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MARKS ADJUSTMENT PROCESS FOR UNIVERSITY ADMISSION

This is an explanation of the marks adjustment process that will be used for ATAR courses examined by the School Curriculum and Standards Authority.

There are over 200 schools and colleges in Western Australia which offer a large variety of Western Australian Certificate of Education (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.

Students must be ranked in some way to ensure fairness when universities offer places. The universities use scaled scores from ATAR courses in calculating an Australian Tertiary Admission Rank (ATAR).

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 Biology, 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. The process therefore encourages students to make sensible choices by choosing courses for which they are best suited and which best prepare them for their future studies.

The marks adjustment process gives students freedom to choose the more challenging courses, if they are interested and academically able, by ensuring a fair treatment of their final results.

The marks adjustment process is a joint exercise by the School Curriculum and Standards Authority (SCSA) and the Tertiary Institutions Service Centre (TISC).

Scaling policy and implementation is the responsibility of the joint TISC/SCSA Scaling Committee.

The marks adjustment process has a number of steps.

The Marks Adjustment Steps

1. Raw Examination Marks

The School Curriculum and Standards Authority (SCSA) is responsible for the setting, conducting and marking of the ATAR examinations. In some courses there are both written and practical examinations. For the small candidature languages with an interstate syllabus, candidates register with SCSA, but the relevant interstate Board of Study is responsible for the setting and marking of the examinations.

2. Raw School Marks

Schools submit their students' raw numerical school assessments (written and practical if appropriate) to SCSA. Mature age students, and students undertaking a language with an interstate syllabus, may do so as non-school candidates. In these cases, students do not receive a numerical school assessment.

3. Moderation of School Marks

3.1 Courses with written examination only

To place the raw school assessment marks on the same numerical scale as the raw examination marks, SCSA moderates the raw school assessments for each course.

A moderated school mark is calculated from the raw school mark. This moderated school mark is on the same numerical scale as the raw examination mark and, therefore, has the same meaning in every school. For example, raw school marks of 67 in Physics from different schools may not mean the same, but moderated school marks of 67 in Physics are the same across schools.

Raw 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 is between the scale used by their teacher when marking the assessment tasks and the scale used for the raw examination marks for the course.

See the SCSA publication, *Your Marks*, for an explanation of the statistical moderation process. (www.scsa.wa.edu.au).

3.2 Courses with separate written and performance/practical/oral exams

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 3.1 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.

4. Combining Examination Mark and School Mark

4.1 Courses with written examinations only

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

4.2 Courses with separate written and performance/practical/oral exams

The raw written examination mark and moderated written school mark (which are both out of 100) for the same ATAR course are then averaged to calculate a combined written mark. The raw performance/practical/oral examination mark and moderated performance/practical/oral school marks (which are both out of 100) for the same ATAR courses 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 ATAR course concerned, to produce a combined mark for the ATAR course.

Between the ATAR courses, the combined marks are not on a common scale at this stage of the process.

4.3 Non-school candidates

If a course has been undertaken as a non-school candidate (formerly: private candidate), there is no raw numerical school assessment and hence the student's raw examination mark becomes their combined mark. In courses with a written and performance/practical/oral examination, the raw marks in both examinations are combined in the appropriate proportion.

5. *Course Combined Marks and Standardised Distributions*

In step 4 above, SCSA produces combined marks distributions for all ATAR courses. The combined marks distributions for each course will reflect the distribution of the raw examination. For example, if Chemistry this year is a particularly difficult examination for the students sitting it, resulting in most of the student's raw examination marks being below 50, then the combined marks distribution for this course will also have most of its marks below 50. Similarly if the Accounting examination, for example, is relatively easy this year for the students sitting this examination, then the resultant combined marks for most of the students will be relatively high.



To compensate for these variations which may occur from year to year, the distributions of each course combined marks are standardised to a predetermined shape such that each distribution will have the same mean and standard deviation.

6. *Scaling Standardised Combined Marks*

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.

TISC runs the Average Marks Scaling (AMS) program, which is applied to the distributions of standardised combined marks of ATAR courses. AMS 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 standardised combined marks for that course are modified (scaled) 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.

As a result of scaling the average (mean) of all scaled scores across all students and courses will be 60. Hence, if the scaled score mean of a course is greater than 60, then the course can be said to have been 'scaled up'. Similarly, if the scaled score mean of a course is less than 60, then the course has been 'scaled down'. The ability of the students doing each course, which affects the eventual scaled scores in that course, can change from one year to the next. For this reason, a particular course may not always scale up or scale down, and the degree of scaling up or scaling down will differ from one year to the next.

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.pdf>

7. Mathematics

There are three ATAR mathematics courses of increasing difficulty: Mathematics Applications, Mathematics Methods and Mathematics Specialist. Mathematics Applications is an unacceptable combination with Mathematics Specialist in the Tertiary Entrance Aggregate calculation. This means that if both Mathematics Applications and Mathematics Specialist are taken, only the higher of the two scaled scores from these courses will be counted in the Tertiary Entrance Aggregate.

