**From scores to a grade**

Meeting and exceeding challenging standards defines success, and the best grading systems motivate students to work harder, overcome failures, and excel academically.

Article: Great Schools Partnership. Grading Principles and Guidelines.

At the UT we generally work with the **absolute caesura**. This means for a written test, an examiner determines beforehand how many points (score) a student must attain at least to pass. A student with [X] points gets a 5.5 (in the end to be rounded to a 6). But what will be the X?   
On the basis of the “X” (cutting score), we then determine in a systematic way all the other grades (transformation).   
  
There are different methods to transform scores to grades. In the next exercises we show some common practice. But this is certainly not an exhaustive overview.   
  
By means of some small exercises and some discussion points, we would like to examine together some common methods used in the Netherland to decide upon the caesura and to get from scores to grades. The transformation. The output of today’s session can contribute to the discussions: would it be useful to arrive at general guidelines for grading? Is this desirable or not? What should these guidelines be? Or is it sufficient if examiners can call on their understanding of the underlying principles for determining the grades? But: do they know and understand these principles?   
  
Working on the exercises and questions can be done in small groups (2-3 participants).

**General note:**For the sake of clarity, we use a written test with open questions as an example. With closed questions you will also have to take into account the guessing factor and with assignments there are several ways to get from a score to a grade. But also then the question applies: which method do you use to convert the scores to a grade?

Important: for the next exercises be alert to the difference between the grade and grade points and the points or score resulting after the students took the test. Purely to keep the distinction clear in the following exercises, we call the grade-points (1-10) **grade-digits**.

**Method 1: the formula method.**

One method to come from a score to a grade which is quite usual, is to use this formula:   
**grade = (p/t \* a )+ b**p = points achieved by a student (or his/her score)  
t = total points available  
a = grade-digits to be distributed   
b = lowest grade-digit possible   
*NB. If we consider grade 1 as the lowest grade (b), then we have 9 grade-digits left for distribution (a)*

**Case: we have a test with 10 open questions and a maximum score of 40 points.**  
Let us say that we consider grade 1 as the lowest grade.   
Annie achieved 20 points. What will be her grade based on the formula above? \_\_\_\_\_\_  
  
John achieved 25 points. What will be his grade based on the formula above? \_\_\_\_\_\_  
  
How many points are needed for grade 5.5? \_\_\_\_   
  
Can you indicate in the graph (attached separately) how the grading progression in relation to the scores takes place? We call this the score-grade transformation scale.

If we use the same formula: grade = p/t \* a + b and same case but now we assume that **0** is the lowest grade to be achieved (range 0-10).  
  
Case: Annie achieved 20 points. What will be her grade based on the formula now? \_\_\_  
  
John achieved 25 points. What will be his grade be based on the formula above? \_\_\_  
  
How many points are needed now for grade 5.5? \_\_\_\_\_

Can you indicate in the graph, in a different colour or bold, how the grading progression in relation to the scores takes place now?

**Discussion: If you compare the different situations, what stands out? If you had to choose, what would you take as the lowest number? Why? Do you think that the programme should take a stand on this or is it up to the examiners themselves? Can you explain your answer?**

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**Method 2: A chosen caesura as a starting point**

Using the former method, the caesura emerges on the basis of the formula used. You could also use a different method in which you deliberately start with a decision on the caesura (or cutting score or cut-off point); the cut-off point between a passing and a failing. A student with [X] points gets a 5.5. What do we choose for the X so we are assured of the proficiency of the students at least at the minimum level we expect?   
  
**Same case: we have a test with 10 open questions and a maximum score of 40 points.**

Question: assume we determine that the caesura or cutting score will be placed at 55%.   
Which score matches this caesura? \_\_\_\_ So a score of \_\_\_\_ yields in this case a 5.5.  
  
John has achieved 25 points. Will he pass? \_\_\_\_\_\_   
  
Question: assume we determine that the caesura or cutting score will be placed at 65%.   
John has achieved 25 points. Will he pass in this situation? \_\_\_\_

Question: Can you imagine a (educational) situation in which a student has to achieve a very high percentage of the available points in order to pass?

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**Discussion: should it be up to all examiners to decide for themselves on the caesura? Please explain your answer.**

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**Transformation**When working with self-defined caesura, you also need a transformation to calculate the grades. There are different ways.   
  
Let us take our case again: **a test with a maximum of 40 points**. Let us assume we use a cut off percentage of 60%.   
  
A difficulty is that in our Dutch grading system we have 5.5 grading-digits to distribute from 0 - 5.5 and 4.5 grading-digits to distribute from 5.5 till 10. And again the 1 is the lowest grade we can give (in Osiris).

0 1 5.5 10 grades   
  
0 24 40 points / score

**Formula 2.1:**One formula that can be used for transformation, is the linear transformation formula. In this case, all the very low (and also negative) scores (below 1) will be rounded to 1.   
  
**p = points achieved by student c = cutting score t = total points available***NB. Actually to be very precise and working with grades with one decimal place after the comma one should use 5.45 instead of 5.5 and 4.55 instead of 4.5.*  
**grade = 5.5 + ( (p – c) \* (4.5 / (t- c)) )**

**Same case: we have a test with 10 open questions and a maximum score of 40 points.**

Question: assume we determine that the caesura or cutting score will be placed at **60%**.

Which score matches this caesura? \_\_\_\_ So a score of \_\_\_\_ yields in this case a grade 5.5.

Annie has achieved 20 points. What will be her grade? Will she pass? \_\_\_ [ ] yes / [ ] no

John has achieved 25 points. What will be his grade? Will he pass? \_\_\_ [ ] yes / [ ] no

**Formula 2.2:**In this situation we use another formula. In Dutch it is called “lineair met een knik”, which can be translates more or less as “linear transformation with a kink”.

* if score is < cutting score : grade = 1 + p \* (4.5/c)
* if score is ≥ cutting score : grade = 5.5 + (p – c) \* (4.5/t-c)

**Same case and a 60% caesura (24 points will be the cutting score).**

Annie has achieved 20 points. What will be her grade now? \_\_\_\_

John has achieved 25 point. what will be his grade? \_\_\_\_

Can you indicate in the second graph (or in the first if you have different colours) how the grading progression in relation to the scores takes place based on the different methods. What stands out?   
In what way do they differ?  *NB. To help you a bit with all the calculations, you can use* [*https://omzettingstabel.faistos.nl/*](https://omzettingstabel.faistos.nl/)*,   
an online transformation calculator.*

**Formula 2.3.**  
Another method, this time counting with percentages and using the range 0-10 (in which case the very low grades, for example 0.4, should be rounded to 1 in the Osiris system).

**For our case: a test with 10 open questions and a maximum score of 40 points.   
Cutting score 60% (c)**

Formula A: If p/t < 0.60 : grade = (p/t) \* (5.5/c \* 100)  
Formula B: If p/t ≥ 0.60 : grade = (p/t – c /100) \* (4.5/(100-c) \* 100)) + 5.5

Example: say p = 10 10/40 = < 0.60 Take formula A: (10/40) \* (5.5/60 \* 100) = 0.25 \* (0.09 \* 100) = 0.25 \* 9 = grade 2.3

Annie has achieved 20 points. What will be her grade now? \_\_\_\_

John has achieved 25 point. what will be his grade? \_\_\_\_

Will method 3 work out differently upon the grading compared to the former methods? In what way?

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**Discussion: regarding these last three methods, would you recommend one of them? Or is it up to the examiner? Please explain your answer.**

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**Question/discussion: If you think of assignments, in what way do the methods indicated to obtain a grade apply or do not apply? (See also appendix 1.)**

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