

Calculation of Results in Summer 2020

Ofqual have published requirements and guidance for calculating results for GCE (AS/A level), GCSE and Extended Project¹.

This document outlines the differences in the process for calculating results for other qualification types offered by AQA:

- Applied General
- Entry Level Certificate (ELC)
- Foundation Certificate of Secondary Education (FCSE)
- Functional Skills
- Level 1 Project
- Level 2 Further Mathematics
- Level 2 Project
- Level 3 Core Mathematics
- Technical Award
- Level 3 Tech Level

The document also covers qualifications offered in the joint venture with Oxford University Press:

- OxfordAQA International AS & A-levels
- OxfordAQA International GCSEs
- OxfordAQA International Project

Standardisation of the grades and rank orders provided by centres

Standardisation was carried out in all of the qualification types listed above, except that in Level 3 Tech Level this was only for the examined units and in Functional Skills English it was only for the Reading and Writing units². Centre assessment grades were accepted as the final grades in the externally assessed and centre assessed units in Level 3 Tech Level, in the Speaking unit in Functional Skills English and in all units in Personal & Social Education (PSE).

Within the qualification types which used standardisation, centre assessment grades were accepted as the final grades for qualifications where *either* there were fewer than 100 candidates entered in summer 2020³ or there were fewer than 100 candidates in total in the historical data (or both).

The historical data are specified as in Annex B of the Ofqual *Requirements* and contain data from summer 2017, summer 2018 and summer 2019, where available. For the Project

¹ <https://www.gov.uk/government/publications/requirements-for-the-calculation-of-results-in-summer-2020>

² References to calculations made at subject level are applied at unit level for these qualifications.

³ Candidates who were withdrawn after the published deadline are *included* in the count.

qualifications and for OxfordAQA International qualifications, data from other awarding organisations are included, where available. Historical international GCSE data on the A*-G scale have not been used.

Predictions

Steps X8 and X8a (*Impute marks for each candidate* and *Determine the subject-level cut scores*) apply only to qualification types which use subject-level predictions. These are the following.

- Functional Skills Mathematics
- Level 2 Further Mathematics
- Level 3 Core Mathematics
- Technical Award

Steps X8 and X8a apply at unit level in the following qualification types.

- Functional Skills English (Reading and Writing units)

The schedule of predictions, containing reference series, age groups, etc is at Annex A.

Historical data and predictions for Level 2 Further Maths

Up to and including 2019, this qualification used a grade scale based on the GCSE A*-G scale. The available grades were A⁺, A*, A, B and C; A⁺ represented a standard better than A*. In 2020 the GCSE 9-1 scale is used; the available grades are 9, 8, 7, 6, 5 and allowed 4. It is intended that the grade 4 boundary should be set at the number of marks below the grade 5 boundary which is half the width between grade 5 and grade 6, rounded in candidates' favour if necessary.

In order to use data from 2019 and earlier, the marks were converted to grades 9-4 (and U) (see Annex B).

The standardisation process

This section relates to the process requirements articulated in Annex E of the Ofqual requirements.

X1 – Generate centre-level historical grade distributions

This step applies to all qualifications.

X2 – Generate qualification-level prior-attainment cut-offs

Prior-attainment cut-offs are for the entire national cohort but vary depending on the primary target age.

This step does not apply to the following qualifications:

- FCSE
- Functional Skills – English Level 1 Speaking and English Level 2 Speaking
- International GCE (A-level and AS) and International GCSE
- Oxford International Project (Independent project)

X3 – Generate subject-level historical matrices

This step does not apply to the following qualifications:

- FCSE
- Functional Skills – English Level 1 Speaking and English Level 2 Speaking
- International GCE (A-level and AS) and International GCSE
- Oxford International Project (Independent project)

X4 – Generate historical predictions

This step does not apply to the following qualifications:

- FCSE
- Functional Skills – English Level 1 Speaking and English Level 2 Speaking
- International GCE (A-level and AS) and International GCSE
- Oxford International Project (Independent project)

