creating a Letter Grade

Another reminder that you should consult our separate handout, *The VLOOKUP Function in Excel*, for information on how you can automatically generate grades in a column based on scores or percentages.