



Explaining our statistical standardisation process in more detail

We have explained the steps that we will take to award grades in June 2020. Statistical standardisation is the final stage of our process to award grades. We will now explain how our statistical standardisation exercise will work in more detail.

The purpose of the statistical standardisation exercise

Cambridge International will take data submitted by centres and carry out a statistical standardisation exercise. This exercise will use statistical evidence from the historical performance of your centre in the syllabus as well as global performance statistics in the same syllabus.

We will do this to align judgements across centres, so that, as far as possible, students are assessed on the same basis and not unfairly advantaged or disadvantaged in the next steps of their education journeys.

The standardisation exercise will show us whether the distribution of your predicted grades for June 2020 is **what we would expect your candidates to achieve**. This statistical standardisation process will not change the rank order of students within your centre. However, if the distribution of your predicted grades is not what we expect to see, then the distribution of grades that we award will match our expectations.

The statistical standardisation exercise will mean that **the grade we award to a candidate may or may not be the same as the predicted grade** that you provided.

The statistical standardisation exercise also means that there will be **no advantage gained by centres whose predicted grades are unrealistic**. If the statistics show that your predicted grades are more generous than our expectation, then the grades we award will be lower than your predicted grades. If the statistics show that your predicted grades are more severe than our expectation, then the grades we award will be higher than your predicted grades.

The standardisation exercise will **not change the rank order** of candidates provided by the centre.

Please note that this statistical standardisation method has some similarities with, but is different from, the methods used by other awarding organisations.

The pieces of evidence we will use in statistical standardisation

For each syllabus for which your centre has made entries, our statistical standardisation exercise will use the following pieces of information:

- The predicted grade you have provided for each candidate
- The rank order you have provided of all candidates within each grade
- The results achieved by candidates at your centre in the syllabus in the previous three years (June 2017, June 2018 and June 2019 exam series)
- Global performance statistics in the syllabus in the June 2019 exam series

Arrangements for syllabuses which have entry routes with different grades available

We have asked you to produce **separate rank orders for:**

- core and extended tiers of a tiered Cambridge IGCSE, which you should treat as separate syllabuses (even though they share a syllabus code)
- AS Level candidates and A Level candidates, even where the syllabus code is the same for the AS Level and the A Level.

This is because for tiered Cambridge IGCSE, the grades available in each tier are different. For AS/A Level, AS Level grades are different from the A Level grades.

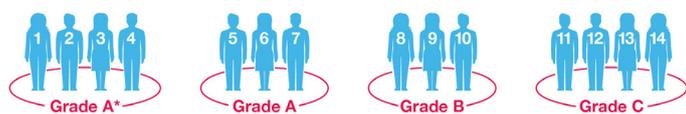
Because the grades available are different, we will treat these as separate sets of results in order to do the calculation in process stage 1, and to create the single rank order in process stage 3. For example, we will create a single rank order and set of results for your AS candidates, and a separate single rank order and set of results for your A Level candidates.



How we will work out your results

To produce your results for a syllabus, our process has four stages:

Stage 1: create a single rank order for the syllabus



We will combine the rank orders that you have given for each grade to form a **single rank order** for the syllabus for your centre.

Stage 2: generate a distribution of grades for your syllabus for June 2020



We will calculate the distribution of grades for your syllabus. This means the number of candidates expected to achieve each grade in June 2020, based on the results achieved by candidates at your centre in the syllabus in the previous three years (June 2017, June 2018 and June 2019 exam series). This number may be expressed using decimal points, e.g. 3.8.

Full details of the mathematical formula that we will use to do this are on the next page.

This calculation gives greatest emphasis to the biggest and most recent set of results at your centre.

Where centres work with us through a Cambridge Associate (such as the British Council), we will do this calculation separately for each Associate Centre.

Stage 3: convert the grade distribution into a whole number of candidates

Stage 2 will generate an expected number of candidate at each grade. We will then convert this into a whole number at each grade, e.g. 4, so that we can allocate grades to candidates.



