

## MOODLE GRADE AGGREGATION METHODS

Grade aggregation is just a fancy term for how grades are calculated. The Moodle Gradebook is set up so that you can group similar grade items together and perform specific calculations on those grouped items. Not every course will need this level of grade complexity. Many courses use the same grade calculation strategy for all graded items. However, it's still very important to understand the various options for calculating your grades, since the aggregation method that you choose can drastically alter the final course grade.

First you need to understand what Moodle calls Categories within your Gradebook. Every course has one main Category. When you see this Category listed, you'll notice it is given the same title as your course. As mentioned earlier, many courses will not need to have any additional categories, but some will. You can have as many categories as you need and they can be nested inside other categories.

Each category has a grade aggregation method set on it, and that aggregation method determines how grade items that are included in that category will be calculated. You can change your aggregation method at will any time you want without affecting anything other than how the category's scores are calculated. So keep this in mind, in case you make a mistake. You can always go back and change your aggregation method. However, you will want to make sure it is right once you start showing aggregated points to your students. Now let's explore the various aggregation methods that you have to choose from.

### Mean of Grades

If you use this calculation method, Moodle will first determine the percentage scores for each grade item. It will then sum those scores and divide that sum by the total number of grade items.

Here is an example:

	Discussion (20 pts)	Quiz (10 pts)	Essay (100 pts)
Student's raw scores:	20	5	80
Raw score divided by points possible multiplied by 100 to give percentage:	$20 / 20 = 1 \times 100 = 100$	$5 / 10 = 0.5 \times 100 = 50$	$80 / 100 = 0.8 \times 100 = 80$
Sum percentages:	$100 + 50 + 80 = 230$		
Divide percentage by total grade items:	$230 / 3 = 76.67$		
Category percentage:	76.67%		

## Weighted Mean of Grades

With this calculation method, the graded items will be multiplied by the weight you give them and that total will be divided by the sum of the weights.

Here is an example:

	Discussion (20 pts) weight of 5	Quiz (10 pts) weight of 2	Essay (100 pts) weight of 10
Student's raw scores:	20	5	80
Raw score divided by points possible:	$20 / 20 = 1$	$5 / 10 = 0.5$	$80 / 100 = 0.8$
Multiply by the weight:	$1 \times 5 = 5$	$0.5 \times 2 = 1$	$0.8 \times 10 = 8$
Sum weighted scores:	$5 + 1 + 8 = 13$		
Divide sum by weights:	$13 / (5 + 2 + 10) = 13 / 17 = 0.76$		
Multiply by 100:	$0.76 \times 100 = 76$		
Category total percentage:	76%		

## Simple Weighted Mean of Grades

This is similar to the way Weighted Mean of Grades is calculated, except that each item is weighted based upon the maximum points possible for that item. Therefore, a 20 point discussion will have a weight of 20 and a 100 point essay will have a weight of 100.

Here is an example.

	Discussion (20 pts)	Quiz (10 pts)	Essay (100 pts)
Student's raw scores:	20	5	80
Raw score divided by points possible:	$20 / 20 = 1$	$5 / 10 = 0.5$	$80 / 100 = 0.8$
Multiply scores by weights:	$1 \times 20 = 20$	$0.5 \times 10 = 5$	$0.8 \times 100 = 80$
Sum weighted scores:	$20 + 5 + 80 = 105$		
Divide sum by weights:	$105 / (20 + 10 + 100) = 105 / 130 = 0.81$		
Multiply by 100:	$0.81 \times 100 = 81$		
Category total percentage:	81%		

## Mean of Grades (with extra credit)

This aggregation method is only included for backward compatibility for instructors who were using Moodle before version 1.9. It is not recommended that you use this aggregation method for any courses designed after December 2009.

## Median of Grades

When this aggregation method is selected, the result will be score that falls in the middle of all the highest and all the lowest grades. If your total grade items are an even number then it will average the two middle grades. So using the example we have been using with the three grades of 100%, 50% and 80%, the median grade would be 80%.

## Lowest Grade

This is pretty self-explanatory. The category grade will be the lowest grade that has been assigned. So using our previous example of 100%, 50% and 80%. The grade for the category would be 50%.

## Highest Grade

Again this is pretty self-explanatory. The category grade will be the highest grade that has been assigned. So using our previous example of 100%, 50% and 80%. The grade for the category would be 100%.

## Mode of Grades

The mode is the grade that occurs the most frequently and is usually used for non-numerical grades (e.g. pass/fail, satisfactory/unsatisfactory, etc.)

## Sum of Grades

This is the only aggregation method that does not internally convert scores individual grade items to percentages. Using our previous example here is how it would work.

	Discussion (20 pts)	Quiz (10 pts)	Essay (100 pts)
Student's raw scores:	20	5	80
Sum scores:	$20 + 5 + 80 = 105$		
Divide sum by total possible:	$105 / (20 + 10 + 100) = 105 / 130 = 0.81$		
Multiply by 100:	$0.81 \times 100 = 81$		
Category total percentage:	81%		

Another feature of this calculation method is that you can mark a grade item as an extra-credit item. When you do this, that item will not factor in to the maximum possible points, but if a score is entered for the item it will be added to the student's total. Here is an example:

	Discussion (20 pts)	Essay (100 pts)	Quiz (20 pts) extra credit
Student's raw scores:	20	95	10
Sum non-extra credit scores:	20 + 95 = 115 out of possible 120		
Add extra credit points up to max possible:	115 + 10 = 120 (the remaining 5 points are ignored since they are beyond the maximum possible)		
Divide total by maximum possible and multiply by 100:	$(120 / 120) \times 100 = 100$		
Category total percentage:	100%		

### *Choosing an Aggregation Method*

If the points you have assigned for each grade item is in proportion to how much the grade item counts towards the total score, then you'll probably want to choose "Simple Weighted Mean of Grades" or "Sum of Grades".

If the points possible for each grade item is not relative to that item's weight for the total course grade but you do want to give different weight to different items, then you'll probably want to use the Weighted Grades method and assign weights either to groups of grade items (you'll have to create categories), or to each grade item individually.

If the points possible for each grade item is not relative to that item's weight for the total course grade and all items have the same weight, then you'll probably want to use the Mean of Grades method.

Example: Set a course to weight quizzes as 20%, assignments as 30% and exams as 50%

1. In your course click on Grades from the Administration block.
2. Click the Categories and Items tab.
3. In the Aggregation column for the course category (the top folder), click the down-arrow and select "Weighted mean of grades".
4. Scroll to the bottom and click the "Add category" button.
5. Give the category the name "Quizzes" and choose "Simple weighted mean of grades" as the aggregation method.
6. For the "Item weight" enter 20.
7. Click Save changes.
8. Repeat to add an "Assignments" category with a weight of "30", and an "Exams" category with a weight of "50".
9. You can now move already created grade items into these categories, or when you create new grade items, you can choose the appropriate category in which to place the item.
10. That's it. The Gradebook will calculate the scores based on the weights you've given these categories, regardless of how many points you assign for each item.