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Section 1: Introduction and Overview

1.1. Introduction

This technical report provides detailed information regarding administration of the New York State Testing Program (NYSTP) Grades 3–8 English Language Arts (ELA) and Mathematics 2021 Operational Tests. This report includes information about test administration, test content and test statistics, validity and reliability, scoring, and scaling.

During the 2020–2021 school year, many students in New York State (NYS) received entirely remote instruction due to the COVID-19 pandemic. Given the U.S. Department of Education's decision not to approve the waiver requested by the New York State Education Department (NYSED) to forego assessments in 2021, it was determined that schools would be required to a Intr (dve)-1 (r)-21 (r)-21 (r)-21 (r)-21 (on not)-2 (3s)-1 (i2 T* 2c)4 (a)-1 (t)1 (in 0.002r)-21 (r)n 2 -0(e)-1 (d)5

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marking the field “receiving entirely remote instruction” on the student’s answer sheet or in the Nextera computer-based testing (CBT) system.

- Schools were given the option to administer the tests to students over the full duration of the testing window to accommodate instructional schedules.

- Schools were allowed to administer the tests to students who were receiving hybrid instruction on the days that they were ordinarily attending school in person. Schools were not required to test the entire grade on the same school day.

- Public school districts were not required to have a uniform testing schedule for all of the schools in the district.

- Make-up testing at each school for students who were absent on the day of their test were allowed to begin on the school day immediately following the first day of the test administration.

- The operational test did not include any embedded field test questions. As a result, there was one form administered per grade and subject and all questions in Session 1 contributed to student scores.

1.2. Test Purpose

The 2021 Grades 3–8 ELA and Mathematics NYSTP was designed to measure student knowledge and skills as defined by grade-level New York State Learning Standards in ELA and Mathematics. The tests were designed to allow the classification of student proficiency into four performance levels (Level I, Level II, Level III, and Level IV). Likewise, the test provided opportunities for students at each of these performance levels to demonstrate their knowledge and skills in the Learning Standards.

1.3. Expected Participants

Students in New York State public school Grades 3, 4, 5, 6, 7, and 8 (and ungraded students of equivalent chronological ages) we

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to the Braille vendor, which then produces the Braille editions. Proofs of the Braille editions are submitted to NYSED for review and approval prior to production.

1.7. Test Translations

The NYSTP Grades 3–8 Mathematics tests are translated into eight languages: Arabic, Bengali, Chinese (Simplified), Chinese (Traditional), Haitian-Creole, Korean, Russian, and Spanish. These tests are translated to provide students the opportunity to demonstrate mathematical proficiency independent of their command of the English language. Sample tests are (s)-1 rallehi

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Section 2: Test Design and Development

2.1. Test Descriptions

The Grades 3

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Section 4: Test Administration and Scoring

This section provides summaries of New York State test administration and scoring procedures. For further information, refer to the aforementioned *School Administrator's Manual* and the *New York State Scoring Leader Handbook (2021)* located here: http://www.nysed.gov/common/nysed/files/programs/state-assessment/3-8-scoring-leader-handbook-2021.pdf

4.1. Test Administration

The NYSTP Grades 3–8 ELA and Mathematics Tests were administered to students in a paper-based (PBT) and computer-based (CBT) testing mode in 2021. The 2020-21 Elementary- and Intermediate-Level Testing Schedule was amended to reflect that schools were able to use the entire testing window to administer the tests to students, whether the testing was paper-based or computer-based. The ELA testing window was Monday, April 19 to Thursday, April 29 for ELA and the Mathematics testing window was Monday, May 3 to Friday, May 14. Schools were given the option to administer the tests to students over the full duration of the testing window to accommodate instructional schedules.

