

Research and Analysis

Summary of contextual information about NRT 2017-2019

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Introduction

The National Reference Test (NRT) is taken every February/March by a nationally representative sample of Year 11 students to provide an additional source of information that can be used in GCSE English language and maths awarding later in the summer. The NRT is supplied by the National Foundation for Educational Research (NFER), which reports annually on the operation of the test and the test results.¹ To contextualise the annual test results, Ofqual, with the NRT student survey, collects data about NRT participants' test-taking motivation and preparation for GCSE in the subject they have taken the NRT in, and analyses the student characteristics of NRT participants, in particular, their Key Stage 2 (KS2) prior attainment profile. After summer awarding, Ofqual also examines the relationship between NRT participants' NRT performance and their subsequent attainment at GCSEs, to understand how well NRT results function as an indicator of anticipated GCSE performance. This report summarises results of the various relevant analyses for NRT 2017-2019.

Data sources

Every year about 80% of the NRT participants in each subject receive 'live' test booklets which contain live test items while the rest take 'refresh' test booklets containing a mixture of live and new items. Only participants taking live booklets contribute to the estimation of the national performance standards. Participants taking refresh booklets contribute to the development of new items which may be used in future iterations of the NRT. The analyses summarised in this paper pertain to the participants who were assigned to receive live test booklets.

NRT participants are invited to fill in the NRT student survey after completing the one-hour NRT. The NRT student survey has three parts: (1) self ratings on 10 items about NRT-specific test motivation; (2) short factual questions about tuition and learning in the relevant GCSE subject; (3) self ratings on 10 items about their motivation, feelings and attitudes about learning the relevant GCSE subject. For each of the first and third part of the survey in each subject, assessment of measurement invariance across years confirmed that different years' ratings can be validly compared, and factor analysis was carried out to group the items into factors. The analyses summarised in this paper made use of the participants' factor-based scores calculated from their item ratings.

The GCSE English Language and Maths performance data used in the analyses summarised in this paper are the candidate-level data that the four exam boards offering the relevant GCSEs in England submitted to Ofqual shortly before GCSE results publication in August of each of 2017, 2018 and 2019. The GCSE populations reported on in this paper include only the relevant year's 16-year-olds in England. Care has been taken to only count the best result for those who entered more than once for the same subject. For each year, the NRT dataset was matched

¹ Ofqual has published NFER's annual NRT Results Digest since 2018. The documents can be accessed at <https://www.gov.uk/government/collections/national-reference-test-information>

to the GCSE dataset to extract the matched NRT participants' GCSE grades, which are on the 9-to-1 scale.

The prior attainment data used in the analyses summarised in this paper are from the Key Stage 2 (KS2) tests taken five years before each year of NRT and were extracted from the National Pupil Database (NPD). The KS2 measure used is referred to as the 'KS2 normalised score'. It is calculated by transforming and combining English reading marks (out of 50) and maths total marks (out of 100) in the KS2 dataset, following the exam boards' current practice in generating KS2-based prediction matrices for GCSE awarding (Eason, 2017).² The KS2 normalised score can range from 0 to 100. For each year, each pupil in the KS2 dataset is assigned to one of ten KS2 performance categories ('deciles') based on their KS2 normalised score, and the cut scores for the deciles are set such that each decile contains roughly 10% of all pupils of the year with valid KS2 normalised scores. Each year's GCSE dataset and NRT dataset were matched to the NPD to extract the matched GCSE-takers' and matched NRT participants' relevant KS2 marks in order to calculate their KS2 normalised scores and determine their KS2 deciles. For NRT participants who could be matched to the NPD, their free school meal (FSM) eligibility data were also extracted.

The NRT performance data and survey weightings used in the analyses summarised in this paper, as well as the sampled students' names and dates of birth (which are used for matching to the NPD and the GCSE dataset), gender and school information, were supplied by NFER/Cito, the NRT supplier/sub-contractor. NRT performance data are in the form of 10 plausible values for each live participant. The plausible values are on the NRT ability scale created through an Item Response Theory (IRT) analysis of all three years' data after the 2019 test. Ability thresholds for Grades 4/5/7 have been established on the scale, which allow each plausible value of each participant to be classed as at/above NRT Grade 4/5/7 or not.

