

Aggregating grades

Activities within a course can be assigned a mark and each of these marks can be aggregated using a variety of methods to give a total grade for the course or a [grade category](#).

Aggregation methods

Method	Description	Example
Natural (default)	The sum of all grade values scaled by weight.	<p>As an example we can say a Learner has received the following grades:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 20/80 (25%) • Assignment 3: 10/10 (100%) <p>If you do not force grade weights we end up with the calculation: $(70 + 20 + 10)/(100 + 80 + 10)$</p> <p>Here we are adding together the grades received for each assignment first:</p> $70 + 20 + 10 = 100$ <p>Then we are adding up all of the maximum grades for each assignment:</p> $100 + 80 + 10 = 190$ <p>If we then represent this as a fraction we have $100/190$ (52.6%) as the final aggregated grade.</p>
Mean of grades	The sum of all the Learner's grades for that divided by the total number of grades (this also means items that can be graded).	<p>Let's imagine a Learner scored the following:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 20/80 (25%) • Assignment 3: 10/10 (100%) <p>The category max grade is 100 and it uses the Mean of grades aggregation.</p> <p>The grade is calculated as: $(0.7 + 0.25 + 1.0)/3 = 0.65$</p> <p>This is because the calculation is done in percentages with 100% represented as a whole number (1.0) and lower percentages represented as a fraction (e.g 0.7 for 70%).</p> <p>So we add all the grades together:</p> $0.7 + 0.25 + 1.0 = 1.95$ <p>Then we divide this by the total number of grades, in this case there are 3 grades, so we divide by that (note that the / represents a division symbol).</p> $1.95 \div 3 = 0.65$ <p>After converting that fraction back into a percentage, the users total aggregated grade is 65/100 (65%).</p>

Weighted mean

Grades can be given weighting to distinguish how important they are, for example assignment 1 might be less important than assignment 3 and therefore assignment 3 might be given a higher weighting. Totara Learn will calculate the category total by taking each grade and multiplying it by its weighting, adding all the weightings together and then dividing the sum of all multiplied grades by the sum of all weightings.

For example, consider the following scenario:

A Learner has received the following grades:

- Assignment 1: 70/100 (70%). Item weight: 10
- Assignment 2: 20/80 (25%). Item weight: 5
- Assignment 3: 10/10 (100%). Item weight: 3

The category max grade is 100 and the **Weighted mean** aggregation method is in use.

The grade is calculated as: $(0.7 \times 10 + 0.25 \times 5 + 1.0 \times 3) / (10 + 5 + 3) = 0.625$

We can break this down. First, the grades are calculated as a percentage and then multiplied by their weighting (the asterisk acts as a multiplication symbol). So we get:

$$0.7 \times 10 = 7$$

$$0.25 \times 5 = 1.25$$

$$1.0 \times 3 = 3$$

Then we add those all together to get 11.25 (this replaces the sum in our first set of brackets).

We then have to add all the weights together, so in this case $10 + 5 + 3 = 18$ (this replaces the sum in our second bracket).

Now we are dealing with the first calculation divided by the second (the / in the original equation symbolises a division symbol).

$$\text{That gives us } 11.25 \div 18 = 0.625$$

As we are dealing with percentages 0.625 gives us 62.5% ($62.5/100$) as the final aggregated grade.