Full details of the mathematical formula that we will use to do this are on the next page.

This calculation takes account of the predicted grade that you have provided for each candidate. The conversion into a whole number will always act in the favour of the candidate's predicted grade.

For example, if the number of candidates to be allocated a grade A* is 3.8, and you have predicted 6 candidates to achieve a grade A*, the converted whole number for your centre will be 4. As another example, if the number of candidates to be allocated a grade A* is 3.8, and you have predicted 2 candidates to achieve a grade A*, the converted whole number for your centre will be 3.

Stage 4: allocate grades to candidates



We will allocate candidates grades according to your rank order (stage 1) and using the whole number of candidates to be given each grade (stage 3). For example, if the number of candidates to be allocated a grade A* is 4 according to Stage 3, the first four candidates in the rank order will be allocated a grade A*. The fifth candidate in the rank order will be allocated a grade A, and so on until the number of candidates to be awarded each grade has been achieved.

We will not make any changes to the rank order that you have provided to us.



The mathematical formulae that we will use in the statistical standardisation

The equation used for stage 2

For each syllabus where your centre has made entries, we will calculate the expected grade distribution for each syllabus as follows:

- For each of the past three June series (i.e. June 2017, June 2018 and June 2019) we will calculate the cumulative number of candidates achieving each grade.
- For each grade, we will use a weighted average of the three June series to calculate an expected cumulative proportion of the June 2020 candidates who should be awarded the grade or better. This will be a number between 0 and 1.

For part b, the expected cumulative proportion who should be awarded the grade in June 2020 will be calculated using the following formula:

$$C_{20} = \frac{3c_{19} + 2c_{18} + c_{17} + G_{19}}{3n_{19} + 2n_{18} + n_{17} + 1}$$

where

C_{20} is the cumulative proportion of candidates in the syllabus in the centre expected to be awarded the grade (or better) in the June 2020 series

c_{19} is the cumulative number of candidates from the centre who achieved the grade (or better) in the syllabus in the June 2019 series

c_{18} is the cumulative number of candidates from the centre who achieved the grade (or better) in the syllabus in the June 2018 series

c_{17} is the cumulative number of candidates from the centre who achieved the grade (or better) in the syllabus in the June 2017 series

G_{19} is the cumulative proportion of the entire global cohort who achieved the grade (or better) in the June 2019 series

n_{19} is the number of results issued to the centre in the June 2019 series

n_{18} is the number of results issued to the centre in the June 2018 series

n_{17} is the number of results issued to the centre in the June 2017 series.

The value C_{20} produced by this equation is a proportion of your candidates who we expect to get the grade (or better).

Finally, the expected cumulative number of candidates from your centre to be awarded each grade (or better) is calculated.

It is equal to $N_{20} C_{20}$ where N_{20} is the number of candidates in the centre's rank order. This number will not usually be a whole number.

The rounding method used for stage 3

For each syllabus where your centre has made entries, we will calculate the whole number of candidates to be allocated to each grade as follows:

- The cumulative number p_{20} of the centre's predicted grades at the relevant grade (or better) is calculated.
- The number $N_{20} C_{20}$ (calculated in stage 2) is rounded towards p_{20} . In other words, if p_{20} is larger than $N_{20} C_{20}$ then $N_{20} C_{20}$ is rounded up to the next whole number.
If p_{20} is smaller than $N_{20} C_{20}$ then $N_{20} C_{20}$ is rounded down to the next whole number. This rounded value of $N_{20} C_{20}$ is the cumulative number of candidates to be awarded that grade (or better).

What we will do if your centre did not make entries every year

Our basic model works by using the results achieved by candidates at your centre in the syllabus in the previous three years (June 2017, June 2018 and June 2019 exam series). However, there will be situations where your centre does not have three years' worth of previous series results data. In these cases, the mathematical formula that we will use in stage 2 will only use the data for the exam series in which you have had entries. For example, if your centre made entries for the syllabus for the first time in June 2018, the mathematical formula will use previous series results data from June 2018 and June 2019.

