



Report on the Scaling of the 2016 NSW Higher School Certificate

NSW Vice-Chancellors' Committee
– Technical Committee on Scaling

Contents

Preface	iii
Acknowledgements	iv
Definitions	v
1 The Higher School Certificate (HSC)	1
1.1 Eligibility for an HSC	1
1.2 Reporting student achievement in the HSC	1
1.2.1 Defining standards by performance bands	1
1.2.2 Examination marks	2
1.2.3 School assessments	2
1.2.4 HSC marks	2
2 The Australian Tertiary Admission Rank (ATAR) – an overview	3
2.1 Background	3
2.2 Categorisation of ATAR courses	3
2.3 Eligibility for an ATAR in 2016	4
2.4 Calculation of the ATAR	4
2.5 The ATAR Advice Notice	4
3 Calculating the ATAR in 2016	6
3.1 Overview	6
3.2 The scaling process in 2016	7
3.2.1 Marks used in the ATAR calculations	7
3.2.2 Raw HSC marks	7
3.2.3 Combined courses	7
3.2.4 Initial standardisation	7
3.2.5 Calculating scaled means and standard deviations	7
3.2.6 Setting maximum marks	8
3.2.7 Scaling individual marks	8
3.2.8 Calculating aggregates and ATAR-eligible percentiles	8
3.2.9 Calculating the ATAR	9
4 The HSC and ATAR in 2016 – some results	11
4.1 Overview	11
4.2 Percentage of students receiving an ATAR	11
4.3 Number of units of ATAR courses completed	11
4.4 Course enrolments – Table A1	12
4.5 Distributions of HSC marks – Table A2	12
4.6 Descriptive statistics of HSC and scaled marks – Table A3	13
4.7 Distribution of ATARs – Table A7	14
4.8 ATAR percentiles and relationship between ATAR and aggregates – Tables A8, A9	14
4.9 Gender differences	15
4.10 University offers	16
5 Trends and other issues	17
5.1 Variation in patterns of HSC marks – Tables A4, A5	17
5.2 Distributions of English and Mathematics marks, 2013–2016	18
5.3 Courses that contribute to the ATAR – Table A6	21

6	Frequently asked questions	22
6.1	Why is my ATAR low in comparison to my HSC marks?	22
6.2	Why does this course contribute to my ATAR when another course where I received a higher mark does not count?	24
6.3	Other frequently asked questions	26
7	Appendix	28
Table A1	Course enrolments	29
Table A2	Distributions of HSC marks by course	32
Table A3	Descriptive statistics and selected percentiles for HSC marks and scaled marks by course	35
Table A4	Distributions of HSC marks by course, 2015–2016	40
Table A5	Distributions of scaled marks by course, 2015–2016	44
Table A6	Courses that contribute to the ATAR	48
Table A7	ATAR distribution	51
Table A8	ATAR percentiles, 2012–2016	53
Table A9	Relationship between ATAR and aggregates, 2012–2016	53

Preface

In New South Wales student achievement in Stage 6 (Years 11 and 12) is reported in two ways: through the Higher School Certificate Record of Achievement and through the Australian Tertiary Admission Rank (ATAR).

A student's Higher School Certificate Record of Achievement presents a profile of their achievement in the courses they have completed, both academic and vocational. Their achievement is reported in terms of the standards they have reached in the courses they have completed.

In contrast, the Australian Tertiary Admission Rank (ATAR) is a numerical measure of a student's overall academic achievement in the HSC in relation to that of other students. This measure allows the comparison of students who have completed different combinations of HSC courses and indicates the position of a student in relation to other students. The ATAR is calculated solely for use by universities, either on its own or in conjunction with other selection criteria, to rank and select school leavers for admission to university.

Calculation of the ATAR is the responsibility of the Technical Committee on Scaling on behalf of the NSW Vice-Chancellors' Committee. The NSW Board of Studies provides the HSC data from which the ATARs are calculated and the Universities Admissions Centre (UAC) advises individual students of their ATARs. Because of confidentiality provisions specified in Government legislation, ATARs cannot be provided to the Board of Studies, to schools or to other agencies.

This report contains information on the calculation of the ATAR in 2016.

Dr Rod Yager

Chair, Technical Committee on Scaling
Macquarie University
February 2017

Acknowledgements

Calculating individual ATARs each year and distributing them to the students who requested them is a major task. It requires a high degree of expertise, commitment and co-operation between the staff of several agencies:

- staff of the Board of Studies, Teaching and Educational Standards NSW (BOSTES) who supply the HSC data from which the ATARs are calculated
- staff of UAC who distribute the ATARs to individual students, handle enquiries from students following the release of the results and distribute information about the ATAR to schools during the year
- members of the Technical Committee on Scaling who play a central role with responsibility for translating policy decisions into processes, and for developing and maintaining programs that ensure the integrity of the data and the accuracy of the individual ATARs
- those members of the Technical Committee on Scaling who work closely with the Chair of the Committee when the ATARs are calculated, and at other times during the year.

Without the skill and commitment of these people, the calculation and distribution of the ATARs would not be possible.

Definitions

ABS

The ABS is the Australian Bureau of Statistics.

ATAR cohort

ATAR cohort is used to refer to those students who received an ATAR in a particular year. The students may have accumulated courses over a five-year period.

ATAR courses

ATAR courses are Board Developed courses for which there are examinations conducted by the Board that yield graded assessments. English Studies and Life Skills courses are not ATAR courses. If students wish to have a VET course contribute to their ATAR eligibility requirements and calculation, they must enrol in the appropriate additional examination course and complete the examination.

The Board

The Board refers to the Board of Studies, Teaching and Educational Standards NSW (BOSTES). On 1 January 2017 BOSTES became NESAS – NSW Education Standards Authority, but in this report will be referred to as BOSTES or The Board as it was in 2016.

Board Developed courses

Board Developed courses are courses whose syllabuses have been developed by the Board.

Board Endorsed courses

Board Endorsed courses are courses whose syllabuses have been approved by the Board but which do not have formal examinations conducted by the Board.

HSC cohort

HSC cohort refers to students who have completed at least one ATAR course in a particular year.

VET examination courses

The VET Curriculum Frameworks are based on training packages where the assessment is competency based. As competency-based assessment does not yield a mark that can be used in the ATAR calculations, the Board introduced an additional course for each VET Curriculum Framework that includes an examination. If students wish to have a VET course contribute to their ATAR eligibility requirements and calculation, they must enrol in the appropriate additional course and complete the examination. These additional courses are termed VET examination courses. Students who do not want their VET courses to contribute towards their ATARs are not required to complete these optional examinations.

1 The Higher School Certificate (HSC)

The Higher School Certificate (HSC) is an exit certificate awarded and issued by the Board. It marks the completion of 13 years of schooling, is the gateway to further study and employment, and presents a profile of student achievement in a set of courses.

1.1 Eligibility for an HSC

To qualify for an HSC, students must complete a pattern of Preliminary and HSC courses containing at least 12 units of Preliminary courses and at least 10 units of HSC courses.

These HSC courses must include at least:

- six units of Board Developed courses
- two units of a Board Developed course in English (or the non-ATAR course, English Studies)
- three courses of two unit value or greater (either Board Developed or Board Endorsed courses)
- four subjects.

Further details about HSC eligibility and HSC courses can be found on the Board's website.

1.2 Reporting student achievement in the HSC

For most ATAR courses, the Board reports student achievement against published standards by:

- an examination mark
- a school assessment
- an HSC mark
- a performance band.

These results are shown on a student's Record of Achievement. A Course Report is also provided for most Board Developed courses. The report describes the standard achieved in the course using performance bands and provides a graph indicating the student's position in the course candidature.

1.2.1 Defining standards by performance bands

Standards in a course are described in terms of the content, skills, concepts and principles relevant to the course and represent the range of achievement expected of students completing the course. Performance band descriptors, which describe typical achievement at different standards (bands), have been developed for each course. There are six performance bands for 2-unit courses and four performance bands for Extension courses.

The percentage of students in any performance band depends only on how many students enrolled in that course perform at the standard specified by the performance band descriptor. There are no predetermined percentages of students to be placed in the performance bands.

It follows that, although the standards described by the performance bands in a course will be the same from year to year, **standards in different courses are not the same as they are based on different criteria**. Because of this, it should not be expected that the percentages of students in the six bands will be the same across courses. For any course, the percentages may also vary from year to year if student performance changes.

The ranges of marks for the bands are as follows:

2-unit courses

Band	1	2	3	4	5	6
Mark range	0–49	50–59	60–69	70–79	80–89	90–100

Extension courses (except Mathematics Extension 2)

Band	E1	E2	E3	E4
Mark range	0–24	25–34	35–44	45–50

Mathematics Extension 2*

Band	E1	E2	E3	E4
Mark range	0–49	50–69	70–89	90–100

**Mathematics Extension 2 students have their achievement for both Mathematics Extension 1 and Mathematics Extension 2 reported using four bands but the mark range is out of 100 rather than 50.*

1.2.2 Examination marks

The examination mark reported on a student's Record of Achievement indicates the standard a student has attained in that examination. If, for example, a student's performance in the Society and Culture examination is at the standard described for Performance Band 3, the examination mark reported on their Record of Achievement for that course will lie between 60 and 69. In general, this mark, termed the aligned examination mark, will differ from the mark the student actually gained on the examination (the raw examination mark).

The aligned mark indicates the standard reached by a student and their position in the performance band. For example, a mark of 62 means that, while the student has performed at a Performance Band 3 standard, their achievement is towards the bottom of this band.

1.2.3 School assessments

To enable school assessments from different schools to be compared, marks submitted by schools (raw assessments) are first moderated using the raw examination marks gained by their students and then aligned to course standards. The school assessments reported on a student's Record of Achievement are the aligned assessments.

Although school assessments are moderated and then aligned with standards, a school's rank order of students in a course is maintained.

1.2.4 HSC marks

For each course, students receive three marks, an examination mark, a school assessment and an HSC mark, all of which have been aligned to the Board's published standards and rounded to whole numbers. The HSC mark is the average of the examination mark and the school assessment. It is the HSC mark that determines a student's performance band for the course.

Further details about the Board's processes can be found on the Board's website.

2 The Australian Tertiary Admission Rank (ATAR) – an overview

2.1 Background

The Australasian Conference of Tertiary Admission Centres (ACTAC) agreed that, as of 2010, all states and territories would adopt a common name for the ranking index used to rank students for university admission. The agreed name was the Australian Tertiary Admission Rank (ATAR). The name change was to emphasise the common scale used for reporting student ranks. NSW and the ACT adopted the new name in 2009.

The ATAR is a numerical measure of a student's overall academic achievement in the HSC in relation to that of other students. This measure allows the overall achievement of students who have completed different combinations of HSC courses to be compared. The ATAR is calculated solely for use by tertiary institutions, either on its own or in conjunction with other criteria, to rank and select school leavers for admission. Calculation of the ATAR is the responsibility of the Technical Committee on Scaling on behalf of the NSW Vice-Chancellors' Committee.

The ATAR, which aims to provide a fair and equitable method of ranking applicants from all states, is based on the assumption that the age cohorts from which the states' Year 12 cohorts are drawn are equally able to undertake tertiary study. That is, if everyone in the age group completed Year 12, it would be fair to consider the same proportion of each state's students as admissible to any particular university course.

The result of this procedure in NSW is a number which represents the position of a student in the appropriate age cohort, based on their overall academic achievement in the HSC.

From 1998 until 2013 New South Wales used data from the School Certificate tests administered by the Board as the link that enabled the positions of HSC students relative to their Year 10 group to be estimated from their positions relative to their Year 12 group. With the move to the ATAR in 2009, the School Certificate group was augmented to more accurately reflect the corresponding Year 7 cohort that is used in other states. The last School Certificate tests were held in 2011 so that procedure is no longer available.

Since 2014 a two-parameter logistic function has been used to translate the HSC students' positions based on their scaled aggregate marks into ATARs. This procedure is consistent with that used in other jurisdictions without Year 10 examinations.

The ATAR is reported as a **number** between 0 and 99.95 with increments of 0.05. The ATAR is not a mark. Specifically, a student's ATAR indicates the position of that student relative to their Year 7 cohort. Students who receive an ATAR of 80.00 in 2016, for example, have performed well enough in the HSC to place them 20 per cent from the top of their Year 7 cohort if all the 2011 Year 7 students completed Year 12 and were eligible for an ATAR in 2016.

Students who indicate on their HSC entry forms that they wish to be notified of their ATARs will receive an ATAR Advice Notice from UAC. ATARs are also made available to institutions for selection purposes.

2.2 Categorisation of ATAR courses

ATAR courses are assessed by formal examinations conducted by the Board and have sufficient academic rigour to be regarded as suitable preparation for university study.

ATAR courses are classified as either Category A or Category B courses. The criteria for Category A courses are academic rigour, depth of knowledge, the degree to which the course contributes to assumed knowledge for tertiary studies, and the coherence with other courses included in the ATAR calculations. Category B courses are those whose level of cognitive and performance demands are not regarded as satisfactory in themselves, but their contribution to a selection index is regarded as adequate if the other courses included in the aggregate are more academically demanding.

The Category B courses in 2016 were:

- Automotive Examination
- Business Services Examination
- Construction Examination
- Electrotechnology Examination
- Entertainment Industry Examination
- Financial Services Examination

- Hospitality Examination
- Human Services Examination
- Information and Digital Technology Examination
- Metal and Engineering Examination
- Primary Industries Examination
- Retail Services Examination
- Tourism, Travel and Events Examination.

2.3 Eligibility for an ATAR in 2016

To be eligible for an ATAR a student must have satisfactorily completed at least 10 units of ATAR courses, which included at least:

- eight units of Category A courses
- two units of English
- three courses of two units or greater
- four subjects.

2.4 Calculation of the ATAR

The ATAR is based on an aggregate of scaled marks in 10 units of ATAR courses comprising:

- the best two units of English
- the best eight units from the remaining units, which can include up to two units of Category B courses.

Marks to be included in the ATAR calculations can be accumulated over a five year period but if a course is repeated only the last satisfactory attempt is used in the calculation of the ATAR.

For students accumulating courses towards their HSC, scaled marks are calculated in the year the courses are completed.

2.5 The ATAR Advice Notice



The ATAR Advice Notice includes:

- the student's ATAR
- a list of the ATAR courses which the student studied and the categorisation of each course
- the number of units of each ATAR course that were actually included in the calculation of the ATAR.

While ATARs are calculated for all ATAR-eligible students, only those students who indicate on their HSC entry forms that they wish to be notified of their ATAR will receive an ATAR Advice Notice from UAC.

There are two circumstances where an ATAR will not be shown on the ATAR Advice Notice. The first is when a student receives an ATAR between 0.00 and 30.00, in which case the ATAR will be indicated as '30 or less'. The second is when the student has not met the requirements for an ATAR, in which case the statement 'Not Eligible' will appear.

An example of an ATAR Advice Notice is given below.

ABN 19 070 055 935 ACN 070 055 935 Quad 2, 8 Parkview Drive, Sydney Olympic Park NSW post: Locked Bag 112, Silverwater NSW 2128 tel: 1300 ASK UAC (1300 275 822); from mobile (02) 9752 0200 website: www.uac.edu.au																																									
<h2 style="margin: 0;">2016 Australian Tertiary Admission Rank Advice</h2>																																									
<p>MR FRED CITIZEN 8 PARKVIEW DRIVE HOMEBUSH BAY NSW 2128</p>	<div style="border: 1px solid black; padding: 5px; transform: rotate(-15deg); display: inline-block;"> <p style="margin: 0;">DRAFT ATAR Notice</p> </div>																																								
<p>Your Australian Tertiary Admission Rank (ATAR): 74.30 *SEVEN*FOUR***THREE*ZERO</p> <p>Shown below are the ATAR courses which were available for inclusion in your ATAR, together with the units that were actually included in the calculation. Information about ATAR eligibility and the calculation of the ATAR is shown over the page.</p> <p>Your BOSTES Student Number: 12345678</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Course name</th> <th style="text-align: center;">Category</th> <th style="text-align: center;">Year completed</th> <th style="text-align: center;">Unit value</th> <th style="text-align: center;">Units included in calculation of ATAR</th> </tr> </thead> <tbody> <tr> <td>Business Studies</td> <td style="text-align: center;">A</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> </tr> <tr> <td>English Standard</td> <td style="text-align: center;">A</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Mathematics</td> <td style="text-align: center;">A</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Studies of Religion 1</td> <td style="text-align: center;">A</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> <tr> <td>French Continuers</td> <td style="text-align: center;">A</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> <tr> <td>French Extension</td> <td style="text-align: center;">A</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Financial Services Examination</td> <td style="text-align: center;">B</td> <td style="text-align: center;">2016</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>		Course name	Category	Year completed	Unit value	Units included in calculation of ATAR	Business Studies	A	2016	2	1	English Standard	A	2016	2	2	Mathematics	A	2016	2	2	Studies of Religion 1	A	2016	1	0	French Continuers	A	2016	2	2	French Extension	A	2016	1	1	Financial Services Examination	B	2016	2	2
Course name	Category	Year completed	Unit value	Units included in calculation of ATAR																																					
Business Studies	A	2016	2	1																																					
English Standard	A	2016	2	2																																					
Mathematics	A	2016	2	2																																					
Studies of Religion 1	A	2016	1	0																																					
French Continuers	A	2016	2	2																																					
French Extension	A	2016	1	1																																					
Financial Services Examination	B	2016	2	2																																					
<p>Issued by UAC without alteration or erasure (see reverse for details of security features)</p> <p>Dr David Christie Managing Director 16 December 2016</p>																																									
																																									
<p>The ATAR is a rank between 0.00 and 99.95 with increments of 0.05. It is used by UAC participating institutions to rank and select school leavers for admission to most undergraduate courses. Some courses use selection criteria other than, or in addition to, the ATAR. For more information about the ATAR read pages 39–42 of the <i>UAC Guide 2016–17</i> or pages 29–32 of the <i>UAC International 2016–17</i> booklet or visit UAC's website at www.uac.edu.au/undergraduate/atar/ or www.uac.edu.au/international/atar/</p> <p>The message 'Not eligible' appears on this advice if you did not satisfactorily complete the requirements for an ATAR as listed over the page.</p> <p>If you are eligible to have a Limited ATAR calculated it will be sent to you on a separate advice. The Limited ATAR is calculated differently to the ATAR. The calculation of the Limited ATAR is described on page 42 of the <i>UAC Guide 2016–17</i> or page 31 of the <i>UAC International 2016–17</i> booklet or visit UAC's website at www.uac.edu.au/undergraduate/atar/ or www.uac.edu.au/international/atar/</p>																																									

3 Calculating the ATAR in 2016

3.1 Overview

Tertiary institutions are concerned with ranking school leaver applicants. From their perspective, the importance of HSC marks is that they convey information about a student's position in relation to other students.

With the exception of English, which is compulsory, students are free to choose their courses of study. Consequently, individual course candidatures vary in size and nature, and there are many different enrolment patterns. In 2016 there were 27,378 different enrolment patterns for ATAR-eligible students; only 205 of these 27,378 combinations were completed by 20 or more students and 19,903 were taken by only one student. Given the choice available, it follows that a student's rank in different courses will not necessarily have the same meaning, as good rankings are more difficult to obtain when the student is competing against students of high academic ability.

Because of the lack of comparability of HSC marks achieved in different courses, either when reported against standards or in terms of ranking, marks of individual students are scaled before they are added to give the aggregates from which the ATARs are determined.