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The conditional standard error of measurement (CSEM) of a scale score indicates the precision with which the proficiency, , is estimated, and it is inversely related to the amount of information provided by the test at a given proficiency level. The CSEM of a scale score is estimated as follows:

$$(\quad) = {}_1 \cdot \frac{1}{\quad\quad}$$

where is the proficiency level corresponding to scale score, *SS*, ( ) is the amount of information provided by the test at , and $_1$ is the scaling constant defined in Table 6.1. The CSEM value varies across proficiency levels and is the highest at the extreme ends of the scale where the amount of test information is typically the lowest.

The final element of the raw-score-to-scale-score tables is the application of the performance level cut scores. Scale score cuts were set in the summer of 2018 through standard review and were applied to the scale scores for the tests in the following years through the equating

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Table 6.3. Mathematics Scale Score Ranges Associated with Each Performance Level

Grade	NYS Level 1	NYS Level 2	NYS Level 3

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Table 7.4. Mathematics Test Reliability and Standard Error of Measurement*

Grade	N-Count	Items	Raw Score Points	Cronbach's Alpha		Feldt-Raju Coefficient	
				Est.	SEM	Est.	SEM
3	176,663	19	19	0.84	1.74	0.84	1.73
4	182,333	23	23	0.88	1.95	0.88	1.94
5	170,958	23	23	0.88	1.95	0.88	1.95
6	164,429	24	24	0.89	2.01	0.89	2.00
7	159,915	26	26	0.89	2.13	0.89	2.12
8	107,089	26	26	0.87	2.23	0.87	2.22

**Note*. Based on Session 1 test questions from the original administration test data.

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	Cronbach's Alpha	Feldt-

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Demographic Category		N-Count	Cronbach's Alpha		Feldt-Raju Coefficient	
			Est.	SEM	Est.	SEM
Ethnicity	White	60,427	0.82	2.28	0.82	2.27
	New York		0.83	2.32	0.83	

NRC

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	Cronbach's Alpha	Feldt-

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Demographic Category		N-Count	Cronbach's Alpha		Feldt-Raju Coefficient	
			Est.	SEM	Est.	SEM
Ethnicity	White	66,702	0.87			

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7.3. Performance Level Classification Consistency and Accuracy

This subsection describes the analyses conducted to estimate performance level classification consistency and accuracy for the Grades 3–8 ELA and Mathematics tests, based on Session 1 test questions, only. Performance level classification consistency and accuracy were calculated using Session 1 data from the original administration, either 2018 or 2019 (see Tables 7.17–7.19.) This provides statistical information on the classification of students into the four performance categories. Classification consistency refers to the estimated degree of agreement between

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Kappa—that corrects for chance agreement—ranged from 0.34 to 0.46. These are between "fair" and "moderate" agreement, as per Landis and Koch's (1977) rules of thumb for kappa. For Mathematics, 61–67% of students were estimated to be classified consistently to one of the four performance categories, and kappa ranged from 0.47 to 0.56. These are considered "moderate" agreement, by Landis and Koch's (1977) rules of thumb for the kappa statistic. As mentioned

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Table 7.19. Decision Agreement (Accuracy) Estimates*

		Accuracy	
Grade	N-Count	All Cuts	Level III Cut
ELA			
3	177,503		

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Appendix A: ELA and Mathematics Test Configurations

The 2021 Grades 3–8 ELA and Mathematics tests were composed of one session (Session 1) that included MC items. A second session (Session 2), consisting of predominantly CR items, was made available to schools strictly for their optional administration to students and, if administered, student scores for Session 2 test items were to be used for local student assessment purposes only. In addition, the 2021 Tests were reduced in length by the removal of the embedded multiple-choice field test questions. The tables included in Appendix A refer to the test configuration when the operational test forms were previously administered for the 2018 and 2019 Tests, with the embedded field test items removed.

