Linking the New York State NYSTP Assessments to NWEA MAP Tests

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Introduction

Northwest Evaluation Association™ (NWEA™) is committed to providing partners with useful tools to help make inferences from the Measures of Academic Progress® (MAP®) interim assessment scores. One important tool is the concordance table between MAP and state summative assessments. Concordance tables have been used for decades to relate scores on different tests measuring similar but distinct constructs. These tables, typically derived from statistical linking procedures, provide a direct link between scores on different tests and serve various purposes. Aside from describing how a score on one test relates to performance on another test, they can also be used to identify benchmark scores on one test corresponding to performance categories on another test, or to maintain continuity of scores on a test after the test is redesigned or changed. Concordance tables are helpful for educators, parents, administrators, researchers, and policy makers to evaluate and formulate academic standing and growth.

Recently, NWEA completed a concordance study to connect the scales of the New York State Testing Program (NYSTP) reading and math with those of the MAP Reading and MAP for Mathematics assessments. In this report, we present the 3rd through 8th grade cut scores on MAP reading and mathematics scales that correspond to the benchmarks on the NYSTP reading and math tests. Information about the consistency rate of classification based on the estimated MAP cut scores is also provided, along with a series of tables that predict the probability of receiving a Level 3 (i.e., "Proficient") or higher performance designation on the NYSTP assessments, based on the observed MAP scores taken during the same school year. A detailed description of the data and analysis method used in this study is provided in the Appendix.

Overview of Assessments

NYSTP assessments include a series of achievement tests aligned to the New York State P-12 Common Core Learning Standards (CCLS) in English Language Arts (ELA) and math for grades 3-8. NYSTP tests are delivered in the paper-and-pencil form. For each grade and subject, there are three cut scores that distinguish performance into four levels with Level 1 as the lowest and Level 4 as the highest. The Level 3 cut score demarks the minimum level of performance considered to be "Proficient" for accountability purposes.

MAP tests are interim assessments that are administered in the form of a computerized adaptive test (CAT). MAP tests are constructed to measure student achievement from Grades K to 12 in math, reading, language usage, and science and aligned to the New York State Common Core Standards. Unlike NYSTP, MAP assessments are vertically scaled across grades, a feature

that supports direct measurement of academic growth and change. MAP scores are reported on a **R**asch Un**it** (RIT) scale with a range from 100 to 350. Each subject has its own RIT scale.

To aid interpretation of MAP scores, NWEA periodically conducts norming studies of student and school performance on MAP. For example, the 2015 RIT Scale norming Study (Thum & Hauser, 2015) employed multi-level growth models on nearly 500,000 longitudinal test scores from over 100,000 students that were weighted to create large, nationally representative norms for math, reading, language usage, and general science.

Estimated MAP Cut Scores Associated with NYSTP Readiness Levels

Tables 1 to 4 report the NYSTP scaled scores associated with each of the four performance levels, as well as the estimated cut scores on the MAP tests associated with the NYSTP performance levels. Specifically, Tables 1 and 2 apply to MAP scores obtained during the spring testing season for reading and math, respectively. Tables 3 and 4 apply to MAP tests taken in a prior testing season (fall or winter) for reading and math, respectively. The tables also report the percentile rank (based on the *NWEA 2015 MAP Norms*) associated with each estimated MAP cut score. The MAP cut scores can be used to predict students' most probable NYSTP performance level, based on their observed MAP scores. For example, a 4th grade student who obtained a MAP math score of 230 in the spring testing season is likely to be at the very high end of Level 3 (Proficient) on the NYSTP taken during that same testing season (see Table 2). Similarly, a 3rd grade student who obtained a MAP reading score of 220 in the fall testing season is likely to be at Level 4 (NYS Level 4) on the NYSTP taken in the spring of 3rd grade (see Table 3).

