

# TERTIARY INSTITUTIONS SERVICE CENTRE

(Incorporated in Western Australia)

100 Royal Street  
East Perth, Western Australia 6004  
Telephone (08) 9318 8000  
Facsimile (08) 9225 7050  
<http://www.tisc.edu.au/>

August 2014

## MARKS ADJUSTMENT PROCESS FOR UNIVERSITY ADMISSION

There are over 200 schools and colleges in Western Australia which offer a large variety of WACE courses to Year 12 students. The many different programs studied by Year 12 students make it difficult to compare the results of all students in courses across the State unless steps are taken to make sure students are not advantaged or disadvantaged on the basis of their program choices.

University admission is competitive in most courses - there are more students who want places than there are places available. This means that students must be ranked in some way to ensure fairness when universities offer places. The universities recognise scaled scores from WACE courses at stage 2 and stage 3 and past TEE subjects in calculating an Australian Tertiary Admission Rank (ATAR). However, for a sound preparation for university studies, the universities would prefer students who have done WACE courses to have studied at stage 3 in preference to stage 2. Hence an increment of 15 is applied to stage 3 adjusted combined marks as an incentive for students to undertake courses at the more difficult stage 3.

For students to be ranked fairly for selection for university places, all students' marks must be on the same scale. We all know that we cannot directly add together quantities on different measurement scales, such as kilograms and pounds. In the same way, if we want to be able to add marks from courses as varied as Aviation, Career and Enterprise, Music and Biological Sciences, for example, all the marks must be on the same scale of measurement to produce a meaningful result. We therefore use a series of processes to convert the raw marks for different courses to the same measurement scale. The scaled scores for any courses can then be added together to form a Tertiary Entrance Aggregate (TEA), from which an Australian Tertiary Admission Rank (ATAR) can be derived.

The marks adjustment process adjusts for differences in abilities of students undertaking courses, and ensures that students are not disadvantaged if they choose a 'difficult' course, nor advantaged if they choose an 'easy' one. It also ensures that students are not advantaged or disadvantaged on the basis of the school they attend nor on the basis of an examination being perceived as easier or harder than in other years. The process therefore encourages students to take the courses for which they are best suited and which best prepare them for their future studies, enabling students to make sensible choices. The marks adjustment process gives students freedom to choose the more challenging courses, if they are interested and academically able, and it ensures a fair treatment of their final results.

### How Does the Marks Adjustment Process Work?

The marks adjustment process is a joint exercise by the School Curriculum and Standards Authority (SCSA) and the Tertiary Institutions Service Centre (TISC). The process has a number of steps which are often referred to as Standardisation, Moderation, Application of Increment and Scaling. From 2011, the Curriculum Council, now the School Curriculum and Standards Authority processed the results separately for courses with separate written and performance/oral components.

For courses (except Mathematics) with written examinations only, see the flow diagram in Figure 1 (attached).

For Mathematics, see the flow diagram in Figure 2 (attached).

For courses with separate written and performance/practical/oral examinations, see the flow diagram in Figure 3 (attached).

## The Marks Adjustment Steps

### 1. **Standardising of Raw Examination Marks**

#### 1.1 Courses with written examinations only

The overall mark for the examination is called the raw examination mark. The raw examination mark is standardised. This process is undertaken because examination papers for courses at stage 2 and stage 3 vary in difficulty from year to year. Standardisation adjusts for these differences in difficulty.

Standardisation ensures that no student is disadvantaged if an examination is harder than usual in the year they do their examination. If an examination is harder, the student's standardised mark in that course may be higher than their raw mark. If, on the other hand, an examination is easier than usual, their standardised mark may be lower than their raw examination mark.

As a result of standardisation:

- the distribution of standardised marks is the same from year to year and from course to course, and
- the top student in each course is given a standardised mark of 100.

Details of the standardisation distribution are published in the Curriculum Council (now School Curriculum and Standards Authority). See <http://www.scsa.wa.edu.au/internet/ Documents/General/Standardisation%20of%20marks%20pdf.pdf>

#### 1.2 Courses with separate written and performance/practical/oral examinations

The above process is separately applied to the raw written and raw performance/practical/oral examination marks to produce a standardised written mark and a standardised performance/practical/oral mark.

### 2. **Moderating of School Marks**

#### 2.1 Courses with written examinations only

The overall mark given by the student's school is the raw school mark. A moderated school mark is calculated from the raw school mark. This moderated school mark is on the same numerical scale as the standardised examination marks and, therefore, has the same meaning in every school.