The scaling process is designed to encourage students to take the courses for which they are best suited and which best prepare them for their future studies. The underlying principle is that a student should neither be advantaged nor disadvantaged by choosing one HSC course over another. The scaling algorithm estimates what students' marks would have been if all courses had been studied by all students and all courses had the same distribution of marks.

The scaling model assumes that a student's position in a course depends on the student's developed ability in that course and the 'strength of the competition'. Since the ATAR is a rank that reflects academic achievement, 'strength of the competition' is defined in terms of the demonstrated overall academic attainment of a course candidature.

Scaling first modifies the mean, the standard deviation (SD) and the maximum mark in each course. Adjustments are then made to the marks of individual students to produce scaled marks, which are the marks the students would have received if all courses had the same candidature and the same mark distribution.

Although scaled marks are generally different from the raw marks from which they are derived, the ranking of students within a course is not changed.

Once the raw marks have been scaled, aggregates are calculated for ATAR-eligible students. Percentiles, which indicate the ranking of students with respect to other ATAR-eligible students, are then determined on the basis of these aggregates. In most cases, the ranking or order of merit based on these aggregates is quite different from the order of merit using aggregates based on HSC marks.

The penultimate step is to determine what the percentiles would have been if all students in their Year 7 cohort completed Year 12 five years later and were eligible for an ATAR. The last step is to truncate these percentiles to the nearest 0.05. These are the ATARs.

Each ATAR corresponds to a range of aggregates and the number of students with each ATAR varies, depending in part on how many candidates tie on the same aggregate.

The scaling process is carried out afresh each year. It does not assume that one course is intrinsically more difficult than another or that the quality of the course candidature is always the same. All students who complete at least one ATAR course in a given year are included in the scaling process for that year. Students who are accumulating courses towards their HSC have their scaled mark for each course calculated in the year that the course is completed.

3.2 The scaling process in 2016

The scaling procedure used to produce the aggregates in 2016 was unchanged from that used in 2015.

3.2.1 Marks used in the ATAR calculations

For each course a student completes, the Board provides the following marks:

- a raw examination mark
- a raw moderated school assessment¹
- an examination mark, which has been aligned to course standards
- a moderated school assessment, which has been aligned to course standards
- an HSC mark.

All marks are provided on a one-unit basis to one decimal place. In the description of the scaling process that follows, to cater for both 2-unit and Extension courses, marks are described on a one-unit basis.

3.2.2 Raw HSC marks

Raw HSC marks, rather than the Board's reported HSC marks, are used in the scaling process. A student's raw HSC mark in a course is the average of their raw examination mark and their raw moderated school assessment. These marks are not reported to students.

3.2.3 Combined courses

As the Board places English Standard and English Advanced raw marks on a common scale, these courses are combined and scaled as a single course but are reported as separate courses in order to be consistent with the Board's reporting practice.

Similarly, while the examinations for the Automotive, Information and Digital Technology, and Hospitality VET Frameworks are separated into two or more streams, the Board places the raw examination marks for the various streams in each framework on a common scale. Consequently, the Automotive Exam, Information and Digital Technology Exam and Hospitality Exam are each scaled as a single course.

3.2.4 Initial standardisation

Before the scaling algorithm is implemented, a linear transformation is applied to the raw HSC marks in each course to set the top mark to a common value. The marks in each course are then standardised to a mean of 25 and standard deviation of 12 on a one-unit basis.

3.2.5 Calculating scaled means and standard deviations

The model underpinning the scaling algorithm specifies that the scaled mean in a course is equal to the average academic achievement of the course candidature where, for individual students, the measure of academic achievement is taken as the average scaled mark in all courses completed. The model specification leads to a set of simultaneous equations from which the scaled means of 2-unit courses are calculated.

The scaled standard deviation for a 2-unit course is the standard deviation of the measure of overall academic achievement of the candidature of that course.

For Extension courses, the scaled means and standard deviations are determined by the performance of the Extension students on the corresponding 2-unit courses. The exceptions are History Extension which can be completed by both Modern History and Ancient History students, and the second Extension courses in English and Mathematics: English Extension 2 and Mathematics Extension 2.

A scaled mean is determined for the Modern History students in History Extension on the basis of their performance in the 2-unit Modern History course. A scaled mean for the Ancient History students in History Extension is found in a similar manner. The scaled mean for History Extension is then set equal to the weighted average of these two scaled means. The scaled standard deviation is found in a similar manner.

Scaled means and standard deviations for English and Mathematics Extension 1 courses are calculated as described above. The scaled mean and standard deviation for the Mathematics Extension 2 course are then determined by the performance of the Extension 2 students in the Mathematics Extension 1 course. For English Extension 2, the scaled mean and standard deviation are determined by the performance of the Extension 2 students in English Advanced. (This option is not available for Mathematics as the Extension 2 students do not complete the Mathematics 2-unit paper.)

¹ These are school assessments that have been moderated using the raw examination marks.

3.2.6 Setting maximum marks

The maximum possible scaled mark in a course is determined according to the academic quality of the course candidature in such a way that the maximum possible scaled mark for the combined 2-unit English candidature is 50 on a one-unit basis.

In 2016 the maximum possible scaled mark in a course was given by the smaller of 50 and the scaled mean + 2.47 times the initial scaled standard deviation, where the scaled mean and initial scaled standard deviation of the course are determined using the scaling algorithm.

The number 2.47 was determined on the basis that the maximum possible scaled mark in the combined 2-unit English course is 50. This number is calculated afresh each year.

3.2.7 Scaling individual marks

Once the scaled means and standard deviations are determined, individual raw marks are scaled using a non-linear transformation which preserves the scaled mean and standard deviation of a course and restricts the scaled marks to the range (0–50).

If the actual maximum scaled mark in a course is less than the maximum possible scaled mark a further linear transformation is applied. The effect of this linear transformation is to increase the standard deviation so that the actual maximum scaled mark in the course is changed to be the same as the maximum possible scaled mark. The transformation does not affect the scaled mean. In all tables presented in this report, the modified scaled standard deviations rather than the initial scaled standard deviations are shown.

For some courses with very small candidatures the non-linear transformation is not always appropriate, in which case alternative transformations, which are consistent with the principles of the scaling algorithm, are used.

3.2.8 Calculating aggregates and ATAR-eligible percentiles

Aggregates of scaled marks are calculated to one decimal place according to the rules described in section 2.4. In 2016 there were 4,472 distinct aggregates. There are a large number of tied results with some aggregates shared by more than 30 students.

ATAR-eligible percentiles, which show the position of students relative to their ATAR cohort, are then determined for these aggregates. The ATAR-eligible percentile corresponding to a particular aggregate is the percentage of the ATAR cohort who received an aggregate mark less than or equal to that aggregate.

Table 3.1 shows the ATAR-eligible percentiles corresponding to selected aggregates for the 2016 ATAR cohort. From the table, it can be seen that, for example, 76.9 per cent of the 2016 ATAR cohort received an aggregate mark of 350 or less.

Table 3.1 ATAR-eligible percentiles corresponding to selected aggregates: 2016

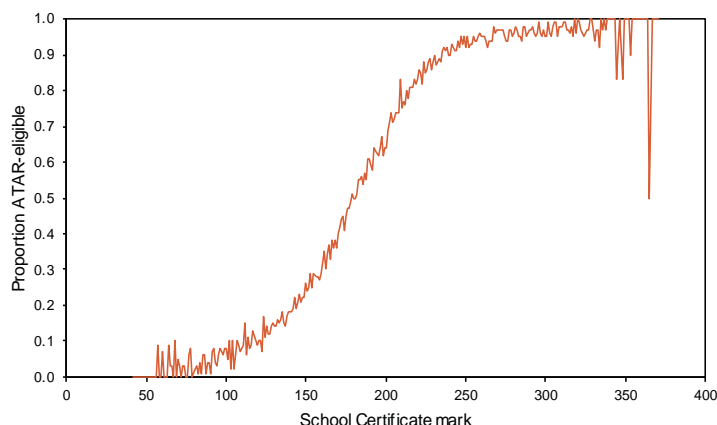
Aggregate	ATAR-eligible percentile
450.0	98.7
400.0	90.8
350.0	76.9
300.0	60.5
250.0	43.6
200.0	27.9
150.0	14.4

3.2.9 Calculating the ATAR

In 2016 a two-parameter logistic function was used to translate the ATAR-eligible percentiles into ATARs. The logistic function approach was adopted in 1998 by other jurisdictions without Year 10 examinations. The procedure was based on the patterns observed in NSW data.

To illustrate the pattern, Figure 3.1 shows the proportion of the 2011 School Certificate cohort who were eligible for an ATAR two years later in 2013 plotted against the total School Certificate mark. Clearly, almost all of the most able students stayed on to Year 12 and applied for an ATAR and the proportion of ATAR-eligible students decreased as the School Certificate mark decreased. The larger spikes at the extreme School Certificate marks are due to the proportions being based on very small numbers of candidates. The shape of the plot in Figure 3.1 can be approximated by a two-parameter logistic function.

Figure 3.1 *Proportion of the School Certificate cohort who were eligible for an ATAR in 2013, by total School Certificate mark*



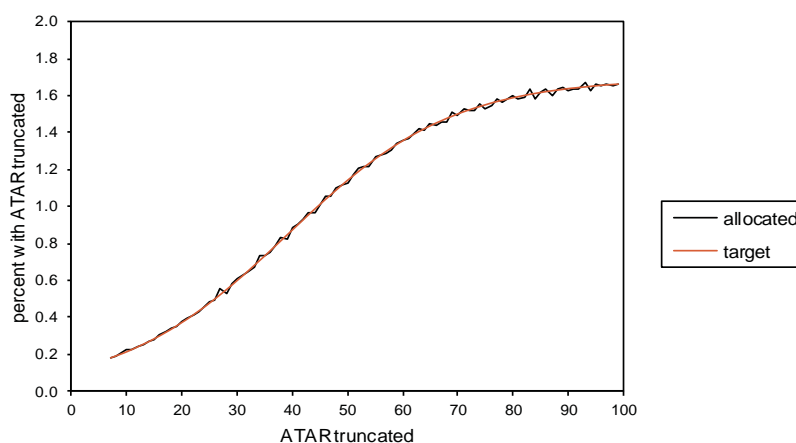
The specific form of the logistic function will depend on the proportion of students in the target population who are ATAR-eligible. This proportion is called the participation rate. In 2016 the participation rate in NSW, determined using ABS data, was 60.2 per cent, up from 60.1 per cent in 2015.

The anchor frequency is the number, N , allocated to the 99.95 category. The top category should contain $1/2000$ th of the target population as all the most able candidates are assumed to complete Year 12 and apply for an ATAR. In 2016 this target frequency was $N = 46$.

The logistic model is $\log [p_j / (1-p_j)] = a + b x_j$, where Np_j is the target frequency of students at ATAR x_j , for x_j less than 99.95. To be consistent with recent NSW ATAR patterns the minimum ATAR awarded was set at 7.00. The target proportions were then rescaled to ensure the target proportions summed to 1. The parameters in the logistic model were estimated using historical ATAR and participation rate data for NSW for 2006–2013.

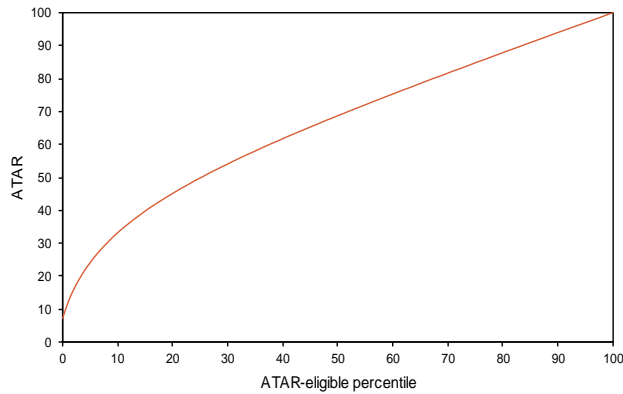
Starting with the highest aggregate the candidates are progressively allocated to ATAR categories to achieve the cumulative target frequencies. There is noise in the allocation due to ties in the aggregates. The resulting pattern is shown in Figure 3.2.

Figure 3.2 *Percentage of ATAR-eligible students in each ATAR truncated category in 2016*



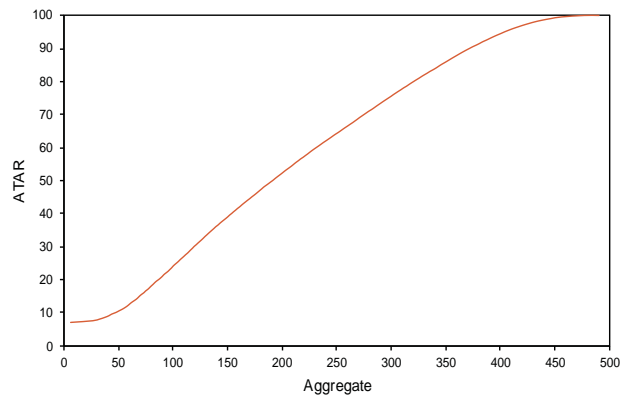
The relationship between the ATAR and ATAR-eligible percentile in 2016 is shown in Figure 3.3.

Figure 3.3 *The relationship between ATAR and ATAR-eligible percentile in 2016*



The relationship between aggregates and ATARs in 2016 is shown graphically in Figure 3.4.

Figure 3.4 *Relationship between aggregate and ATAR in 2016*



Each ATAR corresponds to a range of aggregate marks. The range of aggregates corresponding to one ATAR is greatest in the extremes of the distribution of aggregates and smallest near the middle of the distribution of aggregates. Table 3.2 gives ATARs for selected aggregates based on the 2016 data.

Table 3.2 *Relationship between aggregate and ATAR*

Aggregate	ATAR
450.0	99.20
400.0	94.45
350.0	85.90
300.0	75.55
250.0	64.25
200.0	52.20
150.0	38.95

4 The HSC and ATAR in 2016 – some results

4.1 Overview

In 2016 there was one new course, Punjabi Continuers. The Malay Background Speakers course was available in 2016 but attracted no students.

A total of 75,825 students completed at least one HSC course in 2016, but 3,811 were removed from the database as they completed no ATAR course. Of the remaining pool of 72,014 students, 90.4 per cent received an HSC and 77.7 per cent received an ATAR. Only 9 students who received an ATAR were not eligible for the HSC. While courses contributing to the underlying aggregate may be accumulated over a five-year period, 93.4 per cent of those receiving an ATAR in 2016 included only 2016 courses in their aggregate.

The percentage of students enrolled in at least one ATAR course who were female (51.8%) was higher than the previous year, as was the percentage of students who received an ATAR who were female (53.3%).

4.2 Percentage of students receiving an ATAR

HSC students who do not receive an ATAR fall into one of two broad groups:

- Those who are studying less than 10 units. These include private study students who enrol in one or two courses, mature age students who are studying a limited HSC program and students who are accumulating their HSC over two or more years.
- Those who enrol in a full HSC program which does not satisfy the requirements for an ATAR. These students normally complete six or eight units of Board Developed courses, and choose the remaining units from Board Endorsed courses. They receive an HSC but not an ATAR. In 2016 there were 9,129 such students.

Table 4.1 Proportion of students receiving an ATAR, 2012–2016

Year	HSC candidature	Students receiving an ATAR	
		Number	%
2012	69,638	54,847	78.8
2013	70,686	54,642	77.3
2014	71,706	55,482	77.4
2015	72,238	55,736	77.2
2016	72,014	55,956	77.7

4.3 Number of units of ATAR courses completed

The pattern in 2016 was similar to that observed in 2015, with 46.3 per cent completing exactly 10 ATAR units and 31.6 per cent completing more than the required minimum number of ATAR units (Table 4.2).

Table 4.2 Percentage of students completing specified numbers of units¹ of ATAR courses, 2013–2016

Number of units	2013 %	2014 %	2015 %	2016	
				%	Number
1	0.4	0.4	0.5	0.5	385
2	6.6	7.0	7.6	7.3	5,246
3	0.4	0.5	0.5	0.6	429
4	4.6	5.0	5.3	5.1	3,697
5	0.1	0.2	0.1	0.1	96
6	5.5	5.3	5.1	5.2	3,730
7	0.2	0.2	0.2	0.1	75
8	4.2	3.5	3.2	3.0	2,165
9	0.2	0.2	0.2	0.1	88
10	44.2	44.6	45.6	46.3	33,334
11	17.9	17.9	17.2	17.3	12,444
12	13.7	13.3	12.8	12.6	9,075
13	1.5	1.5	1.3	1.4	973
14	0.3	0.3	0.3	0.3	236
15+	0.1	0.1	0.1	0.1	41
HSC cohort	70,686	71,706	72,238		72,014

¹ The units include current year units and units accumulated in previous years.

4.4 Course enrolments – Table A1

Table A1 in the Appendix provides for each course the size of the candidature, the number who received an HSC in 2016, the number who received an ATAR in 2016, the percentage of females and the maximum ATAR gained by a student enrolled in that course. The table includes students who completed the course in 2016 as well as those who completed the course in previous years and completed at least one ATAR course in 2016. The table excludes courses where there were less than 10 students.

What is clear is that in almost all courses some students gained an ATAR in excess of 95.00, and for the majority of courses the maximum ATAR is higher.

In Table A6 we have included a column showing for each course the maximum ATAR of any student doing the course in any year and including all units from that course in the ATAR calculation. For the vast majority of courses, the values for the maximum ATAR in Tables A1 and A6 agree.

The pattern of 'male-dominated' and 'female dominated' courses was similar to the pattern exhibited previously. Female students were in the majority in languages, creative arts and the humanities, while males were in the majority in technology and computing courses.

A total of 19,588 students enrolled in at least one VET course, of which 12,940 students enrolled in a VET examination course. The proportion taking a VET examination course (66.1%) is lower than the corresponding proportion for 2015 (67.9%).

Overall, 77.7 per cent of the 2016 HSC cohort received ATARs but the percentage varied across courses, from 52.1 per cent to 99.7 per cent for Category A courses with candidatures exceeding 100. For students enrolled in any VET courses, the overall figure was 52.5 per cent but was higher, 78.3 per cent, for students enrolled in VET examination courses.

4.5 Distributions of HSC marks – Table A2

Table A2 in the Appendix shows the distributions of HSC marks in 2016. For each course the percentage of students in Bands 2 to 6 are given, together with the median HSC mark and the Band in which the median lies. Data are not provided for courses with less than 10 students.

Since the introduction of standards referenced reporting in 2001, marks reported to students have not been constrained to a set distribution. Students demonstrating the highest level of achievement in a 2-unit course are placed in Band 6 and receive HSC marks of 90 and above. The data show clearly that patterns of HSC marks vary across courses.

There are few students in Band 1. For most 2-unit courses the median HSC mark lies in Band 4.

Comparison of Table A2 with the corresponding table in 2015 shows that distribution of HSC marks has changed for some courses (see section 5.1.)

4.6 Descriptive statistics of HSC and scaled marks – Table A3

Table A3 in the Appendix presents, for each course, descriptive statistics and the 99th, 90th, 75th, 50th and 25th percentiles for HSC and scaled marks. Data are not provided for courses with less than 10 students. Percentiles are not included for courses with less than 40 students.

Although HSC marks are not used as the basis for scaling they are shown in Table A3 because raw marks are not released to students or teachers and hence cannot be presented in this report. Scaled marks are generally lower than HSC marks: few students receive HSC marks less than 25 (on a one-unit basis) whereas the average scaled mark for the total HSC candidature is approximately 25.

In the table, marks are shown on a one-unit basis, so the range is 0 to 50. The percentiles in a course are based on all students completing that course in 2016 irrespective of whether they were eligible for an ATAR or not.