TABLE 1. CONCORDANCE OF PERFORMANCE LEVEL SCORE RANGES BETWEEN NYSTP ELA AND MAP READING (WHEN MAP IS TAKEN IN SPRING)

Grade	NYSTP			
	Level 1	Level 2	Level 3	Level 4
3	147-290	291-319	**320**-357	358-429
4	138-286	287-319	**320**-342	343-423
5	97-288	289-319	**320**-345	346-413
6	117-282	283-319	**320**-337	338-421
7	98-286	287-317	**318**-346	347-414
8	100-283	284-315	**316**-342	343-412

Grade	MAP							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-195	1-41	196-207	42-72	**208**-221	73-93	222-350	94-99
4	100-202	1-40	203-215	41-73	**216**-223	74-88	224-350	89-99
5	100-209	1-43	210-221	44-74	**222**-230	75-89	231-350	90-99
6	100-210	1-36	211-224	37-72	**225**-231	73-85	232-350	86-99
7	100-215	1-43	216-227	44-73	**228**-238	74-91	239-350	92-99
8	100-218	1-46	219-230	47-74	**231**-240	75-90	241-350	91-99

Notes. 1. %ile=percentile.
2. Bolded numbers indicate the cut scores considered to be at least "proficient" for accountability purposes.

TABLE 2. CONCORDANCE OF PERFORMANCE LEVEL SCORE RANGES BETWEEN NYSTP AND MAP MATH (WHEN MAP IS TAKEN IN SPRING)

Grade	NYSTP			
	Level 1	Level 2	Level 3	Level 4
3	137-284	285-313	**314**-339	340-397
4	137-282	283-313	**314**-340	341-405
5	127-293	294-318	**319**-345	346-415
6	125-283	284-317	**318**-339	340-411
7	124-292	293-321	**322**-347	348-398
8	124-286	287-321	**322**-348	349-400

Grade	MAP							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-195	1-28	196-205	29-56	**206**-214	57-78	215-350	79-99
4	100-205	1-29	206-219	30-65	**220**-233	66-90	234-350	91-99
5	100-218	1-42	219-231	43-73	**232**-246	74-93	247-350	94-99
6	100-216	1-29	217-231	30-64	**232**-241	65-83	242-350	84-99
7	100-226	1-45	227-240	46-74	**241**-254	75-92	255-350	93-99
8	100-226	1-40	227-245	41-77	**246**-259	78-93*	260-350	93*-99

Notes. 1. %ile=percentile.
2. Bolded numbers indicate the cut scores considered to be at least "proficient" for accountability purposes.
3. * reflects occasional departure from one-to-one correspondence between RITs and percentiles due to the larger range of the RIT scale relative to the percentile scale.

TABLE 3. CONCORDANCE OF PERFORMANCE LEVEL SCORE RANGES BETWEEN NYSTP ELA AND MAP READING (WHEN MAP IS TAKEN IN FALL OR WINTER PRIOR TO SPRING NYSTP TESTS)

Grade	NYSTP			
	Level 1	Level 2	Level 3	Level 4
3	147-290	291-319	**320**-357	358-429
4	138-286	287-319	**320**-342	343-423
5	97-288	289-319	**320**-345	346-413
6	117-282	283-319	**320**-337	338-421
7	98-286	287-317	**318**-346	347-414
8	100-283	284-315	**316**-342	343-412

Grade	MAP FALL							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-184	1-40	185-198	41-74	**199**-215	75-95	216-350	96-99
4	100-194	1-40	195-209	41-76	**210**-218	77-90	219-350	91-99
5	100-203	1-44	204-216	45-76	**217**-227	77-92	228-350	93-99
6	100-204	1-33	205-221	34-75	**222**-229	76-89	230-350	90-99
7	100-211	1-42	212-225	43-76	**226**-236	77-92	237-350	93-99
8	100-215	1-45	216-228	46-76	**229**-238	77-91	239-350	92-99

Grade	MAP WINTER							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-192	1-41	193-205	42-74	**206**-220	75-94	221-350	95-99
4	100-199	1-39	200-213	40-74	**214**-222	75-89	223-350	90-99
5	100-207	1-43	208-220	44-76	**221**-229	77-91	230-350	92-99
6	100-208	1-34	209-223	35-73	**224**-230	74-86	231-350	87-99
7	100-214	1-43	215-226	44-73	**227**-237	74-91	238-350	92-99
8	100-217	1-45	218-229	46-75	**230**-239	76-90	240-350	91-99

Notes. 1. %ile=percentile.
2. Bolded numbers indicate the cut scores considered to be at least "proficient" for accountability purposes.