Standardised examination marks are used as a common scale in the moderation of the school marks because the examination is the same for all students from all schools, unlike the scale of school marks, which is different between schools.

The ranking of students according to the moderated school marks is the same as their ranking according to raw school marks within their school.

The moderated school mark is likely to be different (higher or lower) from a student's raw school mark. The bigger the difference, the bigger the gap was between the scale used by their teacher when marking the assessment tasks and the scale used for the standardised examination marks for the course/subject.

See

[http://www.scsa.wa.edu.au/internet/ Documents/General/Your\\_marks\\_Statistical\\_moderation.pdf](http://www.scsa.wa.edu.au/internet/ Documents/General/Your_marks_Statistical_moderation.pdf).

#### 2.2 Courses with separate written and performance/practical/oral examinations

Schools provide to the School Curriculum and Standards Authority a raw written school mark and a separate raw performance/practical/oral school mark.

The process in section 2.1 is separately applied to the raw written school mark and raw performance/practical/oral school mark to produce a moderated written school mark and a moderated performance/practical/oral school mark.

### **3. *Standardising Moderated School Marks***

#### **3.1 Courses with written examinations only**

The moderated school mark is also standardised using the same process as is used to standardise the raw examination mark (see section 1 above).

#### **3.2 Courses with separate written and performance/practical/oral examinations**

The moderated written school mark is standardised using the same process as is used to standardise the raw written examination mark (see section 1.1 above). Separately, the moderated performance/practical/oral school mark is also standardised using the same process as is used to standardise the performance/practical/oral examination mark (see section 1.2 above).

### **4. *Combining Examination Mark and School Mark***

#### **4.1 Courses with written examinations only**

The standardised examination mark and standardised moderated school mark (which are both out of 100) for the same stage of a course are then averaged to calculate a combined mark. Within the stage of a course the combined marks are now on a common scale. Between the stages of a course, and between courses, the marks may not be on a common scale at this stage of the process.

#### **4.2 Courses with separate written and performance/practical/oral examinations**

The standardised written examination mark and standardised moderated written school mark (which are both out of 100) for the same stage of a course are then averaged to calculate a combined written mark. The standardised performance/practical/oral examination mark and standardised moderated performance/practical/oral school mark (which are both out of 100) for the same stage of a course are then averaged to calculate a combined performance/practical/oral mark.

The combined written mark and the combined performance/practical/oral mark are now combined in the proportion stated in the syllabus for the stage of the course concerned, to produce a combined mark for the stage of the course.

Within the stage of a course the combined marks are now on a common scale. Between the stages of a course and between courses the marks may not be on a common scale at this stage of the process.

### **5. *Adjusting Stage 2 and Stage 3 Combined Marks within a Course to a Common Scale***

Before the Increment (see step 6 below) is added to stage 3 combined marks it is necessary to have the stage 2 and stage 3 combined marks on a common scale so the full value of the increment is realised. To achieve a common course scale for the stage 2 and stage 3 combined marks, the Average Marks Scaling (AMS) process is used.

AMS uses the overall achievements (performance in all the students' courses) of the group of students studying each stage of a course to adjust the combined marks of that stage of each course, to produce an adjusted combined mark.

The average difference between the stage 3 adjusted combined marks and stage 2 adjusted combined marks will vary from course to course.

In the case of Mathematics, the AMS process will adjust for the differences between the four unit pairs (2A/2B, 2C/2D, 3A/3B and 3C/3D) of the course. Figure 2 (attached) provides a flow diagram for Mathematics.

## **6. Adding Increment of 15 to Stage 3 Adjusted Combined Marks**

As an incentive for students to do the more challenging stage 3 units of a course, an increment of 15 marks is added to the adjusted combined stage 3 mark, before the marks are finally scaled using AMS. The increment has the effect of increasing the adjusted stage 3 combined marks relative to adjusted stage 2 combined marks and hence significantly improving the stage 3 students' rank positions **within** a course, in recognition of the students undertaking the more difficult stage 3.

For a few interstate language courses (examined at stage 3 only) the increment is not applied as there are not two stages within these courses requiring the encouragement of students to do a higher stage. This does not disadvantage the students doing these courses as the process only affects the ranking of students **within** stage 2 and stage 3 of a course. It has no effect on the ranking of students **between** courses.