When reading the table, it must be remembered that an HSC mark indicates a standard reached whereas a scaled mark reflects the position a student would have obtained in the course candidature had all students completed that course. Because HSC marks and scaled marks serve different purposes, comparing HSC and scaled marks is of little value and can lead to misinterpretations that may adversely affect student choices of courses to study.

Table A3 should not be used as a simple HSC to scaled mark conversion table for reasons explained below.

The Board reports HSC marks rounded to the nearest integer whereas raw marks are calculated to one decimal place. The Board aligns the raw marks to bands that best describe the standards that the students achieve. This can compress a range of raw marks to a smaller number of HSC marks. For example, all Band E4 performances in an Extension course (except for Mathematics Extension 2) are allocated one of the six integer grades 45.0 to 50.0. Thus after aligning and rounding, for each HSC mark there can be a range of raw marks and hence a range of scaled marks. There is, in general, no unique scaled mark for an HSC mark.

A given HSC mark often corresponds to a range of raw and scaled marks and hence to a range of percentiles. Table A3 gives the HSC mark at the specified percentile. Not all students with that HSC mark will be at that percentile when the raw marks are considered. For example, in History Extension the HSC mark at the 90th percentile was 46.0. Students with a History Extension HSC mark of 46.0 in fact corresponded to the scaled mark percentile range 82.9 to 92.2.

The scaled marks reported in Table A3 are the scaled marks at the specified percentiles. The 90th percentile of the scaled mark distribution in History Extension was 42.1 but there was a range of scaled marks achieved by those with an HSC mark of 46.0.

Looking at French Extension in Table A3 we see that the 99th and 90th percentiles of the HSC distribution are both 48.0 whereas the scaled marks at the corresponding percentiles are 48.7 and 46.9. This illustrates that there is not a unique scaled mark corresponding to a given HSC mark.

The primary purpose of Table A3 is to show the relativities between courses. For example, Table 4.3 shows the scaled marks corresponding to the 90th and 50th percentiles for English Extension 2, Mathematics General 2 and Music 1.

Table 4.3 Scaled marks for selected percentiles

Course	Scaled mean	Scaled mark for	
		P ₉₀	P ₅₀
English Extension 2	35.5	44.5	36.1
Mathematics General 2	21.9	36.0	21.8
Music 1	21.1	36.0	20.6

Mathematics General 2 and Music 1 have similarly scaled means and the same scaled mark corresponding to the 90th percentile. English Extension 2 has a higher scaled mean and higher scaled marks at corresponding percentiles. The table shows that the students who are at the 90th percentile of the Mathematics General 2 and Music 1 candidatures have the same scaled marks for those courses as the middle candidate in English Extension 2.

4.7 Distribution of ATARs – Table A7

Table A7 in the Appendix shows the distribution of ATARs. ATARs are not evenly distributed. For most ATARs the number of students on that ATAR lies between 20 and 50. The number of students on an ATAR is less for lower ATARs.

An ATAR of 99.00 does not represent the top 1 per cent of the ATAR cohort; 1.7 per cent of the 2016 ATAR cohort actually gained an ATAR of 99.00 or above. It does, however, represent the level of achievement necessary to be in the top 1 per cent of the 2011 Year 7 cohort if all those students continued to Year 12 and had been eligible for an ATAR in 2016. From Table 4.4 we see that in 2016 16.5 per cent of the ATAR-eligible students received an ATAR of 90.00 or above and 32.6 per cent gained an ATAR of 80.00 and above.

Table 4.4 Percentage of ATAR students receiving specific ATARs and above, 2012–2016

ATAR	2012 %	2013 %	2014 %	2015 %	2016 %
99.00	1.7	1.7	1.7	1.7	1.7
95.00	8.5	8.4	8.3	8.3	8.3
90.00	17.0	16.7	16.5	16.5	16.5
80.00	33.5	33.1	32.8	32.7	32.6
70.00	49.3	48.9	48.4	48.1	48.0
60.00	63.8	63.3	63.0	62.4	62.3
50.00	76.3	75.9	75.8	74.8	74.7

Table 4.5 Median ATAR, 2012–2016

Year	Median ATAR all students	Median ATAR female	Median ATAR male
2012	69.55	71.35	67.55
2013	69.20	71.00	67.00
2014	68.95	70.30	67.20
2015	68.70	70.75	66.35
2016	68.65	70.45	66.55

Table 4.5 shows the median ATAR and the median ATAR for male and female candidates for the years 2012–2016.

In 2016, 46 students received the top ATAR of 99.95, 33 males and 13 females, from a mix of government and independent schools.

4.8 ATAR percentiles and relationship between ATAR and aggregates – Tables A8, A9

Table A8 in the Appendix shows the ATAR corresponding to selected ATAR-eligible percentiles. For example, 10 per cent of the ATAR cohort in 2016 received an ATAR of 93.95 or above.

Each ATAR corresponds to a range of aggregates and the figures provided in Table A9 in the Appendix show the minimum aggregate corresponding to selected ATARs.

4.9 Gender differences

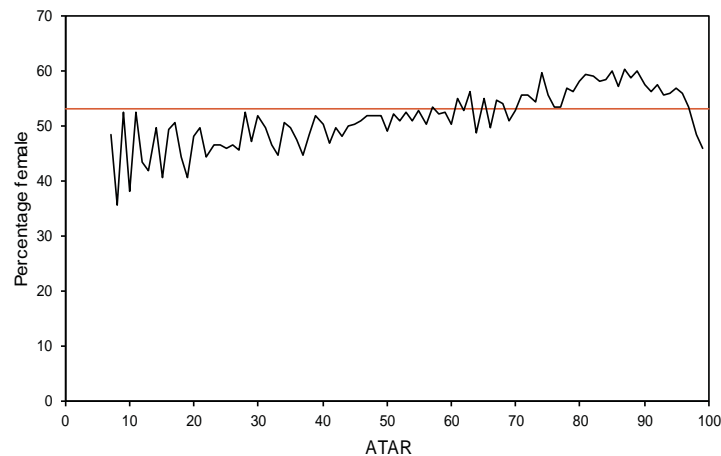
As in previous years, female students outperformed male students in the majority of courses and had a higher median ATAR. The percentages of students receiving ATARs on or above specified values who were female are given in Table 4.6.

Table 4.6 Percentage of students receiving ATARs on or above specified values who were female, 2012–2016

ATAR	2012 % female	2013 % female	2014 % female	2015 % female	2016 % female
99.00	50.1	50.3	46.5	50.2	45.9
98.00	52.8	52.0	48.3	52.1	47.2
95.00	54.9	54.0	51.3	54.1	52.2
90.00	55.7	55.8	53.8	56.2	54.4
80.00	56.3	56.9	55.2	57.1	56.7
70.00	55.9	56.6	55.4	56.4	56.3
60.00	55.2	56.0	55.2	55.5	55.5
50.00	54.6	55.2	54.7	54.9	54.8
40.00	54.0	54.5	54.2	54.3	54.3
30.00	53.6	54.1	53.7	53.8	53.9
Total cohort	53.0	53.5	53.1	53.0	53.3

Figure 4.1 shows the percentage of students on each ATAR who were female. For this graph the ATARs have been truncated, so that an ATAR of 90, for example, includes ATARs from 90.00 to 90.95. Overall 53.3 per cent of the ATAR cohort was female, which is represented by the horizontal line on the graph. The graph shows clearly that there were proportionally more females on ATARs above 70.00 than males.

Figure 4.1 Percentage of students on each ATAR who were female



The vast majority of students who completed the 2016 NSW Higher School Certificate were in Year 7 in 2011. The following table reveals that there are substantial gender differences in the proportions of students from the 2011 NSW Year 7 school cohort who subsequently went on to receive an HSC award or ATAR in 2016.

Comparison with the equivalent figures for the 2015 HSC shows that gender difference in the proportion of the corresponding Year 7 cohort becoming eligible for an ATAR has increased.

Table 4.7 Percentage of male and female in 2011 Year 7, receiving an HSC Award or eligible for an ATAR in 2016

	Number total	% of total 2011 Year 7 cohort	Number female	% of 2011 female Year 7 cohort	Number male	% of 2011 male Year 7 cohort
Year 7 2011 ¹	86,190		42,322		43,868	
Eligible for HSC award 2016	65,076	75.5	34,032	80.4	31,044	70.8
Eligible for ATAR 2016	55,956	64.9	29,802	70.4	26,154	59.6

¹ Schools, Australia 2016 (ABS 4221.0).

4.10 University offers

UAC makes several rounds of offers from September to the end of February. In this report, *offer* refers to offers made in any of those rounds. It does not include offers made by UAC in courses that are not bachelor degrees, or do not start in traditional semester 1, or are domestic fee-paying courses.

Of the 55,956 students who received an ATAR in 2016, 80.1 per cent applied through UAC for a university course. Of the domestic (local) applicants 79.8 per cent were made at least one offer of a place. Tables 4.8 and 4.9 provide a breakdown of applicants and offers by ATAR band.

Table 4.8 Applicants for university places by ATAR – domestic and international

ATAR band	Total number of students	Applicants	
		Number	Percentage ¹
90.00 – 99.95	9,220	9,096	98.7
80.00 – 89.95	9,028	8,705	96.4
70.00 – 79.95	8,629	7,956	92.2
60.00 – 69.95	7,982	6,804	85.2
50.00 – 59.95	6,948	5,225	75.2
Below 50.00	14,149	7,040	49.8
Total	55,956	44,826	80.1

¹ These are percentages of the total number of students in the given ATAR band.

Not all the applicants have been made an offer solely on the basis of their ATARs. For some programs, alternative criteria have been used, while for other programs students' ATARs have been supplemented by additional criteria.

Table 4.9 Offers of university places by ATAR – domestic only

ATAR band	Number of applicants	Offers	
		Number	Percentage ²
90.00 – 99.95	8,905	8,870	99.6
80.00 – 89.95	8,525	8,378	98.3
70.00 – 79.95	7,812	7,387	94.6
60.00 – 69.95	6,655	5,734	86.2
50.00 – 59.95	5,120	3,331	65.1
Below 50.00	6,790	1,262	18.6
Total	43,807	34,962	79.8

² These are percentages of the number of applicants in the given ATAR band.

5 Trends and other issues

5.1 Variation in patterns of HSC marks – Tables A4, A5

As noted in Chapter 3, the scaling process uses the raw marks, not the HSC marks that the Board uses to report student achievement. Further the raw marks for each course undergo an initial standardisation to a common mean and standard deviation before the scaling algorithm is implemented. The HSC marks that the Board uses to report student achievement are not used in the scaling process so any variation in the distribution of these marks across courses does not impact on the ATAR calculation.

A common question is whether changes in the pattern of HSC marks from one year to the next affects the pattern of scaled marks and hence the pattern of ATARs. For the reason given above, the answer is no. It is to be expected that the patterns of HSC marks may change from year to year, reflecting differences in student achievement against the published standards in individual courses. In contrast, one would expect to see differences in the patterns of scaled marks only if the overall academic quality of a course candidature changed.

Tables A4 and A5 in the Appendix show the distributions of HSC and scaled marks, respectively, in 2016 and 2015. The marks are on a per-unit basis (0–50) and courses with less than 40 students in either year are not included. Table A4 shows the percentages of each course candidature with an HSC mark less than 45, 40, 35, 30 and 25 for 2016 and 2015. Table A5 provides similar information for scaled marks. The data show that while the distributions of HSC marks have changed for some courses, the distributions of scaled marks were generally the same.

Biology is an example of a course where the candidature was almost the same as in 2015 but there is a change in the distribution of HSC marks (Table 5.1). The distributions of scaled marks in the two years were, however, similar.

Table 5.1 Distributions of HSC and scaled marks for Biology, 2015 and 2016, on a one-unit basis

Mark	Year	Number	Percentage of students with mark less than:				
			45	40	35	30	25
HSC mark	2016	17,735	91.2	64.7	35.0	9.7	2.2
	2015	17,269	94.2	71.9	40.0	15.7	4.5
Scaled mark	2016	17,735	99.0	91.8	77.8	60.7	43.6
	2015	17,269	98.9	91.9	77.8	60.0	42.4

Taken together, the data indicate that the 2016 candidature in Biology performed better than the corresponding cohort in 2015 in terms of the performance standards for Biology. However, their overall performance as judged by their scaled marks is almost exactly the same.

5.2 Distributions of English and Mathematics marks, 2013–2016

Because all students study English, and most study Mathematics, comparative data is shown for English and Mathematics courses for the four years, 2013 to 2016. Table 5.4 shows the distributions of HSC marks and Table 5.5 shows the distributions of scaled marks.

There is a continuing decline in the number of students completing English Extension 1 and English Extension 2 that has persisted over the past six years. By comparison, the number of students completing the non-ATAR course English Studies is growing. In 2016 there were 6,450 candidates who completed English Studies. These students were not ATAR eligible.

In 2016, 16.7 per cent of ATAR eligible students did not complete a mathematics course and 23.8 per cent of those awarded an HSC did not include a Board developed mathematics course in their Year 12 HSC subjects.

When considering the English marks, recall English Standard and English Advanced are scaled as a single group.

- In 2 unit English, all students complete a common paper (Paper 1) which counts for 40 per cent of the total mark. Advanced and Standard students then complete separate papers that count for 60 per cent of the total mark.
- The Board uses Paper 1 to place the marks of the separate Standard and Advanced papers on the same scale so that a total (raw) examination mark can be calculated for 2 unit English. The marks for Standard and Advanced students are deemed to be on the same scale.
- The Board moderates school assessments using these raw examination marks.
- The raw HSC marks which are used for scaling are then calculated.
- The raw HSC marks for the English Standard and Advanced students are combined and scaled as a single course. A given raw HSC mark yields the same scaled mark for Standard and Advanced students.
- The Board aligns the raw examination marks against standards separately for Standard and Advanced students. As a result, Advanced students on a given raw mark may receive a differently aligned mark than Standard students on the same raw mark. Consequently, an aligned HSC mark may correspond to a slightly different range of scaled marks for Standard and Advanced students.

By contrast, the courses Mathematics General 2 and Mathematics are distinct 2-unit courses. They have no assessment components in common and so they are scaled as separate courses. The performance band information for 2 unit only students on the Mathematics course, corresponding to Table A2, is given in Table 5.2, and the information captured in Table A3 for other courses is provided in Table 5.3 for this group of candidates.

Table 5.2 Distributions of HSC marks for Mathematics 2 unit only candidates

Course	Number	Median HSC mark	Median band	Percentage of students in Performance Band				
				6	5	4	3	2
Mathematics – 2 unit only	10,747	75	4	12	26	30	21	6

Table 5.3 Distributions of HSC and scaled marks for Mathematics 2 unit only candidates

Course	Number	Type of mark	Mean	SD	Max. mark	P99	P90	P75	P50	P25
Mathematics – 2 unit only	10,747	HSC	37.0	7.1	50.0	48.5	45.0	42.0	37.5	33.5
		scaled	28.2	9.5	50.0	46.3	39.8	35.2	29.3	22.1

Table 5.4 Distributions of HSC marks for English and Mathematics courses, 2013–2016

	Year	Enrolment	Percentage of students with HSC mark less than:				
			45	40	35	30	25
English Standard	2016	31,290	99.1	86.5	50.5	12.7	2.8
	2015	31,501	99.6	91.6	57.6	15.3	3.3
	2014	31,483	99.7	91.8	56.5	14.3	2.8
	2013	31,495	99.6	93.1	65.8	21.0	4.5
English Advanced	2016	26,080	84.6	38.0	9.5	1.1	0.2
	2015	26,002	84.6	42.1	8.8	0.9	0.2
	2014	26,729	85.3	40.6	8.4	0.8	0.2
	2013	27,007	88.0	46.9	13.9	1.5	0.2
English Extension 1	2016	4,354	64.6	21.7	4.8	1.0	0.2
	2015	4,512	65.4	22.5	5.7	0.9	0.2
	2014	4,848	69.4	29.3	6.8	1.1	0.3
	2013	5,007	75.3	34.6	11.5	3.2	0.8
English Extension 2	2016	1,619	81.8	51.4	20.4	5.1	0.6
	2015	1,631	73.8	42.8	17.5	4.0	0.3
	2014	1,776	76.8	49.2	22.5	6.8	1.7
	2013	1,907	77.3	47.7	22.0	7.4	2.4
ESL	2016	2,327	95.3	72.7	40.7	15.7	6.2
	2015	2,368	96.0	73.7	38.8	16.5	4.1
	2014	2,291	95.5	71.4	33.8	10.4	2.1
	2013	2,410	97.4	76.6	40.2	15.7	4.1
Mathematics General 2	2016	31,758	94.6	74.1	47.9	24.3	8.3
	2015	31,511	94.3	74.1	49.5	25.1	7.5
	2014	31,321	94.5	74.7	48.7	24.0	6.4
	2013	32,376	94.0	78.8	57.4	23.7	7.9
Mathematics	2016	16,139	76.8	47.3	23.4	7.8	3.5
	2015	16,450	80.3	47.5	19.1	9.2	3.1
	2014	16,693	78.2	46.1	18.3	8.5	3.5
	2013	16,463	81.5	50.5	23.1	7.3	1.9
Mathematics Extension 1	2016	8,671	66.9	40.7	20.4	8.3	2.8
	2015	8,954	65.6	35.8	15.7	6.0	1.7
	2014	9,022	69.6	36.8	15.4	5.8	1.9
	2013	8,839	67.2	36.9	16.3	6.5	2.0
Mathematics Extension 2	2016	3,251	67.9	35.9	14.5	5.7	2.0
	2015	3,333	63.9	31.7	13.7	5.0	1.5
	2014	3,371	68.5	35.2	13.5	5.0	1.3
	2013	3,198	66.0	33.8	12.8	4.3	1.6

Table 5.5 Distributions of scaled marks for English and Mathematics courses, 2013–2016

	Year	Enrolment	Percentage of students with scaled mark less than:					
			45	40	35	30	25	20
English Standard	2016	31,290	99.9	99.0	95.3	87.0	71.8	51.4
	2015	31,501	99.9	99.5	96.9	89.2	74.9	54.3
	2014	31,483	99.9	99.6	97.2	90.0	75.9	55.8
	2013	31,495	99.9	99.3	96.5	89.6	76.0	55.8
English Advanced	2016	26,080	98.0	83.4	60.6	38.7	21.4	9.9
	2015	26,002	96.8	82.4	60.1	36.9	18.4	7.6
	2014	26,729	97.6	83.4	60.3	37.1	19.2	8.1
	2013	27,007	97.5	83.1	60.5	37.2	20.6	9.3
English Extension 1	2016	4,354	94.4	67.4	37.3	17.0	6.3	2.3
	2015	4,512	92.6	64.0	33.2	15.7	6.3	2.5
	2014	4,848	92.8	67.1	38.3	17.4	6.1	1.9
	2013	5,007	97.4	77.1	42.7	16.4	5.2	1.8
English Extension 2	2016	1,619	91.0	70.9	43.8	21.2	8.5	2.5
	2015	1,631	89.8	66.2	39.2	18.4	7.0	1.9
	2014	1,776	90.0	68.8	41.6	20.0	8.2	2.2
	2013	1,907	95.5	76.5	46.0	20.2	6.9	1.9
ESL	2016	2,327	98.9	94.2	85.3	74.0	59.8	46.1
	2015	2,368	98.6	93.8	85.6	75.0	60.5	45.7
	2014	2,291	98.3	93.6	85.0	73.9	59.7	44.8
	2013	2,410	98.8	94.4	85.0	73.7	60.0	46.1
Mathematics General 2	2016	31,758	99.9	97.2	87.7	74.1	59.5	44.4
	2015	31,511	99.9	96.9	87.8	75.5	61.5	46.4
	2014	31,321	99.9	97.5	88.4	75.4	60.9	45.6
	2013	32,376	99.9	97.8	89.1	76.1	61.3	46.0
Mathematics	2016	16,139	95.8	80.1	59.1	39.5	24.1	13.6
	2015	16,450	95.0	80.4	59.4	39.2	23.6	14.1
	2014	16,693	95.3	78.4	59.0	40.4	25.3	14.5
	2013	16,463	98.3	84.4	60.5	38.6	22.7	12.6
Mathematics Extension 1	2016	8,671	76.5	44.1	22.0	10.4	4.3	1.7
	2015	8,954	80.1	48.3	24.0	10.2	4.2	1.4
	2014	9,022	81.6	47.3	21.9	9.3	3.9	1.6
	2013	8,839	78.2	43.4	21.6	10.4	4.7	1.9
Mathematics Extension 2	2016	3,251	50.3	14.7	4.9	1.8	1.0	0.5
	2015	3,333	61.6	19.8	6.8	2.4	0.8	0.2
	2014	3,371	63.9	18.2	5.6	1.8	0.6	0.3
	2013	3,198	54.3	15.7	4.8	1.9	0.9	0.3

5.3 Courses that contribute to the ATAR – Table A6

If students complete only 10 units all courses must be counted in the calculation of the ATAR, whereas if students complete more than 10 units at least one unit will be omitted. In 2016 33,195 students out of the 55,956 ATAR eligible students (59.3%) presented exactly 10 units.