TABLE 4. CONCORDANCE OF PERFORMANCE LEVEL SCORE RANGES BETWEEN NYSTP AND MAP MATH (WHEN MAP IS TAKEN IN FALL OR WINTER PRIOR TO SPRING NYSTP TESTS)

Grade	NYSTP			
	Level 1	Level 2	Level 3	Level 4
3	137-284	285-313	**314**-339	340-397
4	137-282	283-313	**314**-340	341-405
5	127-293	294-318	**319**-345	346-415
6	125-283	284-317	**318**-339	340-411
7	124-292	293-321	**322**-347	348-398
8	124-286	287-321	**322**-348	349-400

Grade	MAP FALL							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-181	1-24	182-192	25-56	**193**-202	57-82	203-350	83-99
4	100-193	1-26	194-208	27-68	**209**-222	69-93	223-350	94-99
5	100-208	1-42	209-221	43-75	**222**-236	76-95	237-350	96-99
6	100-208	1-27	209-223	28-64	**224**-234	65-86	235-350	87-99
7	100-220	1-44	221-234	45-76	**235**-248	77-94*	249-350	94*-99
8	100-221	1-39	222-241	40-80	**242**-255	81-94	256-350	95-99

Grade	MAP WINTER							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-190	1-28	191-200	29-56	**201**-209	57-80	210-350	81-99
4	100-200	1-28	201-214	29-65	**215**-228	66-91	229-350	92-99
5	100-214	1-42	215-227	43-74	**228**-242	75-95*	243-350	95*-99
6	100-213	1-29	214-228	30-65	**229**-238	66-84	239-350	85-99
7	100-224	1-46	225-238	47-76	**239**-252	77-93	253-350	94-99
8	100-224	1-39	225-243	40-78	**244**-257	79-93	258-350	94-99

Notes. 1. %ile=percentile.
2. Bolded numbers indicate the cut scores considered to be at least "proficient" for accountability purposes.
3. * reflects occasional departure from one-to-one correspondence between RITs and percentiles due to the larger range of the RIT scale relative to the percentile scale.

Consistency Rate of Classification

Consistency rate of classification (Pommerich, Hanson, Harris, & Sconing, 2004), expressed in the form of a rate between 0 and 1, provides a means to measure the departure from equity for concordances (Hanson et al., 2001). This index can also be used as an indicator for the predictive validity of the MAP tests, i.e., how accurately the MAP scores can predict a student's proficiency status in the NYSTP test. For each pair of concordant scores, a classification is considered consistent if the examinee is classified into the same performance category regardless of the test used for making a decision. Consistency rate provided in this report can be calculated as, for the "proficient" performance category concordant scores, the percentage of examinees who score at or above both concordant scores plus the percentage of examinees who score below both concordant scores on each test. Higher consistency rate indicates stronger congruence between NYSTP and MAP cut scores. The results in Table 5 demonstrate that on average MAP reading scores can consistently classify students' proficiency (Level 3 or higher) status on NYSTP reading test approximately 81% of the time and MAP math scores can consistently classify students on NYSTP math test approximately 80% of the time. Those numbers are high suggesting that both MAP reading and math tests are great predictors of the students' proficiency status on the NYSTP tests.

TABLE 5. CONSISTENCY RATE OF CLASSIFICATION FOR MAP AND NYSTP LEVEL 3 EQUIPERCENTILE CONCORDANCES

Grade	Reading			Math		
	Consistency Rate	False		Consistency Rate	False	
		Positives	Negatives		Positives	Negatives
3	0.82	0.12	0.06	0.81	0.09	0.10
4	0.83	0.08	0.09	0.80	0.10	0.10
5	0.81	0.09	0.10	0.80	0.11	0.09
6	0.81	0.10	0.09	0.77	0.12	0.11
7	0.82	0.10	0.08	0.80	0.11	0.09
8	0.79	0.08	0.13	0.82	0.08	0.10