Mathematics, which has a different structure from other courses, will have increments of 10 for MAT 2C/2D, 20 for MAT 3A/3B and 30 for MAT 3C/3D. The appropriate increment will be added to the adjusted combined marks in the same way as described here.

## **7. Combining Stage 2 and Stage 3 Adjusted Combined Marks to Produce a Course Distribution**

For each course the distributions of adjusted stage 2 combined marks and adjusted stage 3 combined marks with increment for each course are merged to produce a course distribution of (pooled) final combined marks.

## **8. Scaling Course Adjusted Combined Marks**

Before marks in WACE courses can be added together to form a Tertiary Entrance Aggregate (TEA), they must be placed on the same scale. The processes described above have ensured that within a course the marks are on the same scale, but this is unlikely to be the case between courses. The next step is inter-course scaling.

Scaling takes account of the ability of the students undertaking the courses. Able students generally undertake the more difficult courses, hence scaling aims to ensure that students are not disadvantaged if they choose a difficult course or advantaged if they choose an easy one.

The Average Marks Scaling (AMS) process is applied to the distributions of final combined marks of WACE courses. It uses the information about students' performance provided by these marks to compare the achievements of the group of students studying each course. This information is used to 'scale' the marks of all courses at the same time. In each course the final combined marks used are modified by the AMS process so that the average scaled score in any particular course matches the average scaled scores obtained by the same group of students in all of their courses.

For example, if the Engineering Studies students as a group perform better across all their courses than students of, say, Accounting, the Engineering Studies marks will generally be scaled up, relative to Accounting.

A student's scaled score for a course is likely to be different from the examination mark, school mark and combined mark.

For a technical explanation of the Average Marks Scaling (AMS) process see <http://www.tisc.edu.au/static-fixed/statistics/misc/average-marks-scaling-2009.pdf>

## 9. **Further Adjustment**

In 2012 the joint SCSA/TISC Scaling Policy Committee reviewed the effects of scaling courses at stage 2 and 3. The committee agreed to a minor adjustment to scores after the second AMS scaling, to increase the spread of the stage 2 and stage 3 scaled scores, consistent with the spread achieved in the initial AMS scaling process at step 5. This adjustment does not change the mean (average) scaled scores for the courses at stage 2 or 3.

In the case of Mathematics, which has a unique structure, the AMS process has to deal with four unit pairs (2AB, 2CD, 3AB, 3CD), instead of two as for all other courses. Due to its large candidature, Mathematics is the archetypal 'average' course. These facts together mean that the theoretical highest possible scaled score in Mathematics is constrained to be less than 100, regardless of the ability of the Mathematics candidates at the top end. An adjustment in Mathematics is made at the top end to ensure scaled scores of 100 are achieved; consistent with top scores achieved in Chemistry, Physics and Mathematics: Specialist.

## 10. **Scaling Languages with Interstate Syllabi**

With the very small candidature language courses (those interstate languages with 10 or fewer candidates) scaling processes may become less reliable due to the small numbers of students in the courses concerned. To address this, a process is used which acknowledges the AMS principle that performance over all courses is a reasonable measure of a student's ability, but at the same time also uses the information from the national distribution of results for the language concerned.

The methodology is as follows:

- a) Predict the students' scores in the AMS distribution using their percentile rank in the national distribution for the language concerned. For example, if a student is at the 85<sup>th</sup> percentile in the national distribution of scores in the language, determine the scaled score that is at the 85<sup>th</sup> percentile of all scaled scores in all WACE courses.
- b) Determine the average of the students' predicted scores in step a).
- c) For the students (with at least 3 other scaled scores) doing the language, determine the average of the students' scaled scores in all their other courses.
- d) Determine the average difference of these measures from steps b) and c)  
[Average from step c) subtract average from step b) divided by 2]
- e) If the Average from step c) is greater than the Average from step b) then the average difference from step d) is added to the individual student's predicted mark from step a) to produce recommended scaled scores. Otherwise the average difference is subtracted.

This process takes account of students' performance in all their other courses and their position in the national distribution for the language.

For very small candidature language courses where there is insufficient valid data to use the above processes, the Scaling Technical sub-group must make a judgement on the data that are available.

## 11. **Calculation of an ATAR**

The ATAR is the basis of admission to most university courses. The ATAR is derived from the Tertiary Entrance Aggregate (TEA).