Table A6 in the Appendix provides some information about students who completed more than 10 units. Data are not provided for courses with less than 10 students.

For each course:

- The first column shows the total number of students who did the course in any year and received an ATAR in 2016.
- The second column shows the number of these students who completed more than 10 units.
- The third column expresses this number as a percentage.
- The fourth column gives the percentage of these students who counted all units of that course towards their ATAR. The percentage is based on the number of students in the course who had completed more than 10 units.
- The final column shows the maximum ATAR of any student doing the course in any year and including all units of that course in the ATAR calculation.

Of the 107 courses listed in Table A6, 76 have 70 per cent or more of their students counting the course. The data also show that, while there are differences in the percentages of students who count a particular course towards their ATARs, there is no evidence of systematic differences across Key Learning Areas.

6 Frequently asked questions

In recent years most of the enquiries from students received by the ATAR Enquiry Centre at UAC concerned the relationship between their HSC marks and their ATARs, and the reason why one course contributed to their ATAR and not another. These two major enquiries will be discussed below, followed by a summary of some of the other frequently asked questions.

6.1 Why is my ATAR low in comparison to my HSC marks?

The ATAR is a rank, not a mark, and so there is no reason why the scores should be close. From Table A2 we can see that the median HSC mark for most 2-unit courses is between 70 and 80. The middle ATAR is 68.65 which is lower than the median score for almost all courses. So for students in the middle of the candidature, the ATAR will typically be lower than their average HSC mark.

There is, however, no simple rule to convert HSC marks to ATARs. Courses do not necessarily have the same scaled means from year to year and the pattern of HSC marks varies across courses so that the same HSC mark does not necessarily indicate the same position across courses. The following examples illustrate the complexity of the relationship between HSC marks and ATARs.

Example 1

Consider the following two students, Liam and Kellie, whose HSC marks are shown in Table 6.1. These students are middle students (the 50th percentile) in all of their courses. Their average HSC marks per unit are almost the same, 39.1 and 39.2 respectively, but their ATARs are quite different, 55.90 and 81.65 respectively.

Table 6.1 Two examples of student achievement to show the effect of different scaled means

Liam			
ATAR	Course	HSC mark per course	HSC mark per unit
55.90	Dance	79	39.5
	English Standard	69	34.5
	Music 1	83	41.5
	Society & Culture	79	39.5
	Visual Arts	81	40.5

Kellie			
ATAR	Course	HSC mark per course	HSC mark per unit
81.65	Chemistry	77	38.5
	Economics	78	39.0
	English Advanced	82	41.0
	Mathematics	81	40.5
	Physics	74	37.0

Both Liam and Kellie are at the 50th percentile in all of their courses, so the reason for the difference in their ATARs is the difference in the strength of the competition in the courses they have chosen. The average scaled mean for Liam's courses was 22.0, whereas the average scaled mean for Kellie's courses was 31.4. Since the mean scaled mark and the median scaled mark are generally very similar, Kellie's aggregate is close to 314, while Liam's aggregate is close to 220, reflecting the difference in the academic achievement of the students they have competed against. Consequently, Kellie's ATAR is significantly higher than Liam's ATAR.

Example 2

Consider the following two students, James and Amy, whose HSC marks are shown in Table 6.2. Their average HSC marks per unit are similar, 38.4 and 38.2 respectively, but their ATARs are quite different, 65.00 and 75.00 respectively.

Table 6.2 Two examples of student achievement to show the effect of different scaled means

James			
ATAR	Course	HSC mark per course	HSC mark per unit
65.00	Business Studies	77	38.5
	English Standard	79	39.5
	Food Technology	79	39.5
	Mathematics General 2	71	35.5
	Society & Culture	78	39.0

Amy			
ATAR	Course	HSC mark per course	HSC mark per unit
75.00	Biology	79	39.5
	Chemistry	76	38.0
	English Advanced	76	38.0
	Mathematics	77	38.5
	German Continuers	74	37.0

Amy has an ATAR that is almost the same as her average HSC course score (76.4) whereas James's ATAR is much lower than his average HSC course score (76.8). In fact, his average HSC score is higher than Amy's. If we look at Table A3, the average of the scaled means of the courses taken by James is 21.9, whereas for the average scaled mean for the courses taken by Amy is 30.8.

Example 3

Consider the following two students who completed the same courses. The first student, Fred, receives an HSC mark of 35.0 per unit in each course, while the second student, Laura, receives an HSC mark of 40.0 per unit in each course (Table 6.3).

Table 6.3 Two examples of student achievement: Fred and Laura

Course	Fred		Laura	
	HSC mark per unit	Percentile	HSC mark per unit	Percentile
Biology	35.0	38	40.0	68
Business Studies	35.0	39	40.0	68
English Advanced	35.0	11	40.0	42
Mathematics	35.0	26	40.0	50
Modern History	35.0	29	40.0	62
Visual Arts	35.0	14	40.0	50
ATAR	57.10		78.50	

Their HSC marks per unit in each course differ by only 5, yet their ATARs differ by 21.40. Laura's ATAR is similar to her HSC course marks (80 per course), while Fred's ATAR is much lower than his HSC course marks (70 per course).

The reason for the large difference in the ATARs can be found in the differences in the percentiles shown in Table 6.3. The percentiles are much higher for Laura than for Fred. Given these large differences, it is not surprising that their ATARs are very different.

The courses and HSC marks shown for Fred and Laura are the same as in 2015. While their HSC marks are the same the percentiles (their positions in their courses) have changed because of the changes in the distributions of HSC marks, so their ATARs are different. Table 6.4 presents the ATARs for 2009 to 2016.

Table 6.4 ATARs for Fred and Laura, 2009–2016

Year	Fred	Laura
2009	57.80	81.20
2010	57.05	80.15
2011	58.20	79.80
2012	57.45	79.65
2013	57.55	80.00
2014	55.95	79.45
2015	57.50	79.65
2016	57.10	78.50

The ATAR is about position, whereas HSC marks indicate levels of achievement in individual courses.

6.2 Why does this course contribute to my ATAR when another course where I received a higher mark does not count?

As in previous years, this question arose after the results were released because each student is advised which units contribute to their ATAR. The question is not always easy to answer, especially as students are only aware of their HSC marks, which provide little information as to their rankings in their courses.

The question can often be answered by reference to data on the distributions of HSC and scaled marks in Table A3 in the Appendix. Some examples are presented to illustrate the principles involved.

The examples illustrate the general principle that a student’s position in their course and the scaled means and standard deviations of their courses are all important in determining which of their courses contribute towards their ATAR.

Also, it must be remembered that a given HSC mark usually corresponds to a range of raw and scaled marks.

Example 1 – Scaled means

The first example (Table 6.5) shows a set of HSC and scaled marks corresponding to results at the 90th percentile of the various course distributions.

Table 6.5 HSC and scaled marks – example 1

Course	Number	Scaled mean	Scaled SD	P ₉₀	
				HSC mark per unit	Scaled mark
Ancient History	9,909	24.0	10.8	44.5	38.7
Biology	17,735	26.4	9.9	44.5	39.2
Business Studies	17,130	24.1	10.8	44.5	38.6
PDH&PE	15,498	23.0	10.7	45.0	37.2
Physics	9,156	30.4	9.7	44.5	42.1

These HSC marks are similar and each is at the 90th percentile of a large course with comparable standard deviations. Since the position within the course candidature is the same for each course the scaled mark will depend on the academic quality of the candidature of the course concerned. The highest scaled mark is for Physics, which has the highest scaled mean. The lowest scaled mark is for PDH&PE, which has the lowest scaled mean.

PDH&PE also has the highest HSC mark, which shows that the HSC mark on its own does not give a clear indication of the contribution a course makes towards a student’s aggregate.

Example 2 – Position

Consider students with HSC marks of 47.0 per unit in Business Studies and Mathematics. The student in Business Studies is at the 99th percentile and gains a scaled mark of 45.0, whereas the student in Mathematics is at the 90th percentile and gets a scaled mark of 42.8. Therefore, even though the scaled mean for Mathematics (31.3) is much higher than the scaled mean for Business Studies (24.1), the difference in position compensates for this and the Business Studies student gets the higher scaled mark.

Table 6.6 HSC and scaled marks – example 2

	Scaled mean	Scaled SD	Percentile	HSC mark per unit	Scaled mark
Business Studies	24.1	10.8	P99	47.0	45.0
Mathematics	31.3	9.7	P90	47.0	42.8

Example 3 – Standard deviations

In some situations, particularly in courses with smaller candidatures, the difference in the distribution spread is also a factor in deciding which course contributes towards the ATAR.

Table 6.7 HSC and scaled marks – example 3

Course	Scaled mean	Scaled SD	P ₉₀	
			HSC mark per unit	Scaled mark
Music 1	21.1	10.8	46.0	36.0
Arabic Extension	22.6	6.9	46.0	31.2

Consider students at the 90th percentile of Music 1 with HSC mark 46.0 per unit and scaled mark of 36.0 per unit and at the 90th percentile of Arabic Extension with HSC mark of 46.0 and scaled mark of 31.2. Arabic Extension has scaled mean of 22.6 whereas Music 1 has scaled mean 21.1.

The course with the lower scaled mean has the higher scaled mark corresponding to the HSC mark of 46.0 even though the position is the same in both courses. The reason the scaled marks differ is the spread in the distribution as measured by the standard deviation (SD). Arabic Extension has SD 6.9 but Music 1 has SD 10.8. Music 1 has a candidature with more varied academic ability than Arabic Extension.

Example 4 – Raw versus HSC marks

As noted in section 4.6, there is not necessarily a unique scaled mark for each HSC mark. From Table A3, by focusing on the maximum mark and the 99th percentile, we see that candidates receiving the top HSC mark of 50 in Mathematics Extension 1 received scaled marks from 50.0 to 49.4. The top HSC mark in a course does not necessarily reflect the top raw mark in a course and so a candidate with HSC mark of 50 may not receive the top scaled mark.

The pattern of several scaled marks corresponding to a given HSC mark can occur across the distribution, not just at the top of the range.

6.3 Other frequently asked questions

Does the school I attend matter?

No. The school attended does not feature in the ATAR calculation. The ATAR calculation is based only on marks provided by the Board; no other information is used.

Does my postcode matter?

No.

Are certain courses always 'scaled down'?

No. Scaling is carried out afresh each year: if the quality of the candidature changes, the scaled mean will also change.

Is it true that if I study this course I can't get a high ATAR?

No. As Table A1 in the Appendix shows, there are students in every course who achieve high ATARs.

What impact did the variation in patterns of HSC marks have on the ATAR calculations?

None. It is the raw HSC marks rather than the aligned HSC marks that are scaled. The fact that the percentage of students who are placed in Performance Band 6 differs across courses has no effect on the calculation of the ATAR.

Why can't I use my HSC marks to check the calculation of my ATAR?

There are two reasons. The first is the ATAR is a rank that indicates your position in relation to other students, it is not an average mark. Secondly, raw marks are used in the calculation of the ATAR, not the aligned HSC marks.

Can I find out what my scaled marks are?

No. Scaled marks are not reported to students. They are determined during an interim phase in the ATAR calculation.

I have similar HSC marks to my friend, but we don't have similar ATARs. Why not?

Your ATARs would be similar if your courses were the same.

Which course should I study?

Do not choose courses on the basis of what you believe are the likely effects of scaling. Choice of which courses to study should be determined only by your interests, your demonstrated abilities and the value of courses for your future career plans. The scaling process is designed to allow students to choose according to these principles and not, as far as university selection is concerned, be disadvantaged by their choice. It treats all students on their merits.

Do I get a better ATAR if I study more units?

This is a common question. While the data show that students who study more units tend to gain higher ATARs, determining causality is difficult. The relationship between the number of units studied and ATAR might result from personal attributes including interest, motivation, effort and time management. You cannot assume that simply by studying more units your ATAR will be increased.

What happens if I repeat a course?

If a course is repeated only the last satisfactory attempt is used towards the calculation of the ATAR. Your aggregate will be re-calculated using your new mark. Your aggregate may increase, remain the same or decrease; it depends on your new mark. Since you are being compared with a different cohort your ATAR may increase, remain the same or decrease, even if your aggregate remains the same.

What happens if I accumulate the HSC?

Students who accumulate courses towards their HSC have their scaled marks calculated the year they complete the courses.

What happens if I already have an ATAR and add a new ATAR course the following year?

Your aggregate will be re-calculated using your new course and your previous courses. It may increase or stay the same but it will not go down. However, since you are being compared with a different cohort your ATAR may increase, remain the same or decrease.

If I'm eligible to get bonus points, does my ATAR change?

No. Bonus points do not change your ATAR. They change your selection rank for a particular preference or course.

If bonus points don't increase my ATAR, then how do they work?

Universities allocate bonus points for different reasons. Examples include students with a strong performance in specific HSC courses, students who live in or attend school in an area defined by the university and students who have applied for consideration through Educational Access Schemes.

As the bonus points schemes for each university, and often each course at the same university, are different then your selection rank can be different for each course you list in your course preferences. For some Year 12 applicants, their selection rank for each preference is their ATAR. However, if a university allocates bonus points to you for a particular course then your selection rank for that preference is your ATAR plus bonus points.

7 Appendix

The following courses are not included in Tables A2 to A5 in the Appendix as they had less than 10 students in 2016:

- Arabic Beginners
- Croatian
- Dutch
- Hungarian
- Heritage Indonesian
- Khmer
- Malay Background Speakers
- Maltese
- Swedish
- Ukrainian.

Some other courses do not appear in all tables if they have less than the minimum number of candidates required for a particular table.

Table A1	Course enrolments <i>Excludes courses with less than 10 students.</i>
Table A2	Distributions of HSC marks by course <i>Excludes courses with less than 10 students.</i>
Table A3	Descriptive statistics and selected percentiles for HSC marks and scaled marks by course <i>Excludes courses with less than 10 students or less than 5 ATAR-eligible students and no percentile data are given for courses with less than 40 students.</i>
Table A4	Distributions of HSC marks by course, 2015–2016 <i>Excludes courses with less than 40 students in either year.</i>
Table A5	Distributions of scaled marks by course, 2015–2016 <i>Excludes courses with less than 40 students in either year.</i>
Table A6	Courses that contribute to the ATAR <i>Excludes courses with less than 10 students.</i>
Table A7	ATAR distribution
Table A8	ATAR percentiles, 2012–2016
Table A9	Relationship between the ATAR and aggregates, 2012–2016

Table A1 Course enrolments

- Notes: (i) The **Number all** column includes students who have completed the course in 2016 or in a previous year (and who have done at least one ATAR course in 2016).
- (ii) The **Number HSC** column shows the number of students who completed the course in 2016 or in a previous year and received an HSC award in 2016.
- (iii) The **Number ATAR** column shows the number of students who completed the course in 2016 or in a previous year and who were eligible for an ATAR in 2016.
- (iv) The **% Female** column shows the percentage of students in the course who were female.
- (v) The **% HSC** column shows the percentage of students in the course who received an HSC award in 2016.
- (vi) The **% ATAR eligible** column shows the percentage of students in the course who were eligible for an ATAR in 2016.
- (vii) The **Maximum ATAR** column shows the maximum ATAR achieved by a student doing the course.
- (viii) The table excludes courses with less than 10 students.