Proficiency Projection

Proficiency projection tells how likely a student is classified as "proficient" on NYSTP tests based on his/her observed MAP scores. The conditional growth norms provided in the 2015 MAP Norms were used to calculate this information (Thum & Hauser, 2015). The results of proficiency

projection and corresponding probability of achieving "proficient" on the NYSTP tests are presented in Tables 6 to 8. These tables estimate the probability of scoring at Level 3 or above on NYSTP in the spring and the prior fall or winter testing season. For example, if a 3rd grade student obtained a MAP math score of 199 in the fall, the probability of obtaining a Level 3 or higher NYSTP score in the spring of 3rd grade is 78%. Table 6 presents the estimated probability of meeting Level 3 benchmark when MAP is taken in the spring, whereas Tables 7 and 8 present the estimated probability of meeting Level 3 benchmark when MAP is taken in the fall or winter prior to taking the NYSTP tests.

TABLE 6. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING NYSTP LEVEL 3 (PROFICIENT) WHEN MAP IS TAKEN IN THE SPRING

Grade	Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
3	5	174	208	No	<0.01	5	181	206	No	<0.01
	10	179	208	No	<0.01	10	186	206	No	<0.01
	15	183	208	No	<0.01	15	189	206	No	<0.01
	20	186	208	No	<0.01	20	192	206	No	<0.01
	25	188	208	No	<0.01	25	194	206	No	<0.01
	30	191	208	No	<0.01	30	196	206	No	<0.01
	35	193	208	No	<0.01	35	198	206	No	<0.01
	40	195	208	No	<0.01	40	200	206	No	0.02
	45	197	208	No	<0.01	45	202	206	No	0.08
	50	199	208	No	<0.01	50	203	206	No	0.15
	55	201	208	No	0.01	55	205	206	No	0.37
	60	202	208	No	0.03	60	207	206	Yes	0.63
	65	204	208	No	0.11	65	209	206	Yes	0.85
	70	207	208	No	0.38	70	211	206	Yes	0.96
	75	209	208	Yes	0.62	75	213	206	Yes	0.99
	80	211	208	Yes	0.83	80	215	206	Yes	>0.99
	85	214	208	Yes	0.97	85	218	206	Yes	>0.99
	90	218	208	Yes	>0.99	90	221	206	Yes	>0.99
	95	223	208	Yes	>0.99	95	226	206	Yes	>0.99
4	5	181	216	No	<0.01	5	189	220	No	<0.01
	10	187	216	No	<0.01	10	194	220	No	<0.01
	15	190	216	No	<0.01	15	198	220	No	<0.01
	20	193	216	No	<0.01	20	201	220	No	<0.01
	25	196	216	No	<0.01	25	203	220	No	<0.01
	30	198	216	No	<0.01	30	206	220	No	<0.01
	35	200	216	No	<0.01	35	208	220	No	<0.01
	40	202	216	No	<0.01	40	210	220	No	<0.01
	45	204	216	No	<0.01	45	212	220	No	<0.01
	50	206	216	No	<0.01	50	213	220	No	0.01
	55	208	216	No	0.01	55	215	220	No	0.04
	60	210	216	No	0.03	60	217	220	No	0.15
	65	212	216	No	0.11	65	219	220	No	0.37
	70	214	216	No	0.27	70	221	220	Yes	0.63
	75	216	216	Yes	0.50	75	224	220	Yes	0.92
	80	218	216	Yes	0.73	80	226	220	Yes	0.98
	85	221	216	Yes	0.94	85	229	220	Yes	>0.99
	90	225	216	Yes	>0.99	90	233	220	Yes	>0.99
	95	230	216	Yes	>0.99	95	238	220	Yes	>0.99

TABLE 6. (CONTINUED)