X5 – Calculate the predicted performance in each centre for the current year

This step does not apply to the following qualifications:

- FCSE
- Functional Skills – English Level 1 Speaking and English Level 2 Speaking
- International GCE (A-level and AS) and International GCSE
- Oxford International Project (Independent project)

X6 – Calculate the lowest prior attainment match rate for each centre

This step does not apply to the following qualifications:

- FCSE
- Functional Skills – English Level 1 Speaking and English Level 2 Speaking
- International GCE (A-level and AS) and International GCSE
- Oxford International Project (Independent project)

X7 – Adjust the centre-level grade distributions

This step does not apply to the following qualifications:

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- FCSE
 - Functional Skills – English Level 1 Speaking and English Level 2 Speaking
 - International GCE (A-level and AS) and International GCSE
 - Oxford International Project (Independent project)

X8 – Impute marks for each candidate

This step applies to all qualifications.

X8a – Determine the subject-level cut scores

This step applies to the following qualifications only:

- Technical Award – Performing Arts
- Functional Skills – (excluding English Level 1 Speaking and English Level 2 Speaking)
- Level 2 Further Mathematics
- Level 3 Mathematics Studies

X9 – Determine grades for all candidates

This step applies to all qualifications.

X10 – Generate grades for small centres

This step applies to all qualifications.

X11 – Post-hoc slotting of private candidates

This step applies to all qualifications.

X12 – Determine grades for very large centres (GCSE English language and GCSE mathematics only)

This step does not apply to any qualifications covered by this document.

X13 – Identify candidates receiving off-tier grades (GCSE only)

This step does not apply to any qualifications covered by this document.

X14 – Calculate subject-level aggregates

This step applies to all qualifications.

X15 – Adjust grades to take into account banked unit results

The following steps (X15a-X15d) apply to the following qualifications only:

- Technical Award – Performing Arts
- Applied Generals
- OxfordAQA International AS and A-levels

These steps were not applied to subjects where *either* there were fewer than 100 candidates entered in summer 2020⁴ *or* there were fewer than 100 candidates in total in the historical data (or both).

The method applied here is similar to that used in a normal series to estimate the missing mark when a candidate is absent from an examination⁵.

Banked unit marks are not used if the candidate was entered to re-sit the unit this summer.

Banked units are only used at the level at which certification occurs (e.g. AS units are not included for students certificating an A-level).

X15a - Calculate marks, based on banked units, for each candidate

Description

Generation of a UMS mark based on banked units for each candidate with at least one banked unit. This involves the calculation of a z-score for each banked unit. These z-scores are weighted and averaged for each candidate to calculate their specification z-score, which is then converted to a UMS mark.

Inputs required

- i. Banked unit marks (**D3**)
- ii. Banked unit weights (**D3**)
- iii. z-score for each banked unit (**D3**)

Outputs generated

- i. Candidate marks based on banked units (**D14a**)

Step requirements

- i. For candidate j on unit k from specification l the z-score z_{kjl} is:

⁴ Candidates who were withdrawn after the published deadline are *included* in the count.

⁵ <https://www.jcq.org.uk/exams-office/access-arrangements-and-special-consideration/other-documents/estimating-the-missing-mark-when-a-candidate-is-absent/>

$$Z_{jkl} = \frac{(x_{jkl} - \bar{x}_{kl})}{s_{kl}}$$

Where

x_{jkl} is the UMS mark for candidate j on unit k .

\bar{x}_{kl} is the mean UMS for unit k .

s_{kl} is standard deviation of the UMS marks for unit k .