Course	Number all	Number HSC	Number ATAR	% Female	% HSC	% ATAR eligible	Maximum ATAR
Aboriginal Studies	535	466	279	68.8	87.1	52.1	99.05
Agriculture	1,466	1,365	1,053	55.0	93.1	71.8	99.95
Ancient History	10,138	9,901	9,187	57.6	97.7	90.6	99.95
Biology	18,118	17,509	17,007	61.2	96.6	93.9	99.95
Business Studies	17,511	16,964	15,914	47.4	96.9	90.9	99.90
Chemistry	10,765	10,485	10,423	44.8	97.4	96.8	99.95
Community & Family Studies	8,039	7,803	6,278	92.1	97.1	78.1	99.50
Dance	909	849	732	95.2	93.4	80.5	99.85
Design & Technology	3,298	3,111	2,714	40.5	94.3	82.3	98.85
Drama	4,798	4,639	4,147	67.2	96.7	86.4	99.75
Earth & Environmental Science	1,629	1,587	1,478	43.6	97.4	90.7	99.85
Economics	5,245	5,204	5,183	35.7	99.2	98.8	99.95
Engineering Studies	2,038	1,967	1,912	6.0	96.5	93.8	99.95
English Standard	31,767	30,721	27,943	49.2	96.7	88.0	99.70
English Advanced	26,298	26,005	25,884	58.2	98.9	98.4	99.95
English Extension 1	4,383	4,357	4,358	67.9	99.4	99.4	99.95
English Extension 2	1,625	1,619	1,619	70.5	99.6	99.6	99.95
ESL	2,360	2,258	2,129	52.4	95.7	90.2	99.95
Food Technology	3,600	3,501	2,860	76.1	97.3	79.4	99.80
Geography	4,397	4,285	3,975	45.5	97.5	90.4	99.95
Industrial Technology	5,662	5,441	3,749	13.8	96.1	66.2	98.90
Information Processes & Technology	2,983	2,716	2,467	17.4	91.0	82.7	99.95
Legal Studies	10,480	10,236	9,765	61.7	97.7	93.2	99.95
Mathematics General 2	32,265	31,307	28,437	50.1	97.0	88.1	99.60
Mathematics	16,758	15,017	14,965	46.6	89.6	89.3	99.95
Mathematics Extension 1	9,035	8,553	8,552	41.5	94.7	94.7	99.95
Mathematics Extension 2	3,307	3,236	3,235	35.7	97.9	97.8	99.95
Modern History	10,963	10,692	10,082	52.3	97.5	92.0	99.95
History Extension	1,871	1,864	1,865	61.0	99.6	99.7	99.95
Music 1	4,783	4,573	3,885	50.6	95.6	81.2	99.90
Music 2	757	715	713	51.1	94.5	94.2	99.95
Music Extension	457	453	452	49.2	99.1	98.9	99.95
PDH&PE	15,753	15,355	14,081	54.7	97.5	89.4	99.95
Physics	9,308	9,145	9,076	21.9	98.2	97.5	99.95
Senior Science	6,721	6,567	5,333	46.1	97.7	79.3	99.20
Society & Culture	4,770	4,600	4,293	81.9	96.4	90.0	99.95

Course	Number all	Number HSC	Number ATAR	% Female	% HSC	% ATAR eligible	Maximum ATAR
Software Design & Development	1,921	1,815	1,686	7.2	94.5	87.8	99.95
Studies of Religion I	9,323	8,846	8,703	53.4	94.9	93.3	99.95
Studies of Religion II	6,385	6,198	6,041	65.3	97.1	94.6	99.95
Textiles & Design	1,535	1,481	1,283	98.0	96.5	83.6	99.75
Visual Arts	9,099	8,816	7,599	71.2	96.9	83.5	99.95
Arabic Continuers	220	208	175	63.6	94.5	79.5	98.35
Arabic Extension	68	65	55	58.8	95.6	80.9	93.55
Armenian	24	14	14	62.5	58.3	58.3	97.25
Chinese Beginners	32	27	26	62.5	84.4	81.3	88.45
Chinese Continuers	101	100	97	47.5	99.0	96.0	99.95
Chinese Extension	26	26	26	42.3	100.0	100.0	99.90
Chinese Background Speakers	677	644	636	58.1	95.1	93.9	99.80
Heritage Chinese (Mandarin)	85	82	81	77.6	96.5	95.3	99.55
Classical Greek Continuers	17	17	17	35.3	100.0	100.0	99.95
Classical Greek Extension	12	12	12	33.3	100.0	100.0	99.95
Classical Hebrew Continuers	34	32	32	61.8	94.1	94.1	99.80
Classical Hebrew Extension	19	18	18	47.4	94.7	94.7	99.80
Filipino	14	14	13	50.0	100.0	92.9	83.75
French Beginners	633	622	583	79.9	98.3	92.1	99.90
French Continuers	807	754	750	67.3	93.4	92.9	99.95
French Extension	189	180	180	60.8	95.2	95.2	99.95
German Beginners	117	115	109	70.1	98.3	93.2	99.60
German Continuers	265	249	244	63.4	94.0	92.1	99.95
German Extension	52	52	52	63.5	100.0	100.0	99.95
Hindi	26	18	18	57.7	69.2	69.2	99.00
Indonesian Beginners	29	29	25	55.2	100.0	86.2	91.45
Indonesian Continuers	80	79	78	52.5	98.8	97.5	98.05
Indonesian Extension	15	14	14	46.7	93.3	93.3	97.50
Indonesian Background Speakers	62	62	62	61.3	100.0	100.0	99.15
Italian Beginners	445	433	395	74.6	97.3	88.8	99.45
Italian Continuers	288	271	264	65.6	94.1	91.7	99.95
Italian Extension	59	59	58	61.0	100.0	98.3	99.95
Japanese Beginners	680	668	632	59.6	98.2	92.9	99.35
Japanese Continuers	657	635	626	64.7	96.7	95.3	99.90
Japanese Extension	182	175	175	65.4	96.2	96.2	99.90
Japanese Background Speakers	22	22	19	72.7	100.0	86.4	95.30
Heritage Japanese	31	31	31	48.4	100.0	100.0	99.95
Korean Continuers	20	20	20	85.0	100.0	100.0	99.75
Korean Background Speakers	55	52	51	50.9	94.5	92.7	98.55
Heritage Korean	55	55	55	72.7	100.0	100.0	99.20
Latin Continuers	167	164	165	40.7	98.2	98.8	99.95
Latin Extension	115	113	114	44.3	98.3	99.1	99.95
Macedonian	26	25	25	65.4	96.2	96.2	97.55
Modern Greek Beginners	69	67	62	62.3	97.1	89.9	99.70
Modern Greek Continuers	113	106	103	63.7	93.8	91.2	98.35
Modern Greek Extension	60	56	55	65.0	93.3	91.7	98.35

Course	Number all	Number HSC	Number ATAR	% Female	% HSC	% ATAR eligible	Maximum ATAR
Modern Hebrew	51	45	45	58.8	88.2	88.2	99.80
Persian	34	33	33	58.8	97.1	97.1	89.35
Polish	23	20	19	60.9	87.0	82.6	96.30
Portuguese	13	12	9	69.2	92.3	69.2	73.45
Punjabi	22	22	22	40.9	100.0	100.0	90.65
Russian	42	40	38	47.6	95.2	90.5	99.70
Serbian	19	19	19	42.1	100.0	100.0	95.35
Spanish Beginners	150	146	135	79.3	97.3	90.0	99.80
Spanish Continuers	147	143	137	62.6	97.3	93.2	99.80
Spanish Extension	42	41	40	64.3	97.6	95.2	99.80
Swedish	17	12	12	64.7	70.6	70.6	97.50
Tamil	56	34	33	78.6	60.7	58.9	99.55
Turkish	76	61	58	75.0	80.3	76.3	97.70
Vietnamese	127	121	109	59.8	95.3	85.8	97.15
Automotive Exam	374	336	162	7.5	89.8	43.3	89.60
Business Services Exam	1,113	1,052	873	76.8	94.5	78.4	98.60
Construction Exam	1,574	1,480	1,028	3.0	94.0	65.3	96.75
Electrotechnology Exam	280	265	186	2.5	94.6	66.4	98.55
Entertainment Industry Exam	850	829	754	56.4	97.5	88.7	98.95
Financial Services Exam	115	110	107	56.5	95.7	93.0	99.65
Hospitality Exam	5,243	4,894	4,344	74.0	93.3	82.9	98.85
Human Services Exam	662	646	558	91.4	97.6	84.3	98.55
Information & Digital Technology Exam	903	785	682	13.2	86.9	75.5	98.05
Metal & Engineering Exam	558	482	275	3.2	86.4	49.3	89.80
Primary Industries Exam	592	561	392	51.0	94.8	66.2	95.90
Retail Services Exam	1,001	910	751	73.0	90.9	75.0	97.25
Tourism, Travel & Events Exam	355	350	301	90.4	98.6	84.8	94.70
Total	72,014	65,076	55,956	51.8	90.4	77.7	99.95

Table A2 Distributions of HSC marks by course

- Notes: (i) The **Number** column shows the number of students who completed the course in 2016.
(ii) The **Median HSC mark** column shows the median HSC mark per course.
(iii) The **Median Band** column indicates the Performance Band in which the median HSC mark lies.
(iv) The **Percentage of Students in Performance Band** columns show the percentage of a course candidature in each of the Performance Bands 6 to 2. Extension courses show only Bands 4 to 2 as they have four Bands only: E1 to E4.
(v) This table excludes courses with less than 10 students.

Course	Number	Median HSC mark	Median Band	Percentage students in Performance Band				
				6	5	4	3	2
Aboriginal Studies	496	68	3	9	15	21	29	17
Agriculture	1,395	73	4	7	24	28	24	13
Ancient History	9,909	73	4	8	23	28	24	12
Biology	17,735	75	4	9	27	30	25	8
Business Studies	17,130	74	4	9	26	29	23	10
Chemistry	10,554	77	4	10	31	32	21	4
Community & Family Studies	7,944	74	4	5	26	34	20	10
Dance	878	79	4	9	39	30	18	3
Design & Technology	3,200	77	4	13	28	36	19	4
Drama	4,723	78	4	14	28	41	15	2
Earth & Environmental Science	1,592	76	4	7	28	34	20	7
Economics	5,196	78	4	14	31	29	20	4
Engineering Studies	2,006	76	4	11	27	34	23	4
English Standard	31,290	69	3	1	13	36	38	10
English Advanced	26,080	82	5	15	47	29	8	1
English Extension 1	4,354	43	E3			35	60	5
English Extension 2	1,619	39	E3			18	61	20
ESL	2,327	72	4	5	23	32	25	9
Food Technology	3,535	73	4	7	23	30	23	15
Geography	4,283	77	4	8	33	30	19	8
Industrial Technology	5,575	71	4	7	19	27	24	15
Information Processes & Technology	2,778	74	4	7	21	36	19	12
Legal Studies	10,293	77	4	12	31	29	18	7
Mathematics General 2	31,758	70	4	5	21	26	24	16
Mathematics	16,139	81	5	23	29	24	16	4
Mathematics Extension 1	8,671	42	E3			33	46	18
Mathematics Extension 2	3,251	84	E3			32	53	13
Modern History	10,785	77	4	9	32	32	14	9
History Extension	1,862	40	E3			22	59	18
Music 1	4,677	83	5	18	45	26	9	1
Music 2	717	88	5	34	55	10	<1	
Music Extension	453	45	E4			52	42	6
PDH&PE	15,498	74	4	11	24	28	21	10
Physics	9,156	74	4	8	22	36	22	8
Senior Science	6,656	75	4	6	23	40	23	6
Society & Culture	4,630	79	4	14	35	31	15	4

Course	Number	Median HSC mark	Median Band	Percentage students in Performance Band				
				6	5	4	3	2
Software Design & Development	1,842	75	4	11	23	35	24	6
Studies of Religion I	8,926	40	5	14	37	26	19	4
Studies of Religion II	6,280	79	4	9	39	23	19	7
Textiles & Design	1,515	79	4	15	31	31	16	5
Visual Arts	8,913	81	5	14	40	33	10	2
Arabic Continuers	213	81	5	11	42	31	12	2
Arabic Extension	66	40	E3			20	58	23
Armenian	16	78	4	13	31	50	6	
Chinese Beginners	32	75	4	34	13	13	16	16
Chinese Continuers	98	88	5	45	38	12	2	1
Chinese Extension	25	46	E4			84	16	
Chinese Background Speakers	672	82	5	14	52	30	3	<1
Heritage Chinese (Mandarin)	84	88	5	43	44	11	2	
Classical Greek Continuers	16	93	6	75	6	13	6	
Classical Greek Extension	12	47	E4			92		8
Classical Hebrew Continuers	34	86	5	26	56	15	3	
Classical Hebrew Extension	19	46	E4			74	26	
Filipino	14	87	5	21	57	14	7	
French Beginners	616	78	4	22	25	25	14	10
French Continuers	779	84	5	30	36	24	8	3
French Extension	187	43	E3			39	50	11
German Beginners	113	83	5	34	27	18	17	2
German Continuers	249	81	5	23	31	24	17	4
German Extension	49	44	E3			39	57	4
Hindi	20	88	5	40	45	15		
Indonesian Beginners	29	84	5	31	28	17	17	3
Indonesian Continuers	80	79	4	20	28	38	13	3
Indonesian Extension	15	40	E3			7	73	20
Indonesian Background Speakers	62	74	4	3	6	84	6	
Italian Beginners	445	74	4	15	21	22	21	13
Italian Continuers	273	81	5	21	37	25	11	3
Italian Extension	57	44	E3			40	58	2
Japanese Beginners	665	77	4	18	26	22	16	14
Japanese Continuers	640	82	5	23	33	23	14	5
Japanese Extension	179	42	E3			36	54	8
Japanese Background Speakers	22	88	5	36	50	14		
Heritage Japanese	31	87	5	32	48	19		
Korean Continuers	20	90	6	50	40	5	5	
Korean Background Speakers	55	81	5	13	40	20	16	9
Heritage Korean	54	91	6	65	31	4		
Latin Continuers	164	89	5	49	32	15	4	1
Latin Extension	114	47	E4			70	28	2

Course	Number	Median HSC mark	Median Band	Percentage students in Performance Band				
				6	5	4	3	2
Macedonian	25	86	5	36	36	24	4	
Modern Greek Beginners	69	87	5	46	19	14	10	9
Modern Greek Continuers	97	85	5	30	38	30	2	
Modern Greek Extension	51	45	E4			53	43	2
Modern Hebrew	46	91	6	65	33	2		
Persian	30	88	5	47	33	13	7	
Polish	20	94	6	70	20	10		
Portuguese	13	82	5	23	38	23	15	
Punjabi	22	79	4	14	36	14	14	23
Russian	41	90	6	54	32	10	2	2
Serbian	19	86	5	32	63	5		
Spanish Beginners	147	77	4	12	32	33	18	5
Spanish Continuers	147	79	4	7	41	31	16	4
Spanish Extension	42	41	E3			12	76	10
Tamil	25	89	5	36	52	12		
Turkish	63	85	5	19	44	22	14	
Vietnamese	125	80	5	3	50	34	10	2
Automotive Exam	333	71	4	3	12	41	32	11
Business Services Exam	1,021	73	4	4	26	30	29	9
Construction Exam	1,491	74	4	1	18	49	27	5
Electrotechnology Exam	264	71	4	1	10	47	33	9
Entertainment Industry Exam	846	77	4	7	32	42	10	9
Financial Services Exam	111	73	4	5	24	39	23	8
Hospitality Exam	4,916	74	4	4	28	33	24	7
Human Services Exam	654	72	4	1	18	41	32	7
Information & Digital Technology Exam	806	74	4	1	18	52	23	5
Metal & Engineering Exam	492	69	3		13	36	37	12
Primary Industries Exam	556	74	4	3	22	44	27	3
Retail Services Exam	899	74	4	<1	21	47	25	5
Tourism, Travel & Events Exam	355	71	4	1	14	41	30	12

Table A3 Descriptive statistics and selected percentiles for HSC marks and scaled marks by course

- Notes: (i) The **Number** column shows the number of students who completed the course in 2016.
(ii) The **P₉₉, P₉₀, P₇₅, P₅₀, P₂₅** columns refer to the 99th, 90th, 75th, 50th and 25th percentiles respectively.
(iii) The table excludes courses with less than 10 students or less than 5 ATAR-eligible students and no percentile data are given for courses with less than 40 students.
(iv) This table should not be used as a simple HSC to scaled mark conversion table. For each HSC mark, there can be a range of raw marks and therefore a range of scaled marks.

Course	Number	Type of mark	Mean	SD	Max. mark	P99	P90	P75	P50	P25
Aboriginal Studies	496	HSC	34.3	7.4	48.5	48.0	44.5	39.5	34.0	29.5
		scaled	13.7	12.2	43.4	42.5	35.2	20.7	9.1	3.8
Agriculture	1,395	HSC	36.0	6.5	49.0	47.0	44.0	41.0	36.5	31.5
		scaled	19.8	11.5	46.6	43.1	36.6	29.3	18.2	10.1
Ancient History	9,909	HSC	35.8	6.9	49.5	47.5	44.5	41.0	36.5	31.5
		scaled	24.0	10.8	49.6	45.3	38.7	32.2	24.1	15.8
Biology	17,735	HSC	37.1	5.8	49.0	47.0	44.5	41.5	37.5	33.0
		scaled	26.4	9.9	50.0	45.0	39.2	34.1	26.9	19.2
Business Studies	17,130	HSC	36.8	6.1	49.0	47.0	44.5	41.5	37.0	33.0
		scaled	24.1	10.8	49.4	45.0	38.6	32.7	24.2	15.6
Chemistry	10,554	HSC	38.0	5.6	49.0	47.5	44.5	42.0	38.5	34.5
		scaled	31.5	9.7	50.0	47.1	43.0	39.3	33.1	25.0
Community & Family Studies	7,944	HSC	36.3	6.1	49.5	46.5	43.5	40.5	37.0	33.0
		scaled	18.8	10.6	44.4	41.0	34.0	27.1	17.8	10.0
Dance	878	HSC	38.8	5.4	49.0	48.0	44.5	43.0	39.5	35.0
		scaled	22.8	11.3	47.2	45.4	39.0	31.5	22.0	13.6
Design & Technology	3,200	HSC	38.4	5.1	49.5	48.0	45.5	42.0	38.5	35.0
		scaled	22.0	10.2	46.7	44.0	36.3	29.5	21.6	14.0
Drama	4,723	HSC	39.1	4.6	49.0	48.0	45.5	42.5	39.0	36.0
		scaled	23.5	10.8	49.6	45.8	38.8	31.7	22.6	15.0
Earth & Environmental Science	1,592	HSC	36.9	6.0	49.0	47.0	43.5	41.0	38.0	33.5
		scaled	23.3	10.4	48.3	44.2	36.7	31.3	24.2	15.2
Economics	5,196	HSC	38.5	5.7	49.0	47.5	45.5	43.0	39.0	34.5
		scaled	32.2	9.2	50.0	46.8	42.8	39.3	33.8	26.5
Engineering Studies	2,006	HSC	37.9	5.4	49.5	47.5	45.0	42.0	38.0	34.0
		scaled	25.7	9.7	48.8	45.0	38.5	33.1	26.1	18.5
English Standard	31,290	HSC	34.6	4.9	48.5	44.5	40.5	38.0	34.5	32.0
		scaled	20.0	8.5	48.0	40.0	31.6	25.9	19.7	13.5
English Advanced	26,080	HSC	40.5	4.2	50.0	47.5	45.5	43.5	41.0	38.0
		scaled	31.7	8.3	50.0	45.8	41.7	38.1	32.7	26.2
English Extension 1	4,354	HSC	42.3	4.1	50.0	48.0	47.0	45.0	43.0	40.0
		scaled	36.2	6.7	50.0	47.0	43.9	41.3	37.2	32.3
English Extension 2	1,619	HSC	39.0	5.7	50.0	49.0	47.0	43.0	39.0	35.0
		scaled	35.5	7.3	50.0	48.7	44.5	40.9	36.1	30.8
ESL	2,327	HSC	35.4	7.1	49.5	47.0	43.0	40.0	36.0	32.0
		scaled	21.7	11.3	49.1	45.2	37.2	30.4	21.5	12.6
Food Technology	3,535	HSC	36.0	6.2	50.0	47.5	44.0	40.5	36.5	31.5
		scaled	19.9	11.3	46.3	43.1	36.2	28.8	18.8	10.4