Table A.1. ELA Test Configuration

		Number of Items

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Appendix B: Operational Item Maps

The following tables show the oper (e)(o)12BDC /llipl Itpm M21 (a[T)1oM)1 r 0.002 Tw62 Tm [:) (aps)]TJ 2029..66 00 Td ( )T 0.002 Tc -NYS-1 (aT5 0

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10	Multiple Choice	1	CCSS.ELA-Literacy.RI.4.	Reading Standards for Informational Text	Reading

Question	Type	Points	Standard	Strand	Subscore
8	Multiple Choice	1	CCSS.ELA-Literacy.RI.4.3	Reading Standards for Informational Text	Reading
9	Multiple Choice	1	CCSS.ELA-Literacy.RI.4.3	Reading Standards for Informational Text	Reading
10	Multiple Choice	1	CCSS.ELA-Literacy.RI.4.2	Reading Standards for Informational Text	Reading

1	Multiple Choice	1	CCSS.ELA-Literacy.Lr.4.22		

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20	Multiple Choice	1	CCSS.ELA-Literacy.RI.4.42	Reading Standards for Informational Text	Reading
60	Multiple Choice	1	CCSS.ELA-Literacy.LI.4.22		

Table B.3. ELA Grade 5 Operational Item Map

Question	Type	Points	Standard	Strand

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Question	Type	Points	Standard	Strand	

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Question	Type	Points	Standard	Strand	Subscore
Session 2					

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Question	Type	Points	Standard	Strand	

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Question	Type	Points	Standard	Cluster	Subscore
2	Multiple Choice	1	CCSS.Math.Content.4.OA.B.4	Operations and Algebraic Thinking	Operations and Algebraic Thinking
3	Multiple Choice	1	CCSS.Math.Content.4.NF.A.2	Number and Operations - Fractions	Number and Operations - Fractions
4	Multiple Choice	1	CCSS.Math.Content.4.OA.A.2	Operations and Algebraic Thinking	Operations and Algebraic Thinking
5	Multiple Choice	1	CCSS.Math.Content.4.G.A.1	Geometry	
6	Multiple Choice	1	CCSS.Math.Content.4.OA.A.3	Operations and Algebraic Thinking	Operations and Algebraic Thinking
7	Multiple Choice	1	CCSS.Math.Content.4.NF.A.1	Number and Operations - Fractions	Number and Operations - Fractions
8	Multiple Choice	1	CCSS.Math.Content.4.MD.C.7	Measurement and Data	
9	Multiple Choice	1	CCSS.Math.Content.4.NF.A.2	Number and Operations - Fractions	Number and Operations - Fractions
10	Multiple Choice	1	CCSS.Math.Content.4.NF.B.3c	Number and Operations - Fractions	Number and Operations - Fractions
11	Multiple Choice	1	CCSS.Math.Content.4.NBT.B.5	Number and Operations in Base Ten	Number and Operations in Base Ten
12	Multiple Choice	1	CCSS.Math.Content.4.NBT.B.6	Number and Operations in Base Ten	Number and Operations in Base Ten
13	Multiple Choice	1	CCSS.Math.Content.4.OA.A.3	Operations and Algebraic Thinking	Operations and Algebraic Thinking
14	Multiple Choice	1	CCSS.Math.Content.4.OA.A.1	Operations and Algebraic Thinking	Operations and Algebraic Thinking
15	Multiple Choice	1	CCSS.Math.Content.4.NBT.A.3	Number and Operations in Base Ten	Number and Operations in Base Ten
16	Multiple Choice	1	CCSS.Math.Content.4.MD.A.3	Measurement and Data	
17	Multiple Choice	1	CCSS.Math.Content.4.MD.B.4	Measurement and Data	
18	Multiple Choice	1	CCSS.Math.Content.4.NBT.A.1	Number and Operations in Base Ten	Number and Operations in Base Ten
19	Multiple Choice	1	CCSS.Math.Content.4.OA.C.5	Operations and Algebraic Thinking	Operations and Algebraic Thinking
20	Multiple Choice	1	CCSS.Math.Content.4.NF.B.3a	Number and Operations - Fractions	Number and Operations - Fractions
21	Multiple Choice	1	CCSS.Math.Content.4.G.A.3	Geometry	