- ii. These z-scores are weighted and averaged for each candidate to calculate the specification z-score, Z_{jl} . The weights are the contribution each unit makes to the specification. For example, if two units are banked by candidate with z-scores z_{j1l} and z_{j2l} and respective weights say w_1 and w_2 then the specification z-score Z_{jl} (weighted and averaged for each candidate), is calculated as

$$Z_{jl} = \frac{w_1 z_{j1l} + w_2 z_{j2l}}{w_1 + w_2}$$

The specification z-score Z_{jl} is then converted to a UMS \hat{U}_{jl} where:

$$\hat{U}_{jl} = Z_{jl} * s_l + \bar{x}_l$$

Where

- \bar{x}_l is the mean UMS for specification l in the reference years
- s_l is standard deviation of the UMS for specification l reference years .

X15b – Calculate assessed grades, based on banked units, for each candidate

Description

Determine the assessed grades for candidates based on the standard UMS grade boundaries and assessed marks for all candidates.

Inputs required

- i. Candidate marks (**D14a**)
- ii. UMS mark grade boundaries (**D30**)

Outputs generated

- i. Candidate assessed grades (**D17a**)

Step requirements

- i. Apply the UMS mark grade boundaries to the candidate marks (**D14a**) to determine candidates' assessed grades.
- ii. Store the resulting assessed grades as D17a.

X15c - Calculate the proportion of banked units used in the assessed grade calculation

Determine the total weighting of the banked units.

Step requirements

- i. For each candidate, calculate the sum of all the weights of modular units banked to date, w_{jb} .
- ii. Calculate the proportion of the specification units banked, $p_{jl} = w_{jb}/100$.

For example: if unit 1 contributes 30%, unit 2 contributes 20% and unit 3 contributes 50%, then banking units 1 and 2 gives a weighted banked fraction of 0.5, whereas banking units 2 and 3 gives a weighted banked fraction of 0.7.

X15d – Calculate final grade

Determine the weighted average of grades for candidates based on assessed grades and imputed grades for all candidates.

Inputs required

- i. Candidate imputed grades (**D17**).
- ii. Candidate assessed grades (**D17a**).

Outputs generated

- i. Candidate grades (**D18**).

Step requirements

- i. The candidate imputed grades and the candidate assessed grades are converted onto a numeric scale (e.g. A*=6, A=5, B=4, C=3, D=2, E=1, U=0).
- ii. The weighted average of the candidate assessed and imputed grades is then calculated as follows

$$\text{WeightedGrade} = (1 - p_{jl}) * \text{imputed grade} + p_{jl} * \text{assessed grade}$$

Where, p_{jl} is the proportion of the specification units banked.

In other words, the final grade is a weighted average of the assessed grade (based on the banked units) and the imputed grade (based on direct centre-level performance approach), where the weighting is determined by the proportion of banked units for the candidate.

For candidates with no banked units, candidates would receive a grade based solely on the direct centre-level performance approach.

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- iii. The weighted grade is rounded to the nearest whole number and then recoded into a grade.

Annex A Schedule of predictions

Except in the Project qualifications, predictions are based on AQA data only.

Qualification Type	Level (Qualification /Unit)	Reference Series	Age Group(s)	Prior Attainment Measure	Centre Types
Functional Skills Maths	Qualification	June 2019	15,16,17	KS2	Excl. 2, 5, 7
Functional Skills English	Reading & Writing units	June 2019	15,16,17	KS2	Excl. 2, 5, 7
L2 Certificate in Further Maths	Qualification	June 2019	16	KS2	Excl. 2, 5, 7
L3 Cert in Mathematical Studies	Qualification	June 2017/2018	18	GCSE	All
L1/L2 Tech Award Performing Arts	Qualification	June 2019	16	KS2	Excl. 2, 5, 7

Annex B Level 2 Further Maths: notional grade boundaries on the 9-4 scale in the 2017, 2018 and 2019 awards

Actual boundaries in 2017, 2018 and 2019

	A [^]	A [*]	A	B	C
2019	150	123	96	71	46
2018	150	121	92	66	40
2017	148	117	86	61	36

Notional boundaries on the 9-4 scale

	9	8	7	6	5	4
2019	136	116	96	79	62	53
2018	135	113	92	74	57	48
2017	134	111	88	70	53	44