The classification of participating schools by region is based on publicly available Local Education Authority codes. The classification of participating schools as independent/selective schools or not is based on centre type information that the exam boards have shared with Ofqual.

Student characteristics and NRT attendance

Tables 1 and 2 present, for the drawn and achieved samples of students in the three series of the NRT, summary statistics on the following student variables: gender, FSM eligibility, school type, geographical region, KS2 normalised score, GCSE grade in the relevant subject. The drawn sample includes all students in NRT-participating schools who were randomly selected for the NRT. Not all students in the drawn sample presented themselves for the test. The achieved sample is the subset who actually took the test.

If student absence from the NRT is not sensitive to a student variable, there should be no difference in the summary statistics on the variable between the drawn and achieved samples in the same year. Any difference suggests that student absence

² Eason, S. (2017). Key Stage 2 tests: Alternative measures of prior attainment for predicting GCSE outcomes. AQA Centre for Education Research and Practice.

is sensitive to the variable, and given the variable's known relationship with GCSE performance, there is reason to surmise that the achieved sample's test results are biased (i.e., not as representative of the relevant population as is ideal). For example, a higher mean KS2 normalised score in the achieved than in the drawn sample suggests that students with lower prior attainment are more likely to be absent from the NRT than those with higher prior attainment, and the achieved sample's test results are likely to be upwardly biased because the achieved sample contains a higher than expected proportion of students with high prior attainment, who independent evidence suggests perform better at GCSEs.

Given the NRT's purpose of measuring cohort-level changes over time, a bias caused by student absence in any one year is not by itself problematic. However, for NRT results from different series to be comparable, the sample bias has to be stable from year to year. The across-year stability of the sample bias can be gauged by comparing across years the difference in summary statistics between the drawn and achieved samples.

(The student numbers are lower in 2018 than in the other two years because the cold wave dubbed 'Beast from the East' in 2018 caused the test to be cancelled and not re-scheduled in some schools.)

Table 1. *Student characteristics of NRT English drawn and achieved samples in 2017, 2018 and 2019*

	2017 Drawn	2017 Achieved	2018 Drawn	2018 Achieved	2019 Drawn	2019 Achieved
Number of students	8039	7082	7351	6193	7924	6739
Attendance rate (in %)		88.10		84.25		85.05
Gender						
% Male	51.26	51.28	48.84	48.33	51.19	50.41
FSM eligibility						
% Yes	10.05	9.08	13.60	12.01	12.09	10.89
% No	72.38	73.76	69.69	71.50	71.82	73.08
% not known	17.56	17.16	16.71	16.49	16.09	16.03
School type						
% in independent and selective schools	4.69	5.04	7.07	7.69	4.78	5.15
Region						
% East	11.34	11.11	11.01	11.03	9.05	9.14
% East Midlands	9.85	9.81	6.86	7.04	8.48	8.73
% London	12.25	12.58	17.36	17.18	16.36	16.22
% North East	5.08	5.11	4.24	3.97	6.66	6.29
% North West	14.42	14.43	14.68	14.45	11.72	11.80
% South East	16.31	16.42	15.82	15.99	16.96	17.09
% South West	8.84	8.66	10.45	10.77	7.21	7.02
% West Midlands	11.94	11.79	9.79	10.06	13.26	13.37
% Yorks & Humberside	9.96	10.08	9.79	9.51	10.30	10.34
KS2 normalised score						
% Available	83.38	83.82	84.08	84.40	84.41	84.55
Mean	51.23	51.93	51.19	52.12	51.07	51.93
Standard deviation	16.62	16.53	16.89	16.86	16.58	16.52
Median	51.35	51.96	51.01	52.11	51.27	52.37
GCSE English Language grade						
% Available	95.17	96.39	94.83	96.08	95.23	96.88
Mean	4.75	4.86	4.80	4.96	4.78	4.93
Standard deviation	1.87	1.83	1.92	1.87	1.90	1.85
Median	5	5	5	5	5	5