Course	Number	Type of mark	Mean	SD	Max. mark	P99	P90	P75	P50	P25
Geography	4,283	HSC	37.6	5.9	49.0	47.0	44.5	42.0	38.5	34.0
		scaled	25.5	11.0	50.0	46.1	39.7	34.2	26.6	17.3
Industrial Technology	5,575	HSC	34.8	7.2	49.5	48.0	44.0	40.0	35.5	30.5
		scaled	16.7	9.8	40.6	38.3	31.2	23.9	15.6	8.7
Information Processes & Technology	2,778	HSC	35.9	6.6	49.5	47.0	44.0	40.5	37.0	32.0
		scaled	21.4	10.9	47.8	43.6	36.6	29.8	20.9	12.7
Legal Studies	10,293	HSC	37.7	6.4	49.5	47.5	45.0	42.5	38.5	34.0
		scaled	25.1	11.0	50.0	45.4	39.6	33.9	25.8	16.5
Mathematics General 2	31,758	HSC	34.5	7.4	50.0	47.0	43.5	40.0	35.0	30.0
		scaled	21.9	10.4	46.4	41.6	36.0	30.3	21.8	13.5
Mathematics	16,139	HSC	39.1	7.0	50.0	49.0	47.0	44.5	40.5	35.0
		scaled	31.3	9.7	50.0	47.1	42.8	38.7	32.8	25.3
Mathematics Extension 1	8,671	HSC	40.1	7.1	50.0	50.0	48.0	46.0	41.5	36.0
		scaled	39.5	7.1	50.0	49.4	47.3	44.8	41.0	35.8
Mathematics Extension 2	3,251	HSC	40.7	6.3	50.0	49.0	47.0	45.5	42.0	37.5
		scaled	43.8	4.7	50.0	49.4	48.0	46.8	45.0	42.1
Modern History	10,785	HSC	37.4	6.6	49.0	47.0	44.5	42.0	38.5	34.0
		scaled	26.2	11.3	50.0	45.8	40.2	35.2	27.6	18.0
History Extension	1,862	HSC	39.4	6.0	50.0	49.0	46.0	44.0	40.0	36.0
		scaled	34.1	6.8	49.8	47.1	42.1	38.7	34.5	30.1
Music 1	4,677	HSC	40.7	4.6	49.5	48.5	46.0	44.0	41.5	38.0
		scaled	21.1	10.8	47.1	44.1	36.0	29.4	20.6	12.6
Music 2	717	HSC	43.6	2.8	50.0	49.5	47.0	45.5	44.0	42.0
		scaled	34.4	7.9	50.0	48.6	44.0	40.3	35.6	29.2
Music Extension	453	HSC	43.7	5.2	50.0	50.0	49.0	48.0	45.0	41.0
		scaled	35.8	8.2	50.0	50.0	47.6	42.5	35.7	30.5
PDH&PE	15,498	HSC	36.3	7.2	49.5	47.5	45.0	41.5	37.0	32.0
		scaled	23.0	10.7	48.3	43.7	37.2	31.5	23.0	14.6
Physics	9,156	HSC	36.5	6.3	49.5	47.5	44.5	40.5	37.0	33.0
		scaled	30.4	9.7	50.0	46.2	42.1	38.2	31.9	23.8
Senior Science	6,656	HSC	36.9	5.4	48.5	46.5	44.0	40.5	37.5	33.5
		scaled	18.7	10.0	43.2	40.0	33.0	26.2	18.2	10.6
Society & Culture	4,630	HSC	39.0	5.4	50.0	48.0	45.5	43.0	39.5	35.5
		scaled	23.7	10.6	48.8	44.8	38.1	32.2	23.5	15.5
Software Design & Development	1,842	HSC	37.5	5.5	50.0	48.5	45.0	41.5	37.5	33.5
		scaled	23.8	10.6	48.2	45.0	39.0	32.1	23.2	15.4
Studies of Religion I	8,926	HSC	38.7	5.4	50.0	48.0	45.0	43.0	40.0	35.0
		scaled	27.8	8.9	48.4	44.1	39.2	34.7	28.5	21.6
Studies of Religion II	6,280	HSC	38.0	6.1	49.0	47.0	44.5	43.0	39.5	34.0
		scaled	26.8	10.3	50.0	45.6	39.5	34.9	28.0	19.7
Textiles & Design	1,515	HSC	38.8	5.7	49.5	49.0	46.0	43.0	39.5	35.5
		scaled	22.6	11.4	49.3	47.3	38.8	31.4	21.5	13.4
Visual Arts	8,913	HSC	40.0	4.4	50.0	48.0	45.5	43.5	40.5	37.0
		scaled	22.2	11.1	49.1	45.3	38.1	30.8	21.5	13.3

Course	Number	Type of mark	Mean	SD	Max. mark	P99	P90	P75	P50	P25
Arabic Continuers	213	HSC	39.6	4.8	48.0	47.5	45.0	43.0	40.5	37.5
		scaled	17.0	11.3	44.4	42.5	33.8	25.2	15.6	7.9
Arabic Extension	66	HSC	39.3	5.4	48.0	48.0	46.0	44.0	40.0	35.0
		scaled	22.6	6.9	40.9	40.9	31.2	27.4	22.7	17.7
Armenian	16	HSC	39.5	4.2	49.0					
		scaled	35.0	9.1	50.0					
Chinese Beginners	32	HSC	36.4	10.3	49.0					
		scaled	19.8	12.7	44.6					
Chinese Continuers	98	HSC	42.9	5.4	49.0	49.0	47.0	46.0	44.0	41.5
		scaled	33.5	11.0	50.0	50.0	44.9	42.0	34.9	27.5
Chinese Extension	25	HSC	45.8	2.2	49.0					
		scaled	37.0	5.3	50.0					
Chinese Background Speakers	672	HSC	41.0	3.5	47.5	46.5	45.0	43.5	41.0	39.0
		scaled	22.2	10.9	48.8	44.7	37.6	30.8	21.7	13.9
Heritage Chinese (Mandarin)	84	HSC	43.3	3.2	49.0	49.0	46.5	45.5	44.0	41.5
		scaled	31.4	9.6	50.0	50.0	41.4	38.3	33.1	24.3
Classical Greek Continuers	16	HSC	44.1	4.8	47.5					
		scaled	39.6	10.8	50.0					
Classical Greek Extension	12	HSC	46.1	4.9	50.0					
		scaled	41.3	8.4	50.0					
Classical Hebrew Continuers	34	HSC	42.6	3.7	48.5					
		scaled	34.0	6.4	47.3					
Classical Hebrew Extension	19	HSC	46.1	2.2	50.0					
		scaled	37.3	5.1	50.0					
Filipino	14	HSC	41.9	3.8	45.5					
		scaled	28.1	9.7	42.2					
French Beginners	616	HSC	38.2	7.6	50.0	49.5	47.0	44.0	39.0	33.5
		scaled	24.8	11.1	49.0	47.7	39.0	32.6	25.3	16.3
French Continuers	779	HSC	41.2	5.1	49.5	49.0	47.0	45.5	42.0	38.0
		scaled	34.5	8.4	50.0	48.5	44.4	41.0	35.7	29.1
French Extension	187	HSC	41.7	5.4	49.0	48.0	48.0	46.0	43.0	39.0
		scaled	39.9	5.4	50.0	48.7	46.9	43.4	40.8	36.9
German Beginners	113	HSC	40.5	6.7	49.5	49.5	48.0	46.0	41.5	36.0
		scaled	27.7	11.5	50.0	49.3	42.5	36.3	27.5	18.5
German Continuers	249	HSC	39.7	5.7	49.5	49.0	46.5	44.0	40.5	36.0
		scaled	33.2	9.1	50.0	48.8	44.0	39.8	34.4	27.3
German Extension	49	HSC	42.8	3.9	49.0	49.0	48.0	45.0	44.0	40.0
		scaled	41.6	4.3	50.0	50.0	48.0	44.3	42.1	38.5
Hindi	20	HSC	43.6	3.2	49.0					
		scaled	30.7	8.6	50.0					
Indonesian Beginners	29	HSC	40.1	6.8	49.0					
		scaled	23.2	11.1	44.8					
Indonesian Continuers	80	HSC	39.9	5.0	49.0	49.0	46.5	44.0	39.5	36.5
		scaled	31.0	8.7	50.0	50.0	42.6	37.3	30.9	24.8

Course	Number	Type of mark	Mean	SD	Max. mark	P99	P90	P75	P50	P25
Indonesian Extension	15	HSC	39.2	5.3	48.0					
		scaled	34.5	6.7	49.3					
Indonesian Background Speakers	62	HSC	37.5	2.3	46.0	46.0	39.5	38.5	37.0	36.0
		scaled	32.4	5.2	45.0	45.0	38.4	35.9	32.0	28.3
Italian Beginners	445	HSC	35.5	9.0	49.5	49.0	46.0	42.0	37.0	30.5
		scaled	23.8	11.3	49.3	47.4	39.0	32.1	24.3	15.5
Italian Continuers	273	HSC	39.8	6.0	49.0	48.5	46.5	44.0	40.5	36.5
		scaled	31.6	9.5	50.0	49.2	43.6	38.6	32.1	25.7
Italian Extension	57	HSC	43.3	3.5	50.0	50.0	48.0	46.0	44.0	40.0
		scaled	38.8	5.2	50.0	50.0	45.5	42.6	39.2	34.8
Japanese Beginners	665	HSC	37.0	8.3	49.5	49.0	46.5	43.5	38.5	32.0
		scaled	24.0	11.6	48.3	46.3	39.1	33.4	24.4	14.8
Japanese Continuers	640	HSC	39.9	6.0	49.5	49.0	46.5	44.5	41.0	36.0
		scaled	30.9	10.0	50.0	48.1	43.1	39.0	32.5	23.8
Japanese Extension	179	HSC	41.5	5.5	49.0	49.0	48.0	46.0	42.0	39.0
		scaled	37.8	5.2	50.0	49.1	44.6	41.3	37.5	34.7
Japanese Background Speakers	22	HSC	43.2	3.3	48.0					
		scaled	22.7	10.3	42.8					
Heritage Japanese	31	HSC	43.1	3.1	48.0					
		scaled	29.9	10.5	50.0					
Korean Continuers	20	HSC	43.6	3.8	48.5					
		scaled	24.7	8.1	41.2					
Korean Background Speakers	55	HSC	38.3	6.7	47.0	47.0	45.5	43.5	40.5	34.0
		scaled	22.5	13.6	50.0	50.0	39.1	31.9	23.7	10.7
Heritage Korean	54	HSC	45.3	2.5	48.5	48.5	48.0	47.5	45.5	44.0
		scaled	31.1	9.2	49.0	49.0	44.2	39.0	29.2	25.1
Latin Continuers	164	HSC	43.5	4.3	49.5	49.0	48.0	47.0	44.5	41.0
		scaled	40.1	7.6	50.0	49.7	47.5	45.9	41.8	36.1
Latin Extension	114	HSC	45.4	4.0	50.0	50.0	49.0	48.0	47.0	44.0
		scaled	42.1	6.2	50.0	49.2	48.2	46.6	43.3	39.2
Macedonian	25	HSC	42.6	3.8	49.0					
		scaled	24.8	7.0	40.9					
Modern Greek Beginners	69	HSC	41.4	7.4	50.0	50.0	48.5	47.5	43.5	36.5
		scaled	25.0	13.0	50.0	50.0	41.6	36.2	25.5	13.1
Modern Greek Continuers	97	HSC	42.2	3.8	49.0	49.0	47.5	45.5	42.5	39.0
		scaled	26.5	11.0	49.3	49.3	43.5	36.3	25.1	17.3
Modern Greek Extension	51	HSC	43.7	5.3	50.0	50.0	49.0	48.0	45.0	41.0
		scaled	30.6	9.8	50.0	50.0	42.0	38.7	29.6	23.8
Modern Hebrew	46	HSC	45.4	2.3	49.5	49.5	48.5	47.0	45.5	44.0
		scaled	34.8	7.0	50.0	50.0	45.2	38.4	34.6	30.3
Persian	30	HSC	42.8	4.6	48.5					
		scaled	16.8	10.9	39.5					
Polish	20	HSC	46.1	3.2	49.5					
		scaled	27.8	13.2	50.0					

Course	Number	Type of mark	Mean	SD	Max. mark	P99	P90	P75	P50	P25
Portuguese	13	HSC	40.4	4.4	46.0					
		scaled	19.2	12.4	43.2					
Punjabi	22	HSC	37.0	6.2	46.5					
		scaled	23.0	11.5	48.0					
Russian	41	HSC	43.8	4.6	49.0	49.0	48.5	47.5	45.0	41.5
		scaled	24.0	11.3	44.5	44.5	39.5	33.9	24.0	15.3
Serbian	19	HSC	43.3	2.1	48.0					
		scaled	24.5	7.0	40.5					
Spanish Beginners	147	HSC	38.5	5.5	49.0	48.0	45.0	42.5	38.5	35.0
		scaled	24.7	11.6	50.0	46.9	40.1	33.7	24.1	15.6
Spanish Continuers	147	HSC	38.8	4.8	49.0	48.5	44.0	42.5	39.5	35.0
		scaled	25.7	11.2	50.0	49.1	40.0	33.8	26.7	17.3
Spanish Extension	42	HSC	39.9	5.2	49.0	49.0	46.0	43.0	40.0	36.0
		scaled	31.1	7.6	49.7	49.7	40.5	35.8	30.8	24.8
Turkish	63	HSC	40.9	4.4	47.5	47.5	45.5	44.5	42.5	37.0
		scaled	19.7	12.0	47.7	47.7	34.3	28.7	21.6	6.8
Vietnamese	125	HSC	39.4	4.1	46.0	45.5	44.0	42.5	40.0	37.0
		scaled	20.8	11.7	48.4	47.1	38.2	29.3	19.6	11.3
Automotive Exam	333	HSC	35.2	4.8	48.0	46.0	41.0	38.5	35.5	32.0
		scaled	13.1	9.2	35.7	33.5	27.3	20.4	10.6	5.4
Business Services Exam	1,021	HSC	36.2	5.6	48.5	47.0	43.0	40.5	36.5	32.5
		scaled	17.5	10.2	42.4	41.1	32.5	25.0	16.4	9.1
Construction Exam	1,491	HSC	36.6	4.0	48.0	45.0	41.5	39.0	37.0	34.0
		scaled	15.5	9.4	38.6	36.0	29.6	22.4	14.8	7.9
Electrotechnology Exam	264	HSC	35.4	3.9	48.0	46.0	40.0	38.0	35.5	33.0
		scaled	17.1	8.5	38.0	37.3	28.6	22.9	16.9	10.5
Entertainment Industry Exam	846	HSC	38.1	4.9	47.0	46.5	43.5	41.5	38.5	36.0
		scaled	21.2	9.7	44.6	42.9	34.0	28.1	20.4	14.3
Financial Services Exam	111	HSC	36.9	5.1	49.0	46.5	43.5	40.5	36.5	34.0
		scaled	27.4	9.1	49.0	45.4	39.9	34.1	25.6	21.1
Hospitality Exam	4,916	HSC	36.2	6.2	48.5	46.5	43.0	40.5	37.0	33.0
		scaled	19.0	9.9	43.3	41.1	32.6	26.4	18.4	11.5
Human Services Exam	654	HSC	35.9	4.4	46.5	45.0	41.5	39.5	36.0	32.5
		scaled	18.3	9.8	42.2	40.9	33.0	26.2	17.0	10.0
Information & Digital Technology Exam	806	HSC	36.5	4.4	47.0	45.0	42.0	39.0	37.0	34.0
		scaled	18.2	9.9	42.4	40.3	33.1	24.8	16.8	10.3
Metal & Engineering Exam	492	HSC	34.5	5.1	44.5	44.0	40.5	38.0	34.5	32.0
		scaled	14.4	9.6	38.0	37.7	28.6	21.2	12.2	6.8
Primary Industries Exam	556	HSC	37.1	4.2	48.0	46.5	43.0	40.0	37.0	34.0
		scaled	16.9	9.5	40.0	38.4	31.3	24.0	15.3	9.1
Retail Services Exam	899	HSC	36.4	4.4	47.5	44.0	41.5	39.5	37.0	34.0
		scaled	16.6	10.2	41.6	38.3	31.2	24.9	16.3	8.2
Tourism, Travel & Events Exam	355	HSC	34.7	5.1	47.0	44.0	41.0	38.0	35.5	31.5
		scaled	20.3	8.9	42.1	39.0	32.6	26.0	20.6	13.4

Table A4 Distributions of HSC marks by course, 2015–2016

- Notes: (i) The **Number** column shows the number of students who completed the course in the given year.
(ii) Columns 45, 40, 35, 30 and 25 show the percentage of the course candidature with an HSC mark less than the specified mark.
(iii) The table excludes courses with less than 40 students in either year.

Course	Year	Number	Percentage of students with HSC mark less than:				
			45	40	35	30	25
Aboriginal Studies	2016	496	90.9	75.8	54.8	25.8	8.5
	2015	400	93.8	75.8	54.8	33.5	10.0
Agriculture	2016	1,395	92.7	68.7	40.4	16.8	4.2
	2015	1,344	92.7	71.1	39.4	15.4	2.8
Ancient History	2016	9,909	91.7	69.0	41.4	17.4	5.0
	2015	10,748	92.0	67.1	38.9	16.7	6.8
Biology	2016	17,735	91.2	64.7	35.0	9.7	2.2
	2015	17,269	94.2	71.9	40.0	15.7	4.5
Business Studies	2016	17,130	91.1	65.2	35.8	12.9	2.6
	2015	16,561	91.5	63.7	33.3	11.5	2.9
Chemistry	2016	10,554	90.3	58.9	26.4	5.7	2.0
	2015	10,905	89.2	58.8	26.4	6.5	1.7
Community & Family Studies	2016	7,944	94.8	69.0	34.6	14.2	4.2
	2015	7,957	94.2	67.6	34.3	13.4	3.1
Dance	2016	878	90.5	51.8	22.2	4.3	1.6
	2015	901	88.1	54.7	22.1	3.4	1.4
Design & Technology	2016	3,200	87.5	59.0	23.2	4.5	0.6
	2015	3,148	88.4	63.8	21.1	4.9	0.4
Drama	2016	4,723	85.6	57.3	16.7	1.9	0.1
	2015	4,593	85.6	57.5	17.7	1.9	0.1
Earth & Environmental Science	2016	1,592	93.5	65.3	31.0	10.8	3.8
	2015	1,468	92.3	57.2	27.8	8.9	2.2
Economics	2016	5,196	86.1	54.6	25.8	5.6	1.8
	2015	5,089	88.6	53.9	25.1	7.6	2.4
Engineering Studies	2016	2,006	89.1	61.7	28.2	5.2	1.3
	2015	2,054	90.5	63.0	28.6	5.8	1.3
English Standard	2016	31,290	99.1	86.5	50.5	12.7	2.8
	2015	31,501	99.6	91.6	57.6	15.3	3.3
English Advanced	2016	26,080	84.6	38.0	9.5	1.1	0.2
	2015	26,002	84.6	42.1	8.8	0.9	0.2
English Extension 1	2016	4,354	64.6	21.7	4.8	1.0	0.2
	2015	4,512	65.4	22.5	5.7	0.9	0.2
English Extension 2	2016	1,619	81.8	51.4	20.4	5.1	0.6
	2015	1,631	73.8	42.8	17.5	4.0	0.3
ESL	2016	2,327	95.3	72.7	40.7	15.7	6.2
	2015	2,368	96.0	73.7	38.8	16.5	4.1
Food Technology	2016	3,535	93.1	70.1	40.5	17.7	2.7
	2015	3,361	91.7	71.0	43.4	20.9	4.5
Geography	2016	4,283	91.6	58.7	29.1	10.0	2.4
	2015	4,275	91.4	58.4	33.2	12.6	4.1