If a student has studied all three ATAR mathematics courses, only a maximum of two can be counted in the Tertiary Entrance Aggregate. Mathematics Methods and Mathematics Specialist can both be counted, or Mathematics Applications and Mathematics Methods, but not Mathematics Applications and Mathematics Specialist. See Table 1 for an example.

8. Scaling Languages with Interstate Syllabi

With the very small candidature language courses (those interstate languages with less than 50 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. SCSA collates the data and runs the programs to determine the proposed scaled scores for these languages.

The methodology is as follows:

- a) For each language, for WA students who undertook that language, 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 85th percentile in the national distribution of scores in the language, determine the scaled score that is at the 85th percentile of all scaled scores in all ATAR 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.

A joint SCSA/TISC Scaling Technical sub-group reviews the proposed scaled scores from the above process and makes recommendations to the Scaling Implementation Committee.

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

9. Calculation of an ATAR

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

The first step in the calculation of a School Leaver Tertiary Entrance Aggregate (TEA) is to add a student's best four scaled scores plus 10% of that student's best scaled score in a Language Other Than English (LOTE), 10% of their scaled score in Mathematics Methods and 10% of their scaled score in Mathematics Specialist (as applicable), with no course counting more than once, and

excluding unacceptable course combinations. Accumulation of scaled scores is allowable for courses taken in the current year and previous four years. The maximum TEA is 430.

Table 1: Example of TEA calculation

ATAR Subject	Scaled Score
Physics	89.90
Mathematics Applications	87.55
Mathematics Methods	85.00
Mathematics Specialist [‡]	84.00
English	78.90
Economics	77.85
Sub-total	341.35
10% bonus Mathematics Methods	8.50
10% bonus Mathematics Specialist	8.40
Tertiary Entrance Aggregate	358.15

*Excluded due to unacceptable combination (see point 7 above)

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 multiplied by two, plus 10% of that student's best LOTE scaled score, if any, 10% of the scaled score in Mathematics Methods and 10% of the scaled score in Mathematics Specialist (as applicable), subject to the same unacceptable combinations as for school leavers. All scaled scores used must be from the same year. 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.

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 relative scaling of different courses is directly related to the ability of the students taking any particular course. The average of all scaled scores across all ATAR courses is 60. Therefore you may consider courses with a scaled average greater than 60 as having been 'scaled up'. Conversely courses with a scaled score average below 60 may be considered as having been 'scaled down'. Previous year's scaling statistics can be found at <http://www.tisc.edu.au/static/statistics/scaling/scaling-index.tisc>

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 generally little difference from year to year in terms of the scaled scores.

What is the difference between a WACE Combined Score and a Scaled Score?

The purpose of the WACE combined score is to report student performance in relation to the other students in the same course. There is no direct comparison between WACE combined scores for different courses. A combined mark of 65 in Physics ATAR will not mean the same as a combined mark of 65 in English ATAR or 65 in Dance ATAR.

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

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Courses with Written Examinations Only

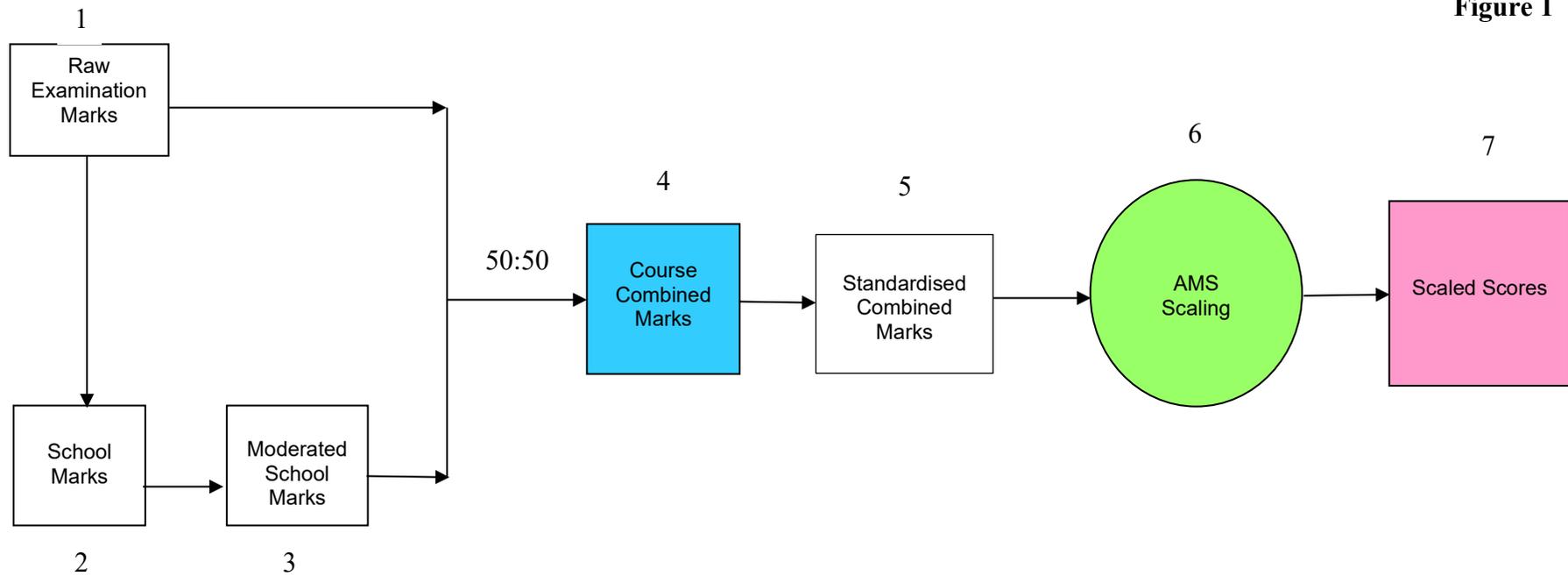
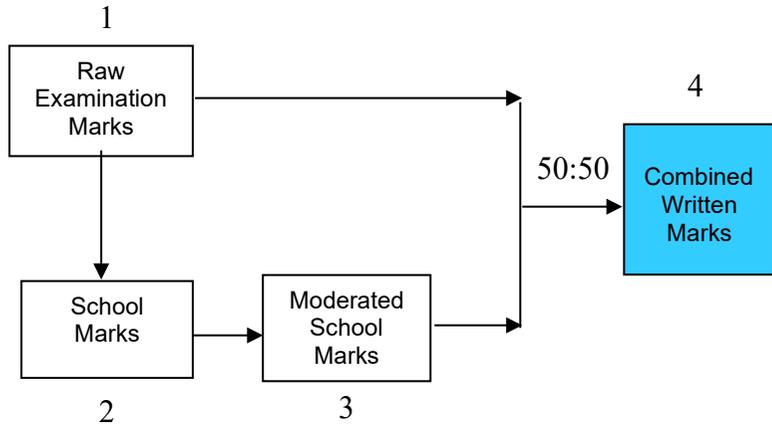