22 22 re f 17481 Multiple Choice 18 rkiBDC 7 5.18 1.16 CCSS.Math.Content.4.MD.C.5a Measurement and Data (ent)4.-f 255.36 1589K.84 15484 1 re f 50.16 176.7 52.08 0.4

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Appendix

Question	Type	Points	Standard	Cluster	Subscore
6	Multiple Choice	1	CCSS.Math.Content.5.OA.A.2	Operations and Algebraic Thinking	
7	Multiple Choice	1	CCSS.Math.Content.5.MD.C.4	Measurement and Data	Measurement and Data
8	Multiple Choice	1	CCSS.Math.Content.5.OA.A.1	Operations and Algebraic Thinking	
9	Multiple Choice	1	CCSS.Math.Content.5.MD.A.1	Measurement and Data	Measurement and Data
10	Multiple Choice	1	CCSS.Math.Content.5.NF.B.4b		

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Question	Type	Points	Standard	Cluster	Subscore

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Question	Type	Points	Standard

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Question	Type	Points	Standard

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Question	Type	Points	Standard	Cluster	Subscore
37	Constructed Response	2	CCSS.Math.Content.8.F.B.4	Functions	Functions
38	Constructed Response	2	CCSS.Math.Content.8.EE.B.5	Expressions and Equations	Expressions and Equations
39	Constructed Response	2	CCSS.Math.Content.8.G.A.3	Geometry	Geometry
40	Constructed Response	2	CCSS.Math.Content.8.G.C.9	Geometry	Geometry
41	Constructed Response	3	CCSS.Math.Content.8.F.A.3	Functions	Functions

*This item map is intended to identify the primary analytic skills necessary to successfully answer each question. However, some questions measure proficiencies described in multiple standards, including a balanced combination of procedural and conceptual understanding.

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Appendix C: Raw-to-Scale Score Tables

Raw Score	Scale Score	CSEM
23	615	8
24	622	9
25	627	10
26	636	13
27	651	21
28	656	23

Table C.4. PBT ELA Grade 6 RSSS Table

Raw Score	Scale Score	CSEM
0	523	37
1	527	33
2	532	29
3	537	25
4	541	22
5	546	19
6	550	17
7	555	

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Table C.6. PBT ELA Grade 8 RSSS Table

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Raw Score	Scale Score	CSEM

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Raw Score	Scale Score*	CSEM
25	629	11
26	638	14
27	653	22
28	656	23

* A CBT mode adjustment has been taken into account for these scale scores

Table C.16. CBT ELA Grade 6 RSSS Table

Raw Score	Scale Score*	CSEM
0	524	36
1	528	32
2	533	28
3	538	24
4	542	22
5	547	19
6	551	17
7	556	15
8	563	13
9	569	11
10	574	10
11	578	9
12	582	8
13	586	8
14	591	7
15	592	7
16	595	7
17	598	7
18	603	7
19	604	7
20	607	7
21	611	8
22	615	8
23	620	9
24	626	10
25	633	12
26	644	16
27	648	18

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Appendix C: Raw-to-

Table C.19. CBT Mathematics Grade 3 RSSS Table

Raw Score	Scale Score*	CSEM
0	542	

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unt for these scale scores

S Table

0 7 O

Table C.23. CBT Mathematics Grade 7 RSSS Table

Raw Score	Scale Score*	CSEM
0	531	370
1	536	249
2	540	181
3	545	122
4	550	83
5	554	62
6	559	43
7	577	14
8	585	10
9	590	8
10	595	6
11	597	5
12		

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Table C.24. CBT Mathematics Grade 8 RSSS Table

Raw Score	Scale Score*	CSEM
0	545	76
1	549	66
2	554	56
3	558	49
	563	42
	568	35
	572	29
	586	

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Appendix D: Study of Operational Test Mode Comparability

Section D.1. Introduction

Being mindful of the variability in the manner in which instruction was being provided to students across the State in response to COVID-19, NYSED decided to administer the pre-existing test forms from one of the last two administrations (either 2018 or 2019) for the 2021 administration of Grades 3–8 ELA and Mathematics Tests. Schools were only required to administer Session 1 of the ELA and Mathematics Tests to students, and Session 1 tests were reduced in length by the removal of the embedded multiple-choice test questions.