Table 2. Student characteristics of NRT Maths drawn and achieved samples in 2017, 2018 and 2019

	2017 Drawn	2017 Achieved	2018 Drawn	2018 Achieved	2019 Drawn	2019 Achieved
Number of students	8075	7144	7319	6169	7911	6825
Attendance rate (in %)		88.47		84.29		86.27
Gender						
% Male	51.58	51.48	48.65	47.92	51.92	51.81
FSM eligibility						
% Yes	10.03	8.96	13.96	12.69	12.55	11.22
% No	72.28	73.82	70.16	71.78	69.98	71.72
% not known	17.68	17.22	15.88	15.53	17.47	17.05
School type						
% in independent and selective schools	4.73	4.89	6.03	6.47	4.07	4.44
Region						
% East	11.29	11.06	11.18	11.30	9.42	9.22
% East Midlands	9.81	9.69	6.89	7.23	8.49	8.75
% London	12.50	12.57	16.72	16.70	15.78	15.44
% North East	5.05	5.05	4.26	3.92	6.67	6.33
% North West	14.03	14.12	15.03	14.82	11.98	12.18
% South East	16.26	16.24	16.07	16.08	16.69	17.30
% South West	9.23	9.00	10.17	10.36	6.98	6.84
% West Midlands	11.89	12.16	9.84	9.89	13.55	13.64
% Yorks & Humberside	9.94	10.11	9.85	9.71	10.44	10.30
KS2 normalised score						
% Available	83.39	83.87	84.64	85.02	83.04	83.47
Mean	50.98	51.74	51.20	52.13	50.75	51.63
Standard deviation	16.77	16.51	16.77	16.58	16.54	16.52
Median	51.06	51.91	51.12	52.17	50.54	51.30
GCSE Maths grade						
% Available	95.34	96.47	95.59	96.79	95.69	96.78
Mean	4.76	4.91	4.73	4.92	4.70	4.88
Standard deviation	2.16	2.11	2.12	2.06	2.09	2.05
Median	5	5	5	5	5	5

Statistical analyses suggest that in both subjects in all years, NRT attendance was sensitive to FSM eligibility, KS2 normalised score and GCSE grade: students eligible for free school meals, students with lower prior attainment, and students subsequently achieving lower GCSE grades were more likely to be absent from the NRT. There was therefore likely to be an upward bias in NRT results obtained from the achieved samples. Importantly, however, the analyses also suggest that the effects of FSM eligibility, KS2 normalised score and GCSE grade on NRT attendance were stable across years, which means that the upward bias in NRT results is an element that has not fluctuated from year to year.

NRT student survey

NRT motivation

In the first part of the NRT student survey, participants provide self ratings on 10 items about NRT-specific test motivation. Factor analysis suggested grouping the items into four factors, which can be interpreted as about the effort made at the NRT, perceived importance of the NRT, indifference to own performance at the NRT and

preparation made specifically for the NRT. Table 3 presents participants' mean ratings on the four factors in the three years of the NRT.

Table 3. Mean ratings on four factors about NRT motivation in NRT 2017-2019

	NRT English			NRT Maths		
	2017	2018	2019	2017	2018	2019
Effort	3.47	3.43	3.37*	3.64	3.62	3.59
Importance	2.84	2.75	2.66*	2.87	2.73	2.66*
Indifference	2.86	2.93	3.04*	2.81	2.87	2.96*
Preparation	1.71	1.64	1.61*	1.79	1.70	1.67*

Note: Mean ratings are on the 1-5 rating scale. Standard errors of all mean ratings are between 0.01 and 0.02. The standard errors quantify the statistical uncertainty due to sampling of students from the GCSE-taking population and were computed by balanced repeated replication which took account of the NRT's stratified sampling design. Survey weightings were applied in calculating mean ratings and their standard errors. * indicates a statistically significant difference between 2017 and 2019 in the mean rating on the relevant factor in the relevant subject at $p < .005$.³

In both subjects, the 2019 participants perceived the NRT as less important and reported less NRT-specific preparation and more indifference to their own NRT performance than their 2017 counterparts. The 2019 participants also reported less effort made at the NRT than the 2017 participants, but the drop in self-reported effort was statistically significant only in English.