What we will do if your centre has few results from previous years

The mathematical equation used in stage 2 takes into account the global performance statistics in the syllabus from the June 2019 exam series. The smaller the number of results your centre has received in the past, the larger the weight attached to these global performance statistics. If your centre is completely new to the syllabus in June 2020 the calculation will assume that your centre is similar to the average of all other centres and we will award grades in the same proportion as were awarded globally in June 2019.



How we will use centres' evidence in our statistical standardisation

We have told you that we may ask you to send us the evidence you have considered in making your professional judgements. We have worked with key stakeholders such as universities to make sure that June 2020 grades will carry the same value as grades and qualifications for any other series. As part of this work, we have committed to stakeholders that we will monitor that centres have based their judgements on relevant evidence.

We have asked for your evidence as a sample check to make sure that centres have used a full range of relevant evidence when making their professional judgements about a predicted grade and rank order position for each candidate within a subject, and that evidence exists for each candidate. This monitoring allows us to provide the assurance that universities need that our 'awarding grades' process is robust, in order to support recognition of our qualifications.

Exceptions to the model

Syllabuses which are available for the first time in June 2020.

There is a small number of syllabuses available for the first time at this level in the June 2020 series. These are:

- Cambridge International AS Level Further Mathematics (9231)
- Cambridge International AS Level Physical Education (9396)
- Cambridge International A Level Physical Education (9396)
- Cambridge International A Level Digital Media & Design (9481)
- Cambridge International Project Qualification (9980).

We have taken a different approach to the statistical standardisation of results in these subjects. If your centre has entries for any of these syllabuses, we have contacted you separately about this.

Arrangements for syllabuses which have changed between June 2017 and June 2020

In some cases, syllabus codes for the same subject at the same level will have changed between June 2017 and June 2020. Where this has happened, we have used all of the previous series results data that is available for your centre. For example, if you have made entries in June 2020 for Cambridge IGCSE Literature in English (0475), we will use previous series results data from Cambridge IGCSE Literature (English) (0486) if you have made entries for 0486 in a previous series.

Arrangements for the A*–G and 9–1 grade sets in Cambridge IGCSE

All of our Cambridge IGCSE subjects are available globally with results reported as a grade from A*–G. In some countries in some syllabuses Cambridge IGCSE is also available under a different syllabus code with results reported as a grade from 9–1.

Many centres in those countries have moved their entries between A*–G syllabuses and 9–1 syllabuses during the period from June 2017 to June 2020. We have taken account of past results in both syllabuses when performing the calculations in stage 2.

For centres who have made entries for the A*–G version of the syllabus in June 2020, we will convert any past 9–1 grades from your centre into A*–G grades. We will include these converted grades in your historical results for the A*–G version of the syllabus.

For centres who have made entries for the 9–1 version of the syllabus in June 2020, we will convert any June 2019 A*–G grades from your centre into 9–1 grades. We will also convert any June 2017 or June 2018 A*–G grades from your centre into 9–1 grades, provided that the 9–1 version of the syllabus was available in that series. We will include these converted grades in your historical results for the 9–1 version of the syllabus.

Cambridge IGCSE Drama (0411)

Cambridge IGCSE Drama has two routes to a grade. One is a linear route, which is available only in June. The other is a staged route, in which candidates take one component in June and the second component in November. For June 2020 we have changed all entries to the linear route and all candidates will receive their grades in the June 2020 series. The syllabus will not be available in November 2020.

In order to include staged-route grades in the historical data used in stage 2, the historical data for Cambridge IGCSE Drama (0411) will include results awarded in the June and November series in 2017, 2018 and 2019. This is an exceptional arrangement for this syllabus only. In all other syllabuses only June results will be included.