A new raw-score-to-scale-score (RSSS) table for each grade/subject was generated for the shortened test based on Session 1 items using the inverse-TCC method with the most recent banked item IRT parameters. Tables D.1 and D.2 summarize the number of items by item type for each session for the ELA and Math test forms.

Table D.1. Summary of Item Type by Session on 2021 Grades 3–8 ELA Test Forms

Subject	Grade	Session	Strand	# Items			Raw Score Points
				MC	CR2	CR4	
ELA	3	1	Reading	18	0		

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Section D.2. Method

This section outlines the steps needed for reevaluating the CBT mode adjustment in this mode comparability study.

1) Determine the samples used to reevaluate the adjustment of the student scores on the CBT test mode. A propensity score matching approach has been implemented in the 2018 and 2019 administrations of Grades 3–8 ELA and Mathematics Tests to generate the CBT and PBT samples that were comparable on selected covariates that may affect student performance, aside from the test mode itself. The covariate balance between the CBT and PBT samples was evaluated after propensity score matching, which showed well-matched PBT and CBT groups were achieved. (Please see the "Comparability of Spring 2018 Grades 3-8 English Language Arts and Mathematics Paper-based and Computer-based Tests" or the "Comparability of Spring 2019 Grades 3-8 English Language Arts and Mathematics Paper-based and Computer-based Tests" for more information.) These matched samples were used to evaluate test-level mode comparability in the 2018 and 2019 administrations. Therefore, the same matched samples can be used to evaluate test-level mode comparability based on Session 1 item responses. For each subject and grade level, the samples used for this study were from the corresponding year when the test forms were originally administered.
2) The distributions of raw scores on Session 1 for the matched PBT and CBT samples are first reviewed. This enables a direct means of detecting possible mode effects on Session 1 of the test.
3) Next, the distributions of scale scores for the matched PBT and CBT samples are reviewed. The scale scores are derived using the new operational raw-score-to-scale-score (RSS(S)2 (er-1 (s)TJ)-2 (o)-1 (b5 (s w)3 (e30.47 0 o))-1 (ded).1fs 0 Tw 10.47 0 Td [ba)-1 (s)-1 2

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Section D.3. Results

Questar calculated the sample means for each matched sample and their standardized differences before and after matching for the following variables:

- 2017 or 2018 Scale Score (SS): the prior year (grade n – 1) scale score, which was the proxy for prior ability that was entered as a key predictor into the propensity score matching model;
- 2018 or 2019 Raw Score (RS): the current year operational raw score for the original test;
- 2018 or 2019 Scale Score (SS): the current year scale score for the original test;
- 2018 or 2019 Raw Score on Session 1 (Session 1 RS): the current year operational raw score on Session 1;
- 2018 or 2019 Scale Score based on Session 1 (Session 1 SS): the current year scale score based on Session 1 RSSS table.

The test-level performance before and after matching is summarized in Tables D.3–D.6. The results for CBT scale score adjustment after matching comparison between the original test (Session 1 + 2) and Session 1 only are summarized in Table D.7.

Table D.3. Test-level Performance between Test Modes Before Matching – ELA

Test	Variable	

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Appendix D: Study of Operational Test Mode Comparability

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Test	Variable	PBT	CBT	Delta	*d*

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Table D.7. CBT Scale Score Adjustments Comparison after Matching

Subject	Grade	Session	

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Appendix E: Memo on Operational Test Mode Comparability

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