The TEA will be calculated by adding a student's best four scaled scores plus 10% of that student's best Language Other Than English (LOTE) scaled score, based on the following rules:

- The best four scaled scores may be accumulated over **five** consecutive years, with no subject or course counting more than once.

- There are unacceptable course combinations whereby scores in both courses/subjects cannot both be used.
- A LOTE bonus of 10% of a LOTE scaled score is added to the aggregate of the best four scaled scores, subject to no LOTE scaled score earlier than 2011 being used. From 2016 Year 12, LOTE scaled scores must be from current or the previous four years. If more than one LOTE has been sat, only one (the best) LOTE scaled score can be used as the LOTE bonus. The LOTE bonus is calculated irrespective of whether the LOTE course is being counted as one of the best four.
- The maximum TEA is 410.

TEAs are then converted to ATARs taking into account the total number of students of Year 12 school leaving age in Western Australia, as well as the number of students who have a TEA.

The ATAR ranges between zero and 99.95. It reports a student's rank relative to all other WA students of Year 12 school leaving age. An ATAR of 75.00 indicates that the student has an overall ranking equal to or better than 75% of the Year 12 school leaving age population in Western Australia.

A Mature Age Tertiary Entrance Aggregate (TEA) is calculated by adding a student's best two scaled scores achieved in the same year multiplied by two, subject to the same unacceptable combinations as for school leavers. The TEA is then converted to an ATAR as described above.

For more detail see [About ATAR](#) on TISC's website at [www.tisc.edu.au](http://www.tisc.edu.au).

## FAQs on Scaling

### ***Should I choose courses which are usually scaled up?***

You may think that it is advantageous to choose courses which are usually scaled up. This is not true, and choosing courses on this basis may actually result in a lower scaled score than you might have otherwise achieved. If you choose a course that you are not very good at, simply because you expect it to be scaled up, your scaled score will be a lot lower than what you could expect to receive in a course which you are good at and which interests you. Your mark may be scaled up, but it is unlikely that your scaled score will be any higher than if you had chosen a more suitable course, even if marks for that course were scaled down.

### ***How do I know which courses will be scaled up and which ones scaled down?***

The movement of any individual student's combined marks after scaling depends on the course and a student's relative position within the course – some courses are scaled up and some are scaled down. The relative scaling of different courses is directly related to the ability of the students taking any particular course.

### ***Should I do stage 2 or stage 3 of a course?***

You should study the stage that is appropriate for your ability.

The universities prefer that students do stage 3. Stage 3 is more difficult than stage 2 and represents better preparation for university study. However, the universities recognise stage 2 for entry and so scaled scores from stage 2 can be used in the TEA calculation.

As an incentive for students to do stage 3 if they are capable of doing so, an increment of 15 marks is added to the adjusted combined marks at stage 3 before scaling. This means that in any course, the average stage 3 scaled score is higher than the average stage 2 scaled score. See scaling statistics at <http://ww.tisc.edu.au/statistics/scaling/scaling - statistics.html>.

### ***If I have results from several years, what happens with scaling?***

Marks are always scaled in the year in which you take the course.

### ***Are scaling results the same every year?***

There are no predetermined outcomes of scaling – the adjustments are based on the performance of students each year. The scaling process is carried out from scratch each year - it does not assume that one course is intrinsically more difficult than another or that the ability of students taking the course is always the same. In the past the process has been very stable and there is very little difference from year to year in terms of the scaled scores. From 2009 a significant number of new courses has been introduced which will change students' course selection patterns and hence could see some changes in scaled scores distributions across courses.