GCSE preparation

In the second part of the NRT student survey, participants answer a number of short factual questions about tuition and learning in the relevant GCSE subject. In English, the questions are about the type of English lessons received at school (combined or separate English language and literature lessons, language lessons only), teaching time, and any tuition received outside school. Table 4 presents summaries of the answers given by each year's participants. A statistically significantly smaller proportion of participants reported receiving tuition outside school in 2019 than in 2017. The 2019 participants reported more teaching time than their 2017 counterparts, which may have resulted from the change to the question in 2018: students taking separate language and literature lessons were asked to give the teaching time for language in 2017, but for language and literature combined in 2018 and 2019.

Table 4. Summary of NRT English participants' answers to questions about teaching and learning for GCSE English Language

	2017	2018	2019
English lessons			
% combined language and literature	75.65	73.51	70.94
% separate language and literature	21.94	22.43	25.42
% language only	2.41	4.06	3.64
Weekly teaching time (in hrs)	4.29	4.43	4.53*
% receiving tuition outside school	30.13	28.53	27.01*

³ The difference between two sample means being statistically significant at $p < .005$ means that if there is no difference between the means of the populations from which the two samples have been drawn, the probability of drawing from them samples whose means differ by as much as the difference being tested is less than .005 (1 in 200).

Note: * indicates a statistically significant difference between 2017 and 2019 in the relevant measure at $p < .005$.

In maths, the questions are about teaching time, homework time, time for maths-related activity at school outside formal lessons, and any tuition received outside school. Table 5 presents summaries of the answers given by each year's participants. No statistically significant difference between 2017 and 2019 was found on any measure.

Table 5. Summary of NRT Maths participants' answers to questions about teaching and learning for GCSE Maths

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Weekly teaching time (in hrs)	4.24	4.23	4.26
Weekly homework time (in hrs)	1.41	1.40	1.38
Weekly other maths-related school activity time (in hrs)	0.73	0.70	0.68
% receiving tuition outside school	37.16	37.91	34.54

GCSE motivation

In the third part of the NRT student survey, participants provide self ratings on 10 items about motivation, feelings and attitudes about learning the relevant GCSE subject. Factor analysis of the data in each subject suggested grouping the items into four factors, which can be interpreted as about the utility value of the subject, importance of the subject, level of enjoyment of the subject, and how big a role the subject plays in their future plan. Table 6 presents participants' mean ratings on the four factors in the three years of the NRT.

Table 6. Mean ratings on four factors about GCSE motivation in NRT 2017-2019

	<u>NRT English</u>			<u>NRT Maths</u>		
	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Utility	3.66	3.60	3.54*	3.59	3.60	3.57
Importance	4.17	4.14	4.09*	4.06	4.08	4.06
Enjoyment	3.68	3.67	3.66	3.45	3.53	3.53*
Future	2.25	2.21	2.15*	2.53	2.54	2.51

Note: Mean ratings are on the 1-5 rating scale. Standard errors of all mean ratings are 0.01. The standard errors quantify the statistical uncertainty due to sampling of students from the GCSE-taking population and were computed by balanced repeated replication which took account of the NRT's stratified sampling design. Survey weightings were applied in calculating mean ratings and their standard errors. * indicates a statistically significant difference between 2017 and 2019 in the mean rating on the relevant factor in the relevant subject at $p < .005$.

For English, the 2019 participants found the subject less useful and less important and saw less of a role of the subject in their future plan than their 2017 counterparts. For maths, the 2019 participants reported more enjoyment of the subject than their 2017 counterparts.