Course	Year	Number	Percentage of students with HSC mark less than:				
			45	40	35	30	25
Industrial Technology	2016	5,575	92.7	74.0	46.5	22.1	7.6
	2015	5512	91.7	73.3	44.8	20.8	5.8
Information Processes & Technology	2016	2,778	93.0	71.8	36.2	17.3	5.6
	2015	2,814	93.0	67.4	33.5	14.7	4.9
Legal Studies	2016	10293	87.8	57.2	28.6	11.0	3.8
	2015	10297	89.2	59.4	31.3	10.1	2.6
Mathematics General 2	2016	31,758	94.6	74.1	47.9	24.3	8.3
	2015	31,511	94.3	74.1	49.5	25.1	7.5
Mathematics	2016	16,139	76.8	47.3	23.4	7.8	3.5
	2015	16,450	80.3	47.5	19.1	9.2	3.1
Mathematics Extension 1	2016	8,671	66.9	40.7	20.4	8.3	2.8
	2015	8,954	65.6	35.8	15.7	6.0	1.7
Mathematics Extension 2	2016	3,251	67.9	35.9	14.5	5.7	2.0
	2015	3,333	63.9	31.7	13.7	5.0	1.5
Modern History	2016	10,785	90.6	58.9	26.8	13.0	4.2
	2015	11,053	88.4	55.9	27.4	9.8	3.5
History Extension	2016	1,862	78.4	46.9	19.2	5.9	1.4
	2015	1,878	78.0	49.8	21.7	6.5	2.3
Music 1	2016	4,677	81.5	37.0	10.8	1.7	0.4
	2015	4,710	83.2	37.8	11.0	2.0	0.2
Music 2	2016	717	65.6	10.5	0.1	0.0	
	2015	694	63.4	12.0	0.3	0.1	0.0
Music Extension	2016	453	48.1	21.0	6.4	1.3	0.4
	2015	424	43.6	18.4	6.8	1.2	0.0
PDH&PE	2016	15,498	88.8	65.2	37.2	16.5	6.3
	2015	15,082	91.3	70.2	37.4	9.0	1.6
Physics	2016	9,156	91.6	69.9	34.0	11.6	3.9
	2015	9,510	91.6	71.1	33.6	10.2	4.3
Senior Science	2016	6,656	93.6	71.0	31.3	8.5	2.4
	2015	6,320	92.4	71.5	38.9	15.1	5.3
Society & Culture	2016	4,630	86.2	51.7	20.8	5.4	1.2
	2015	4,566	88.2	52.9	19.3	5.2	1.8
Software Design & Development	2016	1,842	89.1	66.3	31.7	7.2	0.8
	2015	1,783	91.5	69.3	32.5	10.5	1.6
Studies of Religion I	2016	8,926	86.5	49.9	23.9	5.1	0.8
	2015	8,951	87.3	49.0	22.0	4.4	0.7
Studies of Religion II	2016	6,280	90.7	51.8	28.8	9.4	2.5
	2015	5,902	93.6	59.7	28.9	10.0	3.4
Textiles & Design	2016	1,515	84.6	53.2	22.2	6.1	1.1
	2015	1,635	84.6	52.4	20.3	5.3	1.0
Visual Arts	2016	8,913	85.9	45.4	12.3	1.9	0.2
	2015	9,003	87.3	46.4	12.0	1.7	0.3
Arabic Continuers	2016	213	88.7	46.9	15.5	3.8	1.4
	2015	182	89.6	42.3	14.8	4.9	1.6

Course	Year	Number	Percentage of students with HSC mark less than:				
			45	40	35	30	25
Arabic Extension	2016	66	80.3	45.5	22.7	1.5	0.0
	2015	53	77.4	50.9	24.5	3.8	0.0
Chinese Continuers	2016	98	55.1	17.3	5.1	3.1	2.0
	2015	102	46.1	31.4	10.8	2.9	0.0
Chinese Background Speakers	2016	672	85.7	33.5	3.4	0.7	0.6
	2015	660	87.0	31.2	4.1	1.2	0.3
Heritage Chinese (Mandarin)	2016	84	57.1	13.1	2.4	0.0	
	2015	127	73.2	18.1	2.4	0.0	
French Beginners	2016	616	78.2	53.4	28.1	14.4	4.7
	2015	647	78.4	55.6	28.9	12.7	4.8
French Continuers	2016	779	70.2	34.7	10.8	3.2	0.4
	2015	727	69.3	33.7	13.2	2.5	0.6
French Extension	2016	187	61.0	28.9	11.2	3.7	0.0
	2015	166	63.9	29.5	9.0	3.6	0.0
German Beginners	2016	113	66.4	38.9	21.2	4.4	2.7
	2015	111	69.4	45.9	18.0	5.4	2.7
German Continuers	2016	249	77.1	45.8	21.7	4.8	0.4
	2015	238	77.3	43.3	16.0	4.6	0.8
German Extension	2016	49	61.2	20.4	4.1	0.0	
	2015	68	66.2	25.0	2.9	1.5	1.5
Indonesian Continuers	2016	80	80.0	52.5	15.0	2.5	0.0
	2015	63	71.4	44.4	22.2	6.3	0.0
Indonesian Background Speakers	2016	62	96.8	90.3	6.5	0.0	
	2015	72	100.0	83.3	11.1	0.0	
Italian Beginners	2016	445	85.4	64.7	42.7	21.3	8.3
	2015	361	83.1	59.6	39.1	16.9	6.1
Italian Continuers	2016	273	78.8	41.8	16.9	5.5	2.2
	2015	272	79.4	46.7	23.2	3.7	1.1
Italian Extension	2016	57	59.6	17.5	1.8	0.0	
	2015	57	59.6	21.1	15.8	3.5	0.0
Japanese Beginners	2016	665	82.4	56.5	35.0	19.4	5.1
	2015	642	86.9	61.7	39.1	18.2	7.3
Japanese Continuers	2016	640	76.7	43.4	20.0	5.9	1.3
	2015	659	81.0	45.4	22.6	3.8	1.1
Japanese Extension	2016	179	64.2	31.3	10.1	3.9	1.7
	2015	208	66.8	35.1	12.0	1.9	1.0
Korean Background Speakers	2016	55	87.3	47.3	27.3	10.9	1.8
	2015	54	81.5	37.0	7.4	3.7	0.0
Heritage Korean	2016	54	35.2	3.7	0.0		
	2015	64	37.5	10.9	1.6	0.0	
Latin Continuers	2016	164	51.2	19.5	4.9	1.2	0.0
	2015	194	47.9	17.5	5.2	2.1	0.0
Latin Extension	2016	114	29.8	7.9	1.8	1.8	0.0
	2015	129	22.5	8.5	2.3	0.0	

Course	Year	Number	Percentage of students with HSC mark less than:				
			45	40	35	30	25
Modern Greek Beginners	2016	69	53.6	34.8	20.3	10.1	1.4
	2015	69	65.2	29.0	13.0	5.8	0.0
Modern Greek Continuers	2016	97	70.1	32.0	2.1	0.0	
	2015	95	73.7	32.6	4.2	0.0	
Modern Greek Extension	2016	51	47.1	19.6	3.9	3.9	2.0
	2015	43	48.8	25.6	0.0		
Spanish Beginners	2016	147	88.4	56.5	23.8	5.4	0.7
	2015	177	89.8	58.2	23.2	4.0	0.0
Spanish Continuers	2016	147	93.2	51.7	21.1	4.8	0.7
	2015	150	93.3	56.7	26.7	4.7	0.7
Spanish Extension	2016	42	88.1	42.9	11.9	2.4	2.4
	2015	46	87.0	37.0	8.7	2.2	0.0
Turkish	2016	63	81.0	36.5	14.3	0.0	
	2015	41	65.9	26.8	7.3	2.4	0.0
Vietnamese	2016	125	96.8	47.2	13.6	3.2	0.8
	2015	145	95.2	57.2	9.7	2.1	0.0
Automotive Exam	2016	333	97.0	84.7	43.5	11.4	0.9
	2015	463	98.7	86.6	59.4	21.2	1.7
Business Services Exam	2016	1,021	96.0	69.6	40.0	11.4	2.3
	2015	1,140	96.4	70.3	38.1	8.5	1.5
Construction Exam	2016	1,491	98.7	80.9	31.7	5.0	0.3
	2015	1,637	99.0	81.2	34.6	11.3	0.8
Electrotechnology Exam	2016	264	98.9	88.6	41.3	8.7	0.0
	2015	283	99.3	89.4	49.8	14.5	3.2
Entertainment Industry Exam	2016	846	93.5	61.5	19.9	9.5	0.2
	2015	918	98.7	76.1	38.0	4.5	0.7
Financial Services Exam	2016	111	95.5	71.2	32.4	9.0	0.9
	2015	152	90.1	69.1	32.9	8.6	2.6
Hospitality Exam	2016	4,916	96.3	68.4	35.5	11.3	4.0
	2015	5,180	95.9	66.8	25.4	3.6	0.5
Human Services Exam	2016	654	98.6	80.4	39.8	7.8	0.3
	2015	585	98.6	82.2	39.7	10.4	0.5
Information & Digital Technology Exam	2016	806	98.6	81.0	28.8	6.1	0.9
	2015	903	98.5	85.5	38.4	5.8	0.8
Metal & Engineering Exam	2016	492	100.0	87.2	51.4	14.8	3.3
	2015	565	99.8	92.9	68.7	19.8	1.8
Primary Industries Exam	2016	556	96.8	74.5	30.2	3.6	0.2
	2015	603	96.5	67.7	27.2	8.1	1.0
Retail Services Exam	2016	899	99.6	78.1	31.5	6.5	1.2
	2015	1,072	99.6	78.7	35.7	10.3	1.1
Tourism, Travel & Events Exam	2016	355	99.2	85.6	45.1	14.9	2.8
	2015	338	98.8	74.3	26.3	10.4	0.9

Table A5 Distributions of scaled marks by course, 2015–2016

- Notes: (i) The **Number** column shows the number of students who completed the course in the given year.
(ii) Columns 45, 40, 35, 30, 25, 20 and 15 show the percentage of the course candidature with a scaled mark less than the specified mark.
(iii) The table excludes courses with less than 40 students in either year.

Course	Year	Number	Percentage of students with scaled mark less than:						
			45	40	35	30	25	20	15
Aboriginal Studies	2016	496	100.0	95.4	89.9	85.3	79.0	74.0	64.7
	2015	400	100.0	97.3	91.5	85.0	80.0	73.3	64.0
Agriculture	2016	1,395	99.9	95.7	87.0	77.1	66.0	55.4	40.7
	2015	1,344	99.6	94.5	87.4	77.2	66.5	53.4	39.1
Ancient History	2016	9,909	98.7	92.4	82.1	68.4	52.7	37.1	23.1
	2015	10,748	98.8	93.6	83.4	68.5	51.3	35.5	22.5
Biology	2016	17,735	99.0	91.8	77.8	60.7	43.6	27.3	14.8
	2015	17,269	98.9	91.9	77.8	60.0	42.4	26.9	15.0
Business Studies	2016	17,130	99.1	93.1	81.4	67.5	52.5	37.3	23.5
	2015	16,561	99.2	93.2	81.7	68.0	52.9	37.8	24.5
Chemistry	2016	10,554	95.9	78.0	57.3	39.2	25.0	14.3	6.6
	2015	10,905	95.4	78.5	58.7	39.3	24.6	13.7	6.3
Community & Family Studies	2016	7,944	100.0	98.2	91.5	81.8	70.0	57.2	40.9
	2015	7,957	100.0	98.8	92.1	82.0	69.1	54.8	39.7
Dance	2016	878	98.6	92.5	82.2	70.5	57.1	44.0	29.0
	2015	901	99.4	92.6	83.9	71.9	60.0	43.8	27.9
Design & Technology	2016	3,200	99.5	95.3	87.4	76.2	60.7	44.7	28.8
	2015	3,148	99.8	96.6	87.6	77.5	63.9	47.6	30.2
Drama	2016	4,723	98.4	92.0	82.5	70.6	56.5	41.7	25.3
	2015	4,593	98.4	92.7	83.3	70.4	55.3	38.6	23.1
Earth & Environmental Science	2016	1,592	99.4	95.5	86.3	69.8	53.1	38.4	24.4
	2015	1,468	99.4	94.5	85.4	69.9	55.2	38.6	24.4
Economics	2016	5,196	96.2	78.5	55.1	35.6	21.2	11.8	5.7
	2015	5,089	94.7	77.0	55.7	36.5	22.0	12.1	5.9
Engineering Studies	2016	2,006	99.0	93.1	82.1	64.7	46.2	29.2	16.1
	2015	2,054	99.0	93.2	81.6	65.5	48.3	30.6	16.0
English Standard	2016	31,290	99.9	99.0	95.3	87.0	71.8	51.4	31.2
	2015	31,501	99.9	99.5	96.9	89.2	74.9	54.3	31.4
English Advanced	2016	26,080	98.0	83.4	60.6	38.7	21.4	9.9	3.7
	2015	26,002	96.8	82.4	60.1	36.9	18.4	7.6	2.4
English Extension 1	2016	4,354	94.4	67.4	37.3	17.0	6.3	2.3	0.8
	2015	4,512	92.6	64.0	33.2	15.7	6.3	2.5	0.7
English Extension 2	2016	1,619	91.0	70.9	43.8	21.2	8.5	2.5	0.6
	2015	1,631	89.8	66.2	39.2	18.4	7.0	1.9	0.3
ESL	2016	2,327	98.9	94.2	85.3	74.0	59.8	46.1	31.3
	2015	2,368	98.6	93.8	85.6	75.0	60.5	45.7	30.7
Food Technology	2016	3,535	99.9	96.1	87.4	77.8	65.8	53.0	39.0
	2015	3,361	99.9	96.2	88.7	78.9	67.5	54.1	38.9
Geography	2016	4,283	98.5	90.7	77.8	61.7	45.9	31.6	20.1
	2015	4,275	98.0	90.9	78.0	62.2	46.3	32.3	20.8

Course	Year	Number	Percentage of students with scaled mark less than:						
			45	40	35	30	25	20	15
Industrial Technology	2016	5,575	100.0	99.9	96.0	88.1	77.3	64.1	48.0
	2015	5,512	100.0	99.9	95.6	88.3	76.6	63.3	47.0
Information Processes & Technology	2016	2,778	99.4	95.5	87.0	75.3	61.6	46.6	31.7
	2015	2,814	99.6	95.7	87.7	75.9	61.2	45.7	31.2
Legal Studies	2016	10,293	98.7	90.8	78.2	63.4	47.9	33.7	21.2
	2015	10,297	98.5	92.0	78.8	63.2	47.2	31.8	19.8
Mathematics General 2	2016	31,758	99.9	97.2	87.7	74.1	59.5	44.4	29.6
	2015	31,511	99.9	96.9	87.8	75.5	61.5	46.4	30.5
Mathematics	2016	16,139	95.8	80.1	59.1	39.5	24.1	13.6	7.0
	2015	16,450	95.0	80.4	59.4	39.2	23.6	14.1	8.0
Mathematics Extension 1	2016	8,671	76.5	44.1	22.0	10.4	4.3	1.7	0.7
	2015	8,954	80.1	48.3	24.0	10.2	4.2	1.4	0.5
Mathematics Extension 2	2016	3,251	50.3	14.7	4.9	1.8	1.0	0.5	0.3
	2015	3,333	61.6	19.8	6.8	2.4	0.8	0.2	0.0
Modern History	2016	10,785	98.2	89.3	74.5	58.2	42.3	29.3	19.3
	2015	11,053	98.6	90.4	75.2	57.4	40.8	28.2	17.8
History Extension	2016	1,862	96.6	81.8	52.2	24.7	8.5	3.6	1.0
	2015	1,878	97.8	79.3	52.2	23.7	7.8	2.9	0.7
Music 1	2016	4,677	99.5	95.8	87.6	76.7	63.7	48.0	32.7
	2015	4,710	99.6	96.3	89.1	78.3	63.7	47.5	31.2
Music 2	2016	717	92.7	74.1	46.9	28.5	13.0	5.7	1.3
	2015	694	92.9	73.8	50.0	29.0	15.1	6.3	1.3
Music Extension	2016	453	82.8	68.4	48.3	23.8	9.1	2.6	0.4
	2015	424	80.0	63.4	45.0	24.8	12.0	3.8	0.2
PDH&PE	2016	15,498	99.6	95.2	84.4	70.8	56.1	40.3	26.2
	2015	15,082	99.3	94.6	85.0	72.4	57.8	41.9	25.5
Physics	2016	9,156	97.6	82.1	61.6	43.1	28.1	17.1	8.2
	2015	9,510	96.2	82.7	62.8	43.8	28.9	16.9	7.7
Senior Science	2016	6,656	100.0	99.0	93.5	84.8	71.8	55.5	38.9
	2015	6,320	100.0	98.6	92.9	83.3	71.8	56.8	41.1
Society & Culture	2016	4,630	99.1	93.9	82.9	68.7	54.4	38.6	23.4
	2015	4,566	98.6	92.5	83.4	70.7	54.6	38.8	22.8
Software Design & Development	2016	1,842	99.0	92.1	81.5	70.1	56.1	39.6	23.6
	2015	1,783	99.4	93.6	82.6	69.4	54.2	38.3	24.8
Studies of Religion I	2016	8,926	99.4	92.1	76.2	55.9	36.6	20.3	9.1
	2015	8,951	99.4	92.7	77.6	57.4	36.8	19.7	8.4
Studies of Religion II	2016	6,280	98.7	91.4	75.3	57.9	40.1	25.7	14.7
	2015	5,902	98.5	90.9	76.8	59.1	42.2	26.8	15.3
Textiles & Design	2016	1,515	98.0	91.8	82.1	72.6	59.1	45.4	29.7
	2015	1,635	98.0	92.7	82.9	72.4	59.0	42.5	26.4
Visual Arts	2016	8,913	98.7	93.1	84.6	73.2	60.2	45.3	30.0
	2015	9,003	98.8	94.1	84.6	72.8	59.7	45.0	30.6
Arabic Continuers	2016	213	100.0	97.7	93.4	84.0	73.7	59.2	48.4
	2015	182	100.0	96.7	89.6	81.9	72.5	58.8	41.2

Course	Year	Number	Percentage of students with scaled mark less than:						
			45	40	35	30	25	20	15
Arabic Extension	2016	66	100.0	98.5	98.5	83.3	62.1	37.9	16.7
	2015	53		100.0	96.2	75.5	58.5	35.8	9.4
Chinese Continuers	2016	98	92.9	65.3	50.0	29.6	19.4	13.3	5.1
	2015	102	91.2	68.6	46.1	35.3	25.5	9.8	4.9
Chinese Background Speakers	2016	672	99.1	95.4	85.6	72.6	60.4	44.0	28.3
	2015	660	97.9	93.6	84.2	73.6	58.5	41.7	22.9
Heritage Chinese (Mandarin)	2016	84	95.2	81.0	56.0	41.7	26.2	13.1	6.0
	2015	127	92.9	80.3	62.2	37.8	18.9	11.0	2.4
French Beginners	2016	616	97.6	91.6	81.5	64.9	48.7	33.4	21.6
	2015	647	98.3	90.3	80.2	68.0	54.6	37.7	25.0
French Continuers	2016	779	92.4	70.2	46.2	28.1	14.4	6.2	2.3
	2015	727	88.7	67.3	43.3	25.9	14.4	6.1	1.7
French Extension	2016	187	84.5	44.4	13.9	7.5	1.1	0.0	
	2015	166	76.5	35.5	13.3	4.2	0.0		
German Beginners	2016	113	92.9	83.2	69.9	55.8	41.6	26.5	15.0
	2015	111	94.6	83.8	71.2	54.1	32.4	20.7	9.0
German Continuers	2016	249	92.4	75.1	53.4	33.7	20.1	10.0	2.8
	2015	238	89.9	71.8	47.5	30.3	16.4	8.8	4.6
German Extension	2016	49	83.7	28.6	6.1	2.0	0.0		
	2015	68	83.8	60.3	26.5	7.4	1.5	1.5	1.5
Indonesian Continuers	2016	80	96.3	81.3	66.3	48.8	25.0	13.8	2.5
	2015	63	90.5	79.4	63.5	46.0	30.2	14.3	6.3
Indonesian Background Speakers	2016	62	98.4	93.5	67.7	37.1	6.5	0.0	
	2015	72	97.2	86.1	58.3	31.9	18.1	4.2	0.0
Italian Beginners	2016	445	97.3	91.7	81.1	69.7	51.9	38.2	23.4
	2015	361	94.5	84.8	71.5	57.1	46.3	34.9	19.7
Italian Continuers	2016	273	93.8	80.6	61.2	38.5	22.3	12.1	5.5
	2015	272	95.2	82.0	62.9	44.9	26.5	11.0	3.3
Italian Extension	2016	57	89.5	50.9	28.1	3.5	1.8	0.0	
	2015	57	89.5	63.2	35.1	15.8	12.3	3.5	0.0
Japanese Beginners	2016	665	97.9	92.0	79.4	64.5	51.7	37.0	25.4
	2015	642	98.9	93.6	81.0	67.9	52.3	38.3	24.3
Japanese Continuers	2016	640	94.5	79.7	60.0	43.3	27.5	15.0	7.5
	2015	659	95.4	79.4	61.0	42.2	25.8	13.5	4.7
Japanese Extension	2016	179	92.7	67.0	27.9	5.6	2.2	0.0	
	2015	208	91.3	67.8	37.0	12.5	1.9	0.0	
Korean Background Speakers	2016	55	92.7	92.7	80.0	65.5	52.7	45.5	32.7
	2015	54	94.4	90.7	79.6	70.4	50.0	38.9	24.1
Heritage Korean	2016	54	92.6	79.6	63.0	50.0	22.2	11.1	5.6
	2015	64	96.9	92.2	76.6	48.4	35.9	28.1	20.3
Latin Continuers	2016	164	68.3	41.5	20.1	10.4	6.1	2.4	1.2
	2015	194	64.4	41.2	20.6	10.3	5.7	3.6	2.1
Latin Extension	2016	114	64.0	29.8	9.6	2.6	1.8	1.8	1.8
	2015	129	58.1	22.5	10.9	5.4	2.3	0.8	0.0