### ***What is the difference between a WACE Course Score and a Scaled Score?***

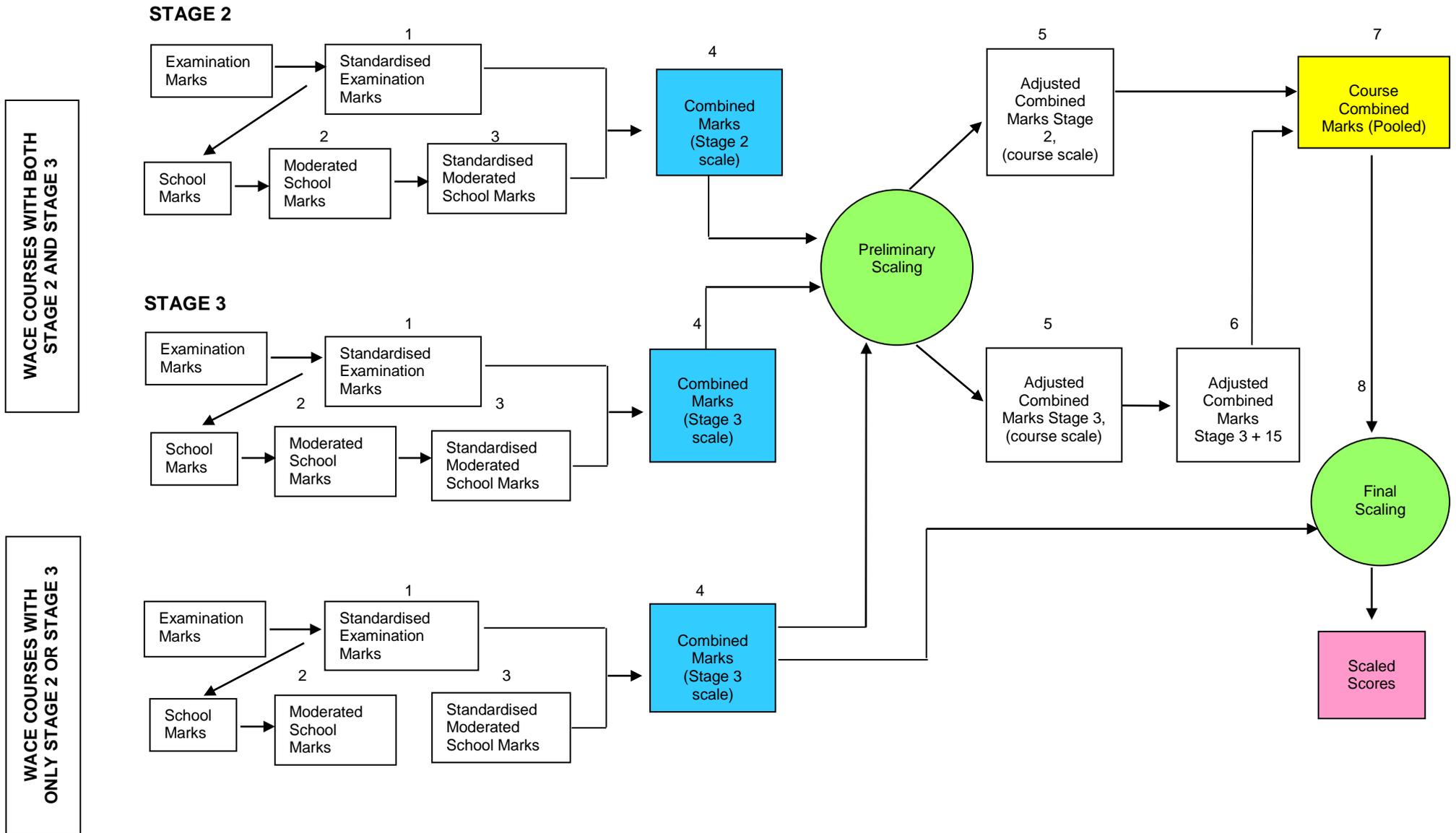
The purpose of the WACE course score at a particular stage is to report student performance in relation to standards established for the stage of the course. A WACE course score at stage 2 or stage 3 is based on a student's combined mark for the stage, and where this mark sits in relation to standards determined for the stage of the course. Standards are specific to each stage of the course, so there is no direct comparison between WACE course scores for the two stages of the course. Standards also are specific to each course, so there is no direct comparison between WACE course scores for different courses.

The purpose of Average Marks Scaling (AMS) is to produce scaled scores that are comparable across all WACE courses. A scaled score is based on a student's combined mark for a stage of study, however these are adjusted to take account of the differences in the difficulty required to attain marks in different stages of study. For example, a scaled score of 65 in Physics (Stage 3) is equivalent to a 65 in English (Stage 2) or a 65 in Dance (Stage 3). Because scaled scores are comparable (on the same scale) it is possible to add them to calculate a TEA and hence an ATAR.