Comparing NRT sample with GCSE-taking population: KS2 and GCSE profile

Summarised in the previous sections (with the exception of the analyses of the relationship between GCSE grade and NRT attendance, which can be performed only after awarding) are the contextual analyses available to Ofqual alongside NFER's report of the annual test results and test operation during its consideration of

whether/how to adjust GCSE grade standards in the light of the year's NRT results. Every year after receiving candidate-level summer awarding data from the exam boards shortly before GCSE results publication in August, Ofqual is in a position retrospectively to compare the NRT achieved sample with the GCSE-taking population. The top halves of Tables 7 and 8 present each year's GCSE-taking population's and NRT achieved sample's prior KS2 attainment profile, and the lower halves their GCSE attainment profile. The profile is given as the cumulative percentage of students of the relevant population or sample with valid data on the relevant attainment measure falling into each attainment category or 'higher' (starting from the highest attainment category) and as summary attainment statistics. Notice that higher attainment is indicated by smaller (decile) number with the KS2 measure but by larger (grade) number with GCSE grades.

Table 7. *KS2 and GCSE profile of GCSE English-taking population and of NRT English achieved sample in 2017-2019*

	2017 GCSE Population	2017 NRT Sample	2018 GCSE Population	2018 NRT Sample	2019 GCSE Population	2019 NRT Sample
Total N	529234	7082	526059	6193	549656	6739
KS2 normalised score						
% Available	85.44	84.11	85.44	84.78	85.73	85.17
% Decile 1	10.00	11.34	9.99	10.94	10.17	10.85
% Decile <=2	20.24	22.03	20.31	21.99	20.40	22.14
% Decile <=3	30.51	32.91	30.69	32.98	30.66	33.56
% Decile <=4	40.63	43.40	40.69	42.91	40.90	44.83
% Decile <=5	50.90	53.50	50.95	52.96	51.04	54.80
% Decile <=6	60.97	63.00	61.03	63.20	61.12	64.00
% Decile <=7	70.97	73.02	71.03	72.97	71.23	73.89
% Decile <=8	81.00	82.31	80.93	82.44	80.99	83.17
% Decile <=9	90.75	92.27	90.68	91.67	90.79	91.67
% Decile <=10	100.00	100.00	100.00	100.00	100.00	100.00
Mean	50.33	51.39	50.37	51.38	50.42	51.61
St.Dev	16.34	16.28	16.37	16.39	16.37	16.28
Median	50.33	51.52	50.36	51.34	50.44	52.05
GCSE English grade						
% Available	99.43	96.32	99.43	96.12	99.34	96.72
% Grade 9	2.60	2.55	2.59	2.99	2.83	3.03
% Grade >=8	7.79	8.07	7.78	8.44	8.30	9.43
% Grade >=7	16.80	17.69	17.52	19.53	17.42	18.76
% Grade >=6	33.38	35.04	33.76	37.23	33.77	36.29
% Grade >=5	53.24	56.83	53.32	57.67	53.40	57.07
% Grade >=4	69.85	74.03	70.16	74.24	70.48	74.47
% Grade >=3	88.61	91.68	89.40	92.34	89.61	92.95
% Grade >=2	96.24	97.83	96.50	97.87	96.42	97.97
% Grade >=1	99.04	99.51	99.07	99.37	98.99	99.56
% Grade >=U	100.00	100.00	100.00	100.00	100.00	100.00
Mean	4.68	4.83	4.70	4.90	4.71	4.90
St.Dev	1.90	1.81	1.89	1.83	1.90	1.82
Median	4	5	5	5	5	5

Note: Results given in the 'NRT Sample' columns are survey-weighted and may differ slightly from the unweighted KS2 and GCSE summary statistics given in the 'Achieved' columns of Table 1.