Grade	Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
5	5	188	222	No	<0.01	5	195	232	No	<0.01
	10	193	222	No	<0.01	10	201	232	No	<0.01
	15	197	222	No	<0.01	15	205	232	No	<0.01
	20	199	222	No	<0.01	20	208	232	No	<0.01
	25	202	222	No	<0.01	25	210	232	No	<0.01
	30	204	222	No	<0.01	30	213	232	No	<0.01
	35	206	222	No	<0.01	35	215	232	No	<0.01
	40	208	222	No	<0.01	40	217	232	No	<0.01
	45	210	222	No	<0.01	45	219	232	No	<0.01
	50	212	222	No	<0.01	50	221	232	No	<0.01
	55	214	222	No	0.01	55	223	232	No	<0.01
	60	216	222	No	0.03	60	225	232	No	0.01
	65	217	222	No	0.06	65	228	232	No	0.08
	70	220	222	No	0.27	70	230	232	No	0.25
	75	222	222	Yes	0.50	75	232	232	Yes	0.50
	80	224	222	Yes	0.73	80	235	232	Yes	0.85
	85	227	222	Yes	0.94	85	238	232	Yes	0.98
	90	231	222	Yes	>0.99	90	242	232	Yes	>0.99
	95	236	222	Yes	>0.99	95	248	232	Yes	>0.99
6	5	192	225	No	<0.01	5	198	232	No	<0.01
	10	197	225	No	<0.01	10	204	232	No	<0.01
	15	201	225	No	<0.01	15	208	232	No	<0.01
	20	203	225	No	<0.01	20	211	232	No	<0.01
	25	206	225	No	<0.01	25	214	232	No	<0.01
	30	208	225	No	<0.01	30	217	232	No	<0.01
	35	210	225	No	<0.01	35	219	232	No	<0.01
	40	212	225	No	<0.01	40	221	232	No	<0.01
	45	214	225	No	<0.01	45	223	232	No	<0.01
	50	216	225	No	<0.01	50	225	232	No	0.01
	55	218	225	No	0.01	55	227	232	No	0.04
	60	219	225	No	0.03	60	230	232	No	0.25
	65	221	225	No	0.11	65	232	232	Yes	0.50
	70	223	225	No	0.27	70	234	232	Yes	0.75
	75	226	225	Yes	0.62	75	237	232	Yes	0.96
	80	228	225	Yes	0.83	80	239	232	Yes	0.99
	85	231	225	Yes	0.97	85	243	232	Yes	>0.99
	90	235	225	Yes	>0.99	90	247	232	Yes	>0.99
	95	240	225	Yes	>0.99	95	253	232	Yes	>0.99

TABLE 6. (CONTINUED)

Grade	Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
7	5	193	228	No	<0.01	5	199	241	No	<0.01
	10	199	228	No	<0.01	10	206	241	No	<0.01
	15	202	228	No	<0.01	15	210	241	No	<0.01
	20	205	228	No	<0.01	20	214	241	No	<0.01
	25	208	228	No	<0.01	25	217	241	No	<0.01
	30	210	228	No	<0.01	30	219	241	No	<0.01
	35	212	228	No	<0.01	35	222	241	No	<0.01
	40	214	228	No	<0.01	40	224	241	No	<0.01
	45	216	228	No	<0.01	45	226	241	No	<0.01
	50	218	228	No	<0.01	50	229	241	No	<0.01
	55	220	228	No	0.01	55	231	241	No	<0.01
	60	222	228	No	0.03	60	233	241	No	<0.01
	65	224	228	No	0.11	65	235	241	No	0.02
	70	226	228	No	0.27	70	238	241	No	0.15
	75	228	228	Yes	0.50	75	241	241	Yes	0.50
	80	231	228	Yes	0.83	80	244	241	Yes	0.85
	85	234	228	Yes	0.97	85	247	241	Yes	0.98
	90	238	228	Yes	>0.99	90	251	241	Yes	>0.99
	95	243	228	Yes	>0.99	95	258	241	Yes	>0.99
8	5	194	231	No	<0.01	5	199	246	No	<0.01
	10	200	231	No	<0.01	10	206	246	No	<0.01
	15	204	231	No	<0.01	15	211	246	No	<0.01
	20	207	231	No	<0.01	20	215	246	No	<0.01
	25	209	231	No	<0.01	25	218	246	No	<0.01
	30	212	231	No	<0.01	30	221	246	No	<0.01
	35	214	231	No	<0.01	35	224	246	No	<0.01
	40	216	231	No	<0.01	40	226	246	No	<0.01
	45	218	231	No	<0.01	45	229	246	No	<0.01
	50	220	231	No	<0.01	50	231	246	No	<0.01
	55	222	231	No	<0.01	55	233	246	No	<0.01
	60	224	231	No	0.01	60	236	246	No	<0.01
	65	226	231	No	0.06	65	238	246	No	<0.01
	70	228	231	No	0.17	70	241	246	No	0.04
	75	231	231	Yes	0.50	75	244	246	No	0.25
	80	233	231	Yes	0.73	80	247	246	Yes	0.63
	85	236	231	Yes	0.94	85	251	246	Yes	0.96
	90	240	231	Yes	>0.99	90	255	246	Yes	>0.99
	95	246	231	Yes	>0.99	95	262	246	Yes	>0.99