Figure 1

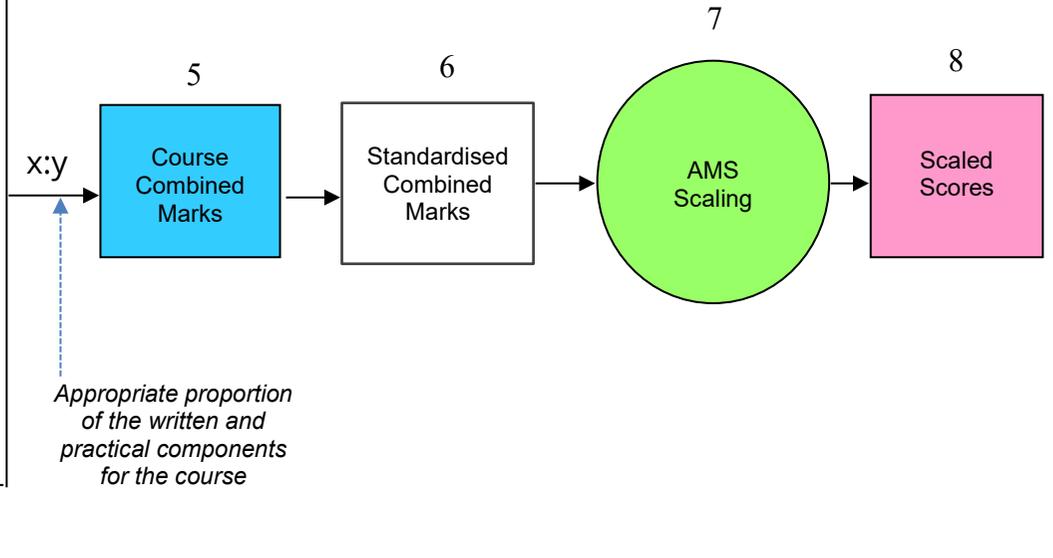
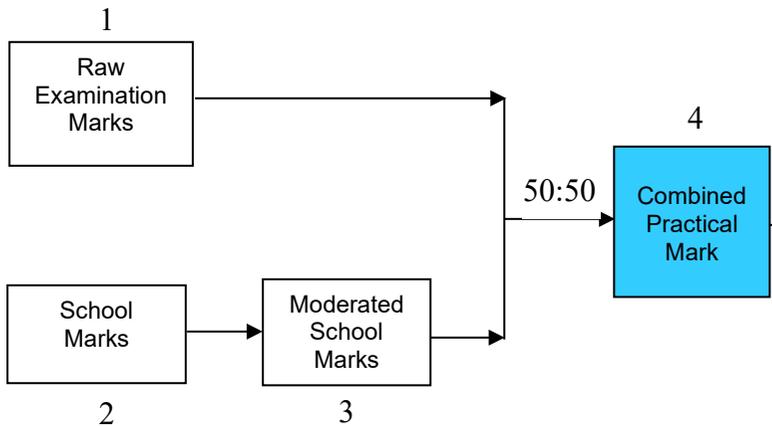
Courses with Separate Written and Practical Examinations

Figure 2

Written Examination



Practical Examination



Appropriate proportion of the written and practical components for the course