<p>Simple weighted mean</p>	<p>This method is similar to the weighted mean of grades, but instead uses each grade item's maximum possible grade as the weighting.</p>	<p>We can break down how this works by looking at an example. A Learner has received the following grades:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 20/80 (25%) • Assignment 3: 10/10 (100%) <p>The category max total grade is 100 and it is using the Simple weighted mean aggregation method.</p> <p>The calculation goes as follows: $(0.7 \times 100 + 0.25 \times 80 + 1.0 \times 10) / (100 + 80 + 10) = 0.526$</p> <p>First we take each grade and multiply it by that item's maximum possible grade, giving us:</p> <p>$0.7 \times 100 = 70$</p> <p>$0.25 \times 80 = 20$</p> <p>$1.0 \times 10 = 10$</p> <p>If we add all of those together we get 100 (this replaces the equation in the first set of brackets).</p> <p>Next we add up all of the maximum possible grades, $100 + 80 + 10 = 190$ (this replaces the equation in the second set of brackets).</p> <p>Now we have to divide the first sum by the second (the / symbolises a division symbol), giving us $100 \div 190 = 0.526$.</p> <p>When we convert this back into a percentage (out of the category maximum 100) we are left with 52.6% (52.6/100).</p>
<p>Median of grades</p>	<p>The middle grade when grades are arranged in order of size.</p>	<p>If we imagine that a Learner achieved the following grades:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 20/80 (25%) • Assignment 3: 10/10 (100%) <p>We can calculate the total grade for category with a max grade of 100 that is using the Median of grade aggregation method by taking all of the percentage grades and arranging them in numerical order, in this case that would be 25%, 70%, 100%.</p> <p>We then simply take the middle number (the median) and that is the final grade, so 70/100 (70%).</p>
<p>Smallest grade</p>	<p>This takes the smallest grade and uses that as the overall category total.</p>	<p>For example, if a Learner scored the the following:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 20/80 (25%) • Assignment 3: 10/10 (100%) <p>The category total is calculated out of 100 and the aggregation method is Smallest grade.</p> <p>The smallest grade is 25% therefore the aggregated grade for the category would be 25 /100 (25%).</p>

Highest grade	The takes the highest grade and uses that as the overall category total.	<p>For example, if a Learner scored the the following:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 20/80 (25%) • Assignment 3: 10/10 (100%) <p>The category total is calculated out of 100 and the aggregation method is Highest grade.</p> <p>The highest grade is 100% therefore the aggregated grade for the category would be 100 /100 (100%).</p>
Mode of grades	<p>The grade that occurs the most frequently.</p> <p>This is most useful to use with non-numerical grades (such as A,B,C,D) as there is likely to be more consistency in the numbers occurring because behind each letter grade is a number (e.g A=100, B=80, C=60).</p>	<p>We can take the example of a Learner who has scored the following:</p> <ul style="list-style-type: none"> • Assignment 1: 70/100 (70%) • Assignment 2: 35/50 (70%) • Assignment 3: 20/80 (25%) • Assignment 4: 10/10 (100%) • Assignment 5: 7/10 (70%) <p>The category max grade is 100 and the aggregation method is Mode of grades.</p> <p>We then look at the grades as a percentage and see which occurs most frequently, in this case it is 70% so the final category total would be 70/100.</p>

To change the grade aggregation method for a course you will need to follow these steps:

1. From the course page go to **Course administration** > *Grade Setup*.
2. Then, alongside the category you wish to change the aggregation method for, in the **Action** column click **Edit** and then **Edit settings**.
3. Find the **Aggregation** setting and change it using the dropdown list of options.
4. Scroll to the bottom of the page and click **Save changes**.



If you haven't set up categories then all grades will be within the default course grade category (this is the top option), which will show a folder icon and the name of the course.

Old methods

Mean of grades (with extra credits)

This is now unsupported but still available to allow backward compatibility with old activities.

An extra credit value greater than 0 changes the grade aggregation calculation. The extra credit number is multiplied by the grade and added to the sum of all grades, but the extra credit value is not included in the division. For example:

- Item 1 is graded 0-100 and its **Extra credit** value is set to 2.
- Item 2 is graded 0-100 and its **Extra credit** value is left at 0.0000.
- Item 3 is graded 0-100 and its **Extra credit** value is left at 0.0000.
- All 3 items belong to Category 1, which has **Mean of grades (with extra credits)** as its aggregation strategy.
- A Learner gets graded 20 on Item 1, 40 on Item 2 and 60 on Item 3.
- The learner's total for Category 1 will be 90/100 since $20 \times 2 + (40 + 60) / 2 = 90$.