Note. %ile=percentile

TABLE 7. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING NYSTP READING LEVEL 3 (PROFICIENT) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING NYSTP TESTS

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
3	5	162	208	No	<0.01	5	171	208	No	<0.01
	10	168	208	No	<0.01	10	176	208	No	<0.01
	15	172	208	No	<0.01	15	180	208	No	<0.01
	20	175	208	No	<0.01	20	183	208	No	<0.01
	25	178	208	No	0.01	25	185	208	No	<0.01
	30	180	208	No	0.01	30	188	208	No	<0.01
	35	182	208	No	0.02	35	190	208	No	<0.01
	40	184	208	No	0.03	40	192	208	No	0.01
	45	186	208	No	0.06	45	194	208	No	0.02
	50	188	208	No	0.08	50	196	208	No	0.04
	55	190	208	No	0.13	55	198	208	No	0.09
	60	192	208	No	0.20	60	199	208	No	0.13
	65	194	208	No	0.24	65	201	208	No	0.22
	70	197	208	No	0.39	70	204	208	No	0.42
	75	199	208	Yes	0.50	75	206	208	Yes	0.50
	80	202	208	Yes	0.61	80	208	208	Yes	0.65
	85	205	208	Yes	0.76	85	211	208	Yes	0.83
	90	209	208	Yes	0.87	90	215	208	Yes	0.96
	95	214	208	Yes	0.95	95	221	208	Yes	>0.99
4	5	173	216	No	<0.01	5	179	216	No	<0.01
	10	178	216	No	<0.01	10	184	216	No	<0.01
	15	182	216	No	<0.01	15	188	216	No	<0.01
	20	185	216	No	<0.01	20	191	216	No	<0.01
	25	188	216	No	<0.01	25	194	216	No	<0.01
	30	190	216	No	0.01	30	196	216	No	<0.01
	35	192	216	No	0.01	35	198	216	No	<0.01
	40	194	216	No	0.02	40	200	216	No	0.01
	45	196	216	No	0.04	45	202	216	No	0.01
	50	198	216	No	0.07	50	204	216	No	0.02
	55	200	216	No	0.09	55	205	216	No	0.04
	60	202	216	No	0.15	60	207	216	No	0.08
	65	204	216	No	0.23	65	209	216	No	0.16
	70	206	216	No	0.33	70	211	216	No	0.28
	75	209	216	No	0.44	75	214	216	Yes	0.50
	80	211	216	Yes	0.56	80	216	216	Yes	0.65
	85	214	216	Yes	0.67	85	219	216	Yes	0.78
	90	218	216	Yes	0.85	90	223	216	Yes	0.94
	95	224	216	Yes	0.96	95	228	216	Yes	0.99