Table 8. *KS2 and GCSE profile of GCSE Maths-taking population and of NRT Maths achieved sample in 2017-2019*

	2017 GCSE Population	2017 NRT Sample	2018 GCSE Population	2018 NRT Sample	2019 GCSE Population	2019 NRT Sample
Total N	534813	7144	531134	6193	550643	6825
KS2 normalised score						
% Available	85.54	83.76	85.79	84.78	86.24	83.92
% Decile 1	9.85	11.04	9.78	10.94	9.94	10.89
% Decile <=2	20.02	21.99	20.02	21.99	20.10	21.75
% Decile <=3	30.27	32.96	30.37	32.98	30.34	32.46
% Decile <=4	40.36	43.43	40.39	42.91	40.57	42.19
% Decile <=5	50.61	53.46	50.67	52.96	50.74	52.80
% Decile <=6	60.70	63.20	60.79	63.20	60.86	63.19
% Decile <=7	70.72	73.02	70.83	72.97	71.03	73.45
% Decile <=8	80.80	82.37	80.78	82.44	80.85	82.60
% Decile <=9	90.60	91.58	90.59	91.67	90.71	91.77
% Decile <=10	100.00	100.00	100.00	100.00	100.00	100.00
Mean	50.21	51.29	50.24	51.38	50.28	51.27
St.Dev	16.35	16.31	16.33	16.39	16.33	16.31
Median	50.24	51.32	50.24	51.34	50.30	51.06
GCSE Maths grade						
% Available	99.43	96.35	99.41	96.71	99.40	96.73
% Grade 9	3.54	4.24	3.60	4.44	3.71	4.27
% Grade >=8	10.26	12.09	10.47	11.90	10.85	11.87
% Grade >=7	19.94	23.52	19.99	22.59	20.38	22.33
% Grade >=6	31.05	35.31	31.90	35.49	31.85	34.18
% Grade >=5	49.74	55.00	50.39	54.52	50.09	53.80
% Grade >=4	70.73	75.88	70.79	76.01	71.42	76.22
% Grade >=3	83.10	86.40	83.80	88.15	84.23	88.20
% Grade >=2	91.94	94.29	92.70	95.48	92.79	95.16
% Grade >=1	98.08	98.67	98.13	99.08	98.17	99.03
% Grade >=U	100.00	100.00	100.00	100.00	100.00	100.00
Mean	4.58	4.85	4.62	4.88	4.63	4.85
St.Dev	2.11	2.08	2.10	2.02	2.10	2.02
Median	5	5	5	5	5	5

Note: Results given in the 'NRT Sample' columns are survey-weighted and may differ slightly from the unweighted KS2 and GCSE summary statistics given in the 'Achieved' columns of Table 2.

In both tables, the numbers in the Sample columns are mostly larger than the corresponding numbers in the respective Population columns, providing further, and more direct, evidence for the NRT sample's upward bias. Further analysis suggests that the upward bias was caused mostly by more low-attaining students not attending the test than high-attaining students (as suggested by the drawn/achieved sample comparisons discussed above), and to a small extent by the exclusion of some schools (namely, special schools, studio schools, pupil referral units, further education colleges, schools which the School Census indicates have less than 15 students in the relevant year group) from the NRT sampling frame.

Classification concordance between NRT and GCSE

For the NRT to provide useful information for GCSE awarding, NRT participants' performance should ideally be predictive of their own and their cohort's GCSE performance. However, a number of obvious differences between the NRT and GCSE would lead one not to expect a perfect relationship between NRT and GCSE performance. For example, although the NRT and GCSEs in the relevant subject examine the same content, the NRT is dissimilar in length, and perhaps also in

question style and format, to the GCSE exam with a particular exam board that NRT participants have been preparing for, and the effect of the dissimilarity on NRT performance may not be uniform across all NRT participants. Another obvious difference is that GCSE exams take place some months after the NRT, and NRT participants may improve their knowledge and skills to different degrees in the intervening months. A further difference is that the NRT is low-stakes to students and schools while GCSEs are high-stakes, and stakes can interact with student ability, test subject, test motivation and test anxiety in complex ways in affecting test performance. These differences have been taken account of in setting the NRT grade standards. Any change in the relationship between NRT and GCSE performance over the years would signal a possible change in the effect of some or all of these differences on test performance.