Course	Year	Number	Percentage of students with scaled mark less than:						
			45	40	35	30	25	20	15
Modern Greek Beginners	2016	69	98.6	88.4	72.5	58.0	46.4	36.2	26.1
	2015	69	98.6	87.0	76.8	60.9	37.7	20.3	17.4
Modern Greek Continuers	2016	97	94.8	84.5	72.2	62.9	49.5	37.1	15.5
	2015	95	95.8	86.3	77.9	68.4	54.7	37.9	18.9
Modern Greek Extension	2016	51	96.1	78.4	60.8	51.0	29.4	17.6	3.9
	2015	43	95.3	76.7	65.1	39.5	27.9	7.0	0.0
Spanish Beginners	2016	147	95.2	89.1	77.6	63.9	53.1	36.1	23.1
	2015	177	94.4	87.0	77.4	61.0	49.7	31.1	18.6
Spanish Continuers	2016	147	95.9	89.8	76.9	63.3	45.6	32.7	19.7
	2015	150	96.0	88.7	79.3	66.0	49.3	36.0	24.7
Spanish Extension	2016	42	95.2	88.1	66.7	45.2	26.2	4.8	2.4
	2015	46	95.7	84.8	63.0	37.0	13.0	6.5	2.2
Turkish	2016	63	98.4	96.8	92.1	77.8	65.1	46.0	39.7
	2015	41	95.1	82.9	78.0	63.4	48.8	39.0	26.8
Vietnamese	2016	125	97.6	93.6	86.4	75.2	64.8	51.2	36.0
	2015	145	99.3	93.8	86.2	79.3	68.3	51.0	33.1
Automotive Exam	2016	333		100.0	99.7	93.7	84.7	73.9	65.2
	2015	463		100.0	99.6	94.4	86.6	78.6	67.6
Business Services Exam	2016	1,021	100.0	98.6	93.7	85.6	74.4	60.7	46.0
	2015	1,140	100.0	98.9	92.1	85.4	74.0	60.5	43.8
Construction Exam	2016	1,491		100.0	98.1	91.1	80.9	67.1	52.3
	2015	1,637		100.0	98.0	91.6	81.2	68.8	54.7
Electrotechnology Exam	2016	264		100.0	98.1	93.2	80.3	63.3	41.3
	2015	283		100.0	99.3	95.1	80.6	59.7	43.5
Entertainment Industry Exam	2016	846	100.0	95.9	90.5	79.7	64.8	47.9	26.2
	2015	918	100.0	98.7	92.7	79.7	64.1	46.1	29.2
Financial Services Exam	2016	111	98.2	90.1	78.4	62.2	45.0	22.5	9.0
	2015	152	95.4	86.8	78.9	65.8	50.7	28.3	12.5
Hospitality Exam	2016	4,916	100.0	98.6	93.0	84.5	71.6	55.0	38.7
	2015	5,180	100.0	98.3	93.5	84.4	70.3	57.1	39.1
Human Services Exam	2016	654	100.0	97.9	92.8	84.9	72.2	62.2	43.7
	2015	585		100.0	95.2	88.2	78.5	61.5	42.7
Information & Digital Technology Exam	2016	806	100.0	98.6	94.2	86.6	75.2	58.1	43.2
	2015	903	100.0	98.1	93.1	87.3	74.3	59.7	41.5
Metal & Engineering Exam	2016	492		100.0	96.3	91.9	82.9	73.6	57.3
	2015	565		100.0	99.6	92.9	83.2	71.2	58.2
Primary Industries Exam	2016	556	100.0	99.8	96.2	87.6	79.0	66.9	47.5
	2015	603		100.0	95.9	90.1	79.8	67.7	49.1
Retail Services Exam	2016	899	100.0	99.6	95.7	86.7	78.1	64.9	46.4
	2015	1,072	100.0	99.3	94.9	87.6	78.7	67.3	51.1
Tourism, Travel & Events Exam	2016	355	100.0	99.2	94.1	85.6	69.6	48.2	32.1
	2015	338	100.0	99.4	94.7	87.6	71.0	55.0	36.7

Table A6 Courses that contribute to the ATAR

- Notes: (i) This table shows the percentage of the course candidature who completed more than 10 units of ATAR courses for whom all units of that course contributed to their ATAR.
- (ii) The *Number receiving ATAR* column shows the number of students who did the course in 2016 or a previous year, and received an ATAR in 2016.
- (iii) The *ATAR students with > 10 units* columns show the number and percentage of ATAR students who completed more than 10 units of ATAR courses.
- (iv) The *Percentage who counted course* column shows the percentage of ATAR students who completed more than 10 units of ATAR courses for whom all units of that course contributed towards their ATAR.
- (v) The *Maximum ATAR including the course* column shows the maximum ATAR of any student doing the course in any year and including all units from that course in their ATAR calculation.
- (vi) The table excludes courses with less than 10 students.

Course	Number receiving ATAR	ATAR students with > 10 units		Percentage who counted course	Maximum ATAR including the course
		Number	Percentage		
Aboriginal Studies	279	87	31	78	98.55
Agriculture	1,053	492	47	75	99.40
Ancient History	9,187	3,947	43	86	99.95
Biology	17,007	7,923	47	81	99.95
Business Studies	15,914	6,122	38	85	99.90
Chemistry	10,423	6,475	62	75	99.95
Community & Family Studies	6,278	2,033	32	88	97.60
Dance	732	247	34	57	99.20
Design & Technology	2,714	1,082	40	74	98.85
Drama	4,147	1,554	37	73	99.70
Earth & Environmental Science	1,478	600	41	81	99.85
Economics	5,183	2,930	57	77	99.95
Engineering Studies	1,912	1,033	54	71	99.85
English Standard	27,943	8,563	31	100	99.70
English Advanced	25,884	13,459	52	98	99.95
English Extension 1	4,358	3,083	71	86	99.95
English Extension 2	1,619	1,021	63	79	99.95
ESL	2,129	739	35	100	99.95
Food Technology	2,860	966	34	87	99.80
Geography	3,975	1,778	45	83	99.95
Industrial Technology	3,749	1,256	34	70	98.40
Information Processes & Technology	2,467	1,073	43	78	99.90
Legal Studies	9,765	4,066	42	85	99.95
Mathematics General 2	28,437	9,654	34	73	99.60
Mathematics	14,965	8,949	60	71	99.95
Mathematics Extension 1	8,552	6,222	73	90	99.95
Mathematics Extension 2	3,235	1,744	54	97	99.95
Modern History	10,082	4,624	46	85	99.95
History Extension	1,865	1,460	78	82	99.95
Music 1	3,885	1,464	38	64	99.90
Music 2	713	527	74	64	99.95
Music Extension	452	361	80	68	99.95

Course	Number receiving ATAR	ATAR students with > 10 units		Percentage who counted course	Maximum ATAR including the course
		Number	Percentage		
PDH&PE	14,081	5,236	37	87	99.95
Physics	9,076	5,336	59	75	99.95
Senior Science	5,333	1,744	33	84	98.85
Society & Culture	4,293	1,422	33	86	99.95
Software Design & Development	1,686	860	51	73	99.95
Studies of Religion I	8,703	7,728	89	80	99.95
Studies of Religion II	6,041	2,014	33	82	99.95
Textiles & Design	1,283	410	32	79	99.75
Visual Arts	7,599	2,759	36	75	99.95
Arabic Continuers	175	103	59	71	93.50
Arabic Extension	55	46	84	78	87.90
Armenian	14	11	79	82	97.25
Chinese Beginners	26	10	38	50	88.45
Chinese Continuers	97	74	76	62	99.90
Chinese Extension	26	22	85	73	99.90
Chinese Background Speakers	636	247	39	64	99.80
Heritage Chinese (Mandarin)	81	42	52	43	99.35
Classical Greek Continuers	17	17	100	71	99.90
Classical Greek Extension	12	12	100	75	99.95
Classical Hebrew Continuers	32	20	63	70	99.70
Classical Hebrew Extension	18	15	83	93	99.80
Filipino	13	5	38	80	83.75
French Beginners	583	197	34	76	99.90
French Continuers	750	532	71	66	99.95
French Extension	180	162	90	85	99.95
German Beginners	109	45	41	64	99.60
German Continuers	244	150	61	58	99.95
German Extension	52	42	81	86	99.95
Hindi	18	15	83	73	99.00
Indonesian Beginners	25	9	36	100	91.45
Indonesian Continuers	78	51	65	57	98.05
Indonesian Extension	14	13	93	62	97.50
Indonesian Background Speakers	62	33	53	39	92.85
Italian Beginners	395	164	42	74	99.45
Italian Continuers	264	173	66	68	99.95
Italian Extension	58	48	83	90	99.80
Japanese Beginners	632	218	34	71	99.30
Japanese Continuers	626	371	59	66	99.90
Japanese Extension	175	124	71	78	99.90
Japanese Background Speakers	19	4	21	50	95.30
Heritage Japanese	31	9	29	44	99.95
Korean Continuers	20	7	35	71	74.30

Course	Number receiving ATAR	ATAR students with > 10 units		Percentage who counted course	Maximum ATAR including the course
		Number	Percentage		
Korean Background Speakers	51	14	27	79	98.55
Heritage Korean	55	20	36	85	98.55
Latin Continuers	165	141	85	62	99.95
Latin Extension	114	103	90	76	99.95
Macedonian	25	13	52	46	97.55
Modern Greek Beginners	62	29	47	83	98.40
Modern Greek Continuers	103	76	74	62	98.35
Modern Greek Extension	55	50	91	88	98.35
Modern Hebrew	45	29	64	41	99.80
Persian	33	7	21	71	82.60
Polish	19	14	74	64	96.30
Punjabi	22	17	77	53	90.65
Russian	38	17	45	65	99.70
Serbian	19	12	63	75	88.40
Spanish Beginners	135	44	33	73	99.80
Spanish Continuers	137	75	55	56	99.80
Spanish Extension	40	35	88	91	99.80
Tamil	33	29	88	72	97.80
Turkish	58	19	33	68	97.70
Vietnamese	109	45	41	71	96.95
Automotive Exam	162	76	47	53	80.65
Business Services Exam	873	311	36	77	97.50
Construction Exam	1,028	304	30	77	96.75
Electrotechnology Exam	186	85	46	66	88.45
Entertainment Industry Exam	754	243	32	76	98.95
Financial Services Exam	107	50	47	74	99.65
Hospitality Exam	4,344	1,481	34	78	98.15
Human Services Exam	558	177	32	76	97.85
Information & Digital Technology Exam	682	279	41	72	98.05
Metal & Engineering Exam	275	133	48	52	89.80
Primary Industries Exam	392	174	44	73	95.00
Retail Services Exam	751	292	39	61	97.25
Tourism, Travel & Events Exam	301	71	24	75	94.70

Table A7 ATAR distribution

- Notes: (i) This table shows the number of students receiving each ATAR from 99.95 to 99.00 and the number corresponding to the stated ATAR ranges down to 30.00–30.95.
- (ii) The median ATAR in 2016 was 68.65.

ATAR	Number	Number on or above	Percentage on or above
99.95	46	46	0.1
99.90	47	93	0.2
99.85	46	139	0.2
99.80	48	187	0.3
99.75	44	231	0.4
99.70	50	281	0.5
99.65	43	324	0.6
99.60	48	372	0.7
99.55	44	416	0.7
99.50	48	464	0.8
99.45	48	512	0.9
99.40	48	560	1.0
99.35	45	605	1.1
99.30	46	651	1.2
99.25	47	698	1.2
99.20	43	741	1.3
99.15	51	792	1.4
99.10	42	834	1.5
99.05	50	884	1.6
99.00	45	929	1.7
99.00 – 99.95			
99.00 – 99.95	929	929	1.7
98.00 – 98.95			
98.00 – 98.95	925	1,854	3.3
97.00 – 97.95			
97.00 – 97.95	930	2,784	5.0
96.00 – 96.95			
96.00 – 96.95	927	3,711	6.6
95.00 – 95.95			
95.00 – 95.95	928	4,639	8.3
94.00 – 94.95			
94.00 – 94.95	909	5,548	9.9
93.00 – 93.95			
93.00 – 93.95	933	6,481	11.6
92.00 – 92.95			
92.00 – 92.95	916	7,397	13.2
91.00 – 91.95			
91.00 – 91.95	914	8,311	14.9
90.00 – 90.95			
90.00 – 90.95	909	9,220	16.5
89.00 – 89.95			
89.00 – 89.95	922	10,142	18.1
88.00 – 88.95			
88.00 – 88.95	916	11,058	19.8
87.00 – 87.95			
87.00 – 87.95	896	11,954	21.4
86.00 – 86.95			
86.00 – 86.95	917	12,871	23.0
85.00 – 85.95			
85.00 – 85.95	907	13,778	24.6
84.00 – 84.95			
84.00 – 84.95	885	14,663	26.2
83.00 – 83.95			
83.00 – 83.95	916	15,579	27.8
82.00 – 82.95			
82.00 – 82.95	891	16,470	29.4
81.00 – 81.95			
81.00 – 81.95	883	17,353	31.0
80.00 – 80.95			
80.00 – 80.95	895	18,248	32.6
79.00 – 79.95			
79.00 – 79.95	886	19,134	34.2
78.00 – 78.95			
78.00 – 78.95	876	20,010	35.8
77.00 – 77.95			
77.00 – 77.95	886	20,896	37.3

ATAR	Number	Number on or above	Percentage on or above
76.00 – 76.95	864	21,760	38.9
75.00 – 75.95	856	22,616	40.4
74.00 – 74.95	872	23,488	42.0
73.00 – 73.95	850	24,338	43.5
72.00 – 72.95	849	25,187	45.0
71.00 – 71.95	853	26,040	46.5
70.00 – 70.95	837	26,877	48.0
69.00 – 69.95	844	27,721	49.5
68.00 – 68.95	817	28,538	51.0
67.00 – 67.95	817	29,355	52.5
66.00 – 66.95	805	30,160	53.9
65.00 – 65.95	811	30,971	55.3
64.00 – 64.95	788	31,759	56.8
63.00 – 63.95	797	32,556	58.2
62.00 – 62.95	779	33,335	59.6
61.00 – 61.95	763	34,098	60.9
60.00 – 60.95	761	34,859	62.3
59.00 – 59.95	750	35,609	63.6
58.00 – 58.95	732	36,341	64.9
57.00 – 57.95	719	37,060	66.2
56.00 – 56.95	714	37,774	67.5
55.00 – 55.95	712	38,486	68.8
54.00 – 54.95	682	39,168	70.0
53.00 – 53.95	680	39,848	71.2
52.00 – 52.95	675	40,523	72.4
51.00 – 51.95	656	41,179	73.6
50.00 – 50.95	628	41,807	74.7
49.00 – 49.95	626	42,433	75.8
48.00 – 48.95	617	43,050	76.9
47.00 – 47.95	589	43,639	78.0
46.00 – 46.95	591	44,230	79.0
45.00 – 45.95	567	44,797	80.1
44.00 – 44.95	541	45,338	81.0
43.00 – 43.95	539	45,877	82.0
42.00 – 42.95	520	46,397	82.9
41.00 – 41.95	503	46,900	83.8
40.00 – 40.95	496	47,396	84.7
39.00 – 39.95	462	47,858	85.5
38.00 – 38.95	467	48,325	86.4
37.00 – 37.95	441	48,766	87.2
36.00 – 36.95	422	49,188	87.9
35.00 – 35.95	408	49,596	88.6
34.00 – 34.95	410	50,006	89.4
33.00 – 33.95	376	50,382	90.0
32.00 – 32.95	360	50,742	90.7
31.00 – 31.95	348	51,090	91.3
30.00 – 30.95	342	51,432	91.9

Table A8 ATAR percentiles, 2012–2016

Note: This table shows the ATAR at selected percentiles of the ATAR cohort.

Percentile	ATAR 2012	ATAR 2013	ATAR 2014	ATAR 2015	ATAR 2016
100	99.95	99.95	99.95	99.95	99.95
99	99.40	99.40	99.35	99.40	99.40
98	98.80	98.80	98.75	98.75	98.75
95	97.05	97.00	96.95	96.95	96.95
90	94.10	94.00	93.95	93.95	93.95
85	91.15	91.00	90.90	90.90	90.90
80	88.15	88.00	87.85	87.85	87.85
75	85.15	84.95	84.80	84.75	84.75
70	82.10	81.90	81.70	81.65	81.60
60	75.95	75.70	75.40	75.25	75.25
50	69.55	69.20	68.95	68.70	68.65
40	62.75	62.40	62.15	61.70	61.65
30	55.30	54.90	54.70	54.05	53.95

Table A9 Relationship between ATAR and aggregates, 2012–2016

Note: This table shows the lowest aggregate of scaled marks corresponding to each of the selected ATARs.

ATAR	Lowest aggregate				
	2012	2013	2014	2015	2016
99.95	475.2	477.9	475.3	478.1	476.6
99.50	454.2	455.0	454.0	457.9	455.8
99.00	443.9	443.8	444.5	446.9	446.0
98.00	429.7	429.5	431.2	432.4	431.2
95.00	401.6	402.6	404.4	404.2	403.8
90.00	369.4	371.3	372.2	371.2	371.7
85.00	343.0	344.8	345.1	343.8	345.3
80.00	318.4	321.3	320.6	319.9	320.6
75.00	295.3	297.9	296.9	297.0	297.5
70.00	272.8	276.1	275.0	274.8	275.1
65.00	251.1	253.5	253.3	253.1	253.4
60.00	229.9	232.2	231.9	231.4	231.4
55.00	209.5	211.3	210.8	211.4	210.9
50.00	190.5	191.3	189.9	191.9	191.4

Report on the Scaling of the 2016 NSW Higher School Certificate

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About this publication

This report contains information on the calculation of the Australian Tertiary Admission Rank (ATAR) in 2016. It includes an overview of the HSC and the ATAR, a breakdown of the scaling process, analysis of HSC and ATAR statistics and notes trends for the year.

Cover picture

Kaitlan Tobruk Hora
Northern Beaches Secondary College Freshwater Senior Campus

Desertification (Painting)

My work illustrates a warning of 'desertification'. Fred Williams was my source of inspiration to portray the Australian landscape stripped of its fertility and life. By envisioning the landscape as bare, scarred and arid my intention is to explore human dominance over the natural world, using this dystopian picture to express a warning of what awaits the next generation.

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