TABLE 7. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 3	Prob.			Cut-Score	Level 3	Prob.
5	5	181	222	No	<0.01	5	186	222	No	<0.01
	10	186	222	No	<0.01	10	191	222	No	<0.01
	15	190	222	No	<0.01	15	195	222	No	<0.01
	20	193	222	No	<0.01	20	197	222	No	<0.01
	25	195	222	No	<0.01	25	200	222	No	<0.01
	30	198	222	No	0.01	30	202	222	No	<0.01
	35	200	222	No	0.01	35	204	222	No	<0.01
	40	202	222	No	0.03	40	206	222	No	<0.01
	45	204	222	No	0.04	45	208	222	No	0.01
	50	206	222	No	0.07	50	210	222	No	0.03
	55	208	222	No	0.12	55	212	222	No	0.06
	60	210	222	No	0.19	60	214	222	No	0.12
	65	212	222	No	0.23	65	215	222	No	0.17
	70	214	222	No	0.33	70	218	222	No	0.35
	75	216	222	No	0.44	75	220	222	No	0.42
	80	218	222	Yes	0.50	80	222	222	Yes	0.58
	85	221	222	Yes	0.67	85	225	222	Yes	0.78
	90	225	222	Yes	0.81	90	229	222	Yes	0.94
	95	231	222	Yes	0.96	95	234	222	Yes	0.99
6	5	186	225	No	<0.01	5	190	225	No	<0.01
	10	192	225	No	<0.01	10	196	225	No	<0.01
	15	196	225	No	<0.01	15	199	225	No	<0.01
	20	198	225	No	<0.01	20	202	225	No	<0.01
	25	201	225	No	<0.01	25	204	225	No	<0.01
	30	203	225	No	0.01	30	207	225	No	<0.01
	35	205	225	No	0.02	35	209	225	No	<0.01
	40	207	225	No	0.03	40	211	225	No	0.01
	45	209	225	No	0.06	45	212	225	No	0.02
	50	211	225	No	0.10	50	214	225	No	0.04
	55	213	225	No	0.16	55	216	225	No	0.06
	60	215	225	No	0.19	60	218	225	No	0.12
	65	217	225	No	0.28	65	220	225	No	0.22
	70	219	225	No	0.39	70	222	225	No	0.35
	75	221	225	No	0.44	75	224	225	Yes	0.50
	80	224	225	Yes	0.61	80	226	225	Yes	0.65
	85	226	225	Yes	0.72	85	229	225	Yes	0.83
	90	230	225	Yes	0.84	90	233	225	Yes	0.96
	95	236	225	Yes	0.97	95	238	225	Yes	0.99

TABLE 7. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 3	Prob.			Cut-Score	Level 3	Prob.
7	5	189	228	No	<0.01	5	192	228	No	<0.01
	10	195	228	No	<0.01	10	198	228	No	<0.01
	15	199	228	No	<0.01	15	201	228	No	<0.01
	20	202	228	No	<0.01	20	204	228	No	<0.01
	25	204	228	No	<0.01	25	207	228	No	<0.01
	30	206	228	No	0.01	30	209	228	No	<0.01
	35	209	228	No	0.01	35	211	228	No	<0.01
	40	211	228	No	0.03	40	213	228	No	<0.01
	45	213	228	No	0.05	45	215	228	No	0.01
	50	214	228	No	0.07	50	217	228	No	0.03
	55	216	228	No	0.10	55	219	228	No	0.06
	60	218	228	No	0.15	60	221	228	No	0.12
	65	220	228	No	0.23	65	223	228	No	0.22
	70	222	228	No	0.33	70	225	228	No	0.35
	75	225	228	No	0.44	75	227	228	Yes	0.50
	80	227	228	Yes	0.56	80	230	228	Yes	0.72
	85	230	228	Yes	0.72	85	232	228	Yes	0.78
	90	234	228	Yes	0.85	90	236	228	Yes	0.94
	95	240	228	Yes	0.97	95	242	228	Yes	>0.99
8	5	191	231	No	<0.01	5	194	231	No	<0.01
	10	197	231	No	<0.01	10	199	231	No	<0.01
	15	201	231	No	<0.01	15	203	231	No	<0.01
	20	204	231	No	<0.01	20	206	231	No	<0.01
	25	207	231	No	0.01	25	209	231	No	<0.01
	30	209	231	No	0.01	30	211	231	No	<0.01
	35	211	231	No	0.02	35	213	231	No	<0.01
	40	213	231	No	0.03	40	215	231	No	<0.01
	45	215	231	No	0.05	45	217	231	No	0.01
	50	217	231	No	0.08	50	219	231	No	0.02
	55	219	231	No	0.13	55	221	231	No	0.05
	60	221	231	No	0.16	60	223	231	No	0.10
	65	223	231	No	0.22	65	225	231	No	0.18
	70	225	231	No	0.31	70	227	231	No	0.29
	75	228	231	No	0.40	75	229	231	No	0.43
	80	230	231	Yes	0.50	80	232	231	Yes	0.57
	85	234	231	Yes	0.69	85	235	231	Yes	0.77
	90	237	231	Yes	0.78	90	239	231	Yes	0.93
	95	243	231	Yes	0.94	95	244	231	Yes	0.99