One way to quantify the relationship between NRT and GCSE performance is to examine the classification concordance between the two assessments, that is, how often concordance (NRT and GCSE delivering the same above/below classification for a student at a key grade boundary) and the two kinds of discordance (over- and under-performance at the NRT relative to GCSE) occur. The ideal observation is a high level of concordance coupled with similar levels of the two kinds of discordance.

Table 9 presents the level of NRT/GCSE classification concordance and pattern of discordance at the three key grade boundaries in the two subjects in 2017 to 2019. A higher level of classification concordance can be seen in maths than in English. In both subjects, more classification concordance can be found at the Grade 7/6 boundary than at Grade 4/3, and likewise more at Grade 4/3 than at Grade 5/4. The level of classification concordance is reasonably high and has stayed highly stable across the three years. As for the discordance patterns, under-performance at the NRT (relative to GCSE) is more common than over-performance. The discordance patterns appear to have changed across the years in different ways in the two subjects. Focusing on 2017 and 2019, the dominance of NRT under-performance over NRT over-performance as a pattern of classification discordance has increased in English but decreased in maths.

Table 9. NRT/GCSE classification concordance at key grade boundaries in 2017, 2018 and 2019 (standard error in brackets)

	2017		2018		2019	
	%	(SE)	%	(SE)	%	(SE)
English						
Grade 7/6						
Concordant	80.86	(0.56)	80.24	(0.58)	81.37	(0.57)
Disconcordant: NRT>GCSE	7.29	(0.33)	6.57	(0.36)	6.30	(0.32)
Disconcordant: NRT<GCSE	8.16	(0.37)	9.30	(0.39)	9.04	(0.42)
Grade 5/4						
Concordant	71.74	(0.58)	72.07	(0.65)	71.18	(0.66)
Disconcordant: NRT>GCSE	10.63	(0.41)	9.57	(0.38)	9.25	(0.41)
Disconcordant: NRT<GCSE	13.94	(0.49)	14.47	(0.54)	16.30	(0.53)
Grade 4/3						
Concordant	75.10	(0.56)	74.83	(0.61)	73.21	(0.66)
Disconcordant: NRT>GCSE	8.66	(0.37)	7.93	(0.37)	7.56	(0.36)
Disconcordant: NRT<GCSE	12.56	(0.48)	13.36	(0.50)	15.95	(0.56)
Maths						
Grade 7/6						
Concordant	85.38	(0.48)	86.61	(0.47)	86.15	(0.51)
Disconcordant: NRT>GCSE	3.60	(0.24)	4.49	(0.29)	5.32	(0.29)
Disconcordant: NRT<GCSE	7.37	(0.35)	5.61	(0.31)	5.27	(0.31)
Grade 5/4						
Concordant	80.93	(0.55)	81.52	(0.53)	81.23	(0.54)
Disconcordant: NRT>GCSE	4.98	(0.27)	6.49	(0.34)	6.65	(0.32)
Disconcordant: NRT<GCSE	10.44	(0.41)	8.69	(0.36)	8.85	(0.38)
Grade 4/3						
Concordant	83.31	(0.53)	84.03	(0.53)	84.11	(0.50)
Disconcordant: NRT>GCSE	3.95	(0.24)	4.96	(0.33)	4.68	(0.27)
Disconcordant: NRT<GCSE	9.09	(0.38)	7.72	(0.37)	7.94	(0.36)

Note: The standard error quantifies the combined uncertainty due to sampling of students from the GCSE-taking population and sampling of items from all items in use in the NRT. The uncertainty due to student sampling was computed by balanced repeated replication which took account of the NRT's stratified sampling design. The uncertainty due to item sampling was computed by combining the repeated analyses using the 10 plausible values. Survey weightings were applied in calculating the concordant and disconcordant percentages and their standard errors. For all grade boundaries in both subjects, the concordant percentage and the two disconcordant percentages always add to somewhere between 96 and 97, not 100, because of missing GCSE grades for some NRT participants.



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