# MARKS ADJUSTMENT PROCESS FOR UNIVERSITY ADMISSION

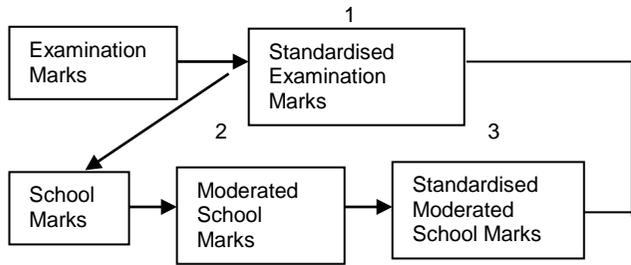
Figure 1

Courses (except Mathematics) with Written Examinations Only

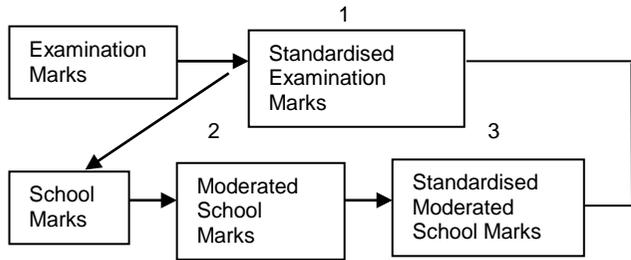


# MARKS ADJUSTMENT PROCESS FOR UNIVERSITY ADMISSION

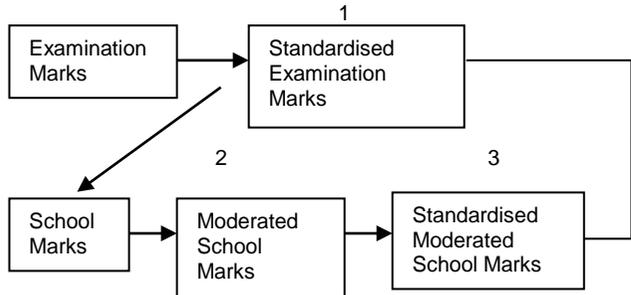
## MATHEMATICS 2A/2B



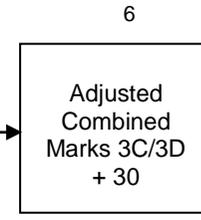
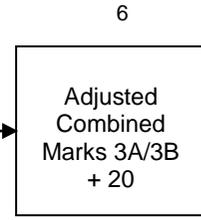
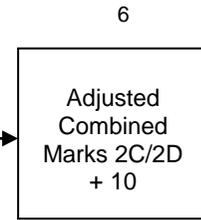
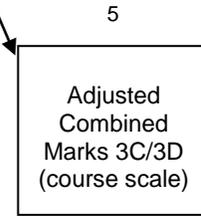
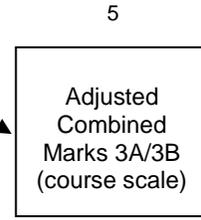
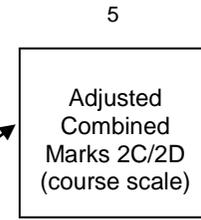
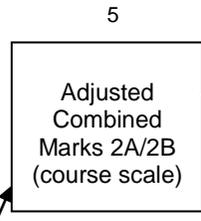
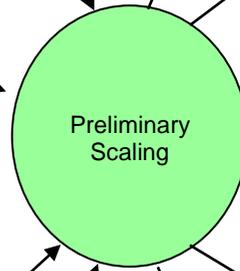
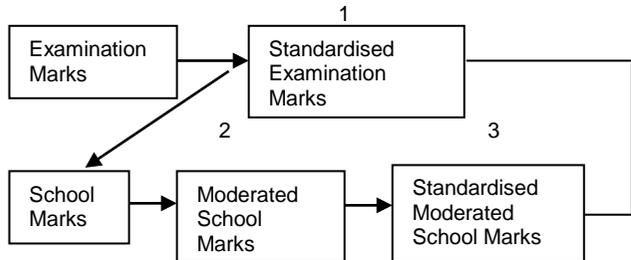
## 2C/2D



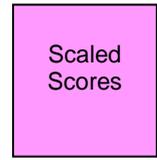
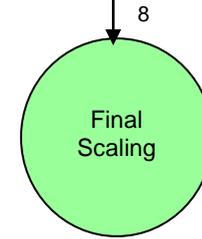
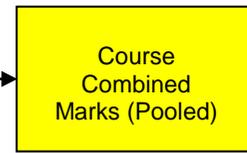
## 3A/3B



## 3C/3D



## Figure 2 7



# MARKS ADJUSTMENT PROCESS FOR UNIVERSITY ADMISSION