Note. %ile=percentile

TABLE 8. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING NYSTP MATH LEVEL 3 (PROFICIENT) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING NYSTP TESTS

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
3	5	169	206	No	<0.01	5	176	206	No	<0.01
	10	174	206	No	<0.01	10	181	206	No	<0.01
	15	177	206	No	0.01	15	184	206	No	<0.01
	20	179	206	No	0.02	20	187	206	No	<0.01
	25	182	206	No	0.06	25	189	206	No	0.01
	30	184	206	No	0.08	30	191	206	No	0.02
	35	185	206	No	0.11	35	193	206	No	0.05
	40	187	206	No	0.17	40	195	206	No	0.10
	45	189	206	No	0.27	45	197	206	No	0.20
	50	190	206	No	0.32	50	198	206	No	0.26
	55	192	206	No	0.44	55	200	206	No	0.42
	60	194	206	Yes	0.56	60	202	206	Yes	0.58
	65	195	206	Yes	0.62	65	203	206	Yes	0.66
	70	197	206	Yes	0.73	70	205	206	Yes	0.80
	75	199	206	Yes	0.78	75	207	206	Yes	0.90
	80	201	206	Yes	0.86	80	209	206	Yes	0.95
	85	204	206	Yes	0.94	85	212	206	Yes	0.99
	90	207	206	Yes	0.98	90	215	206	Yes	>0.99
	95	212	206	Yes	>0.99	95	220	206	Yes	>0.99
4	5	179	220	No	<0.01	5	185	220	No	<0.01
	10	184	220	No	<0.01	10	190	220	No	<0.01
	15	188	220	No	<0.01	15	194	220	No	<0.01
	20	190	220	No	<0.01	20	197	220	No	<0.01
	25	193	220	No	0.01	25	199	220	No	<0.01
	30	195	220	No	0.02	30	201	220	No	<0.01
	35	197	220	No	0.04	35	203	220	No	0.01
	40	198	220	No	0.06	40	205	220	No	0.02
	45	200	220	No	0.11	45	207	220	No	0.05
	50	202	220	No	0.17	50	209	220	No	0.10
	55	204	220	No	0.27	55	211	220	No	0.20
	60	205	220	No	0.27	60	212	220	No	0.26
	65	207	220	No	0.38	65	214	220	No	0.42
	70	209	220	Yes	0.50	70	216	220	Yes	0.58
	75	211	220	Yes	0.62	75	218	220	Yes	0.74
	80	214	220	Yes	0.78	80	221	220	Yes	0.90
	85	216	220	Yes	0.86	85	223	220	Yes	0.95
	90	220	220	Yes	0.96	90	227	220	Yes	0.99
	95	225	220	Yes	0.99	95	232	220	Yes	>0.99

TABLE 8. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 3	Prob.			Cut-Score	Level 3	Prob.
5	5	187	232	No	<0.01	5	192	232	No	<0.01
	10	193	232	No	<0.01	10	198	232	No	<0.01
	15	196	232	No	<0.01	15	201	232	No	<0.01
	20	199	232	No	<0.01	20	204	232	No	<0.01
	25	202	232	No	<0.01	25	207	232	No	<0.01
	30	204	232	No	<0.01	30	209	232	No	<0.01
	35	206	232	No	0.01	35	211	232	No	<0.01
	40	208	232	No	0.02	40	213	232	No	<0.01
	45	210	232	No	0.04	45	215	232	No	<0.01
	50	211	232	No	0.05	50	217	232	No	0.01
	55	213	232	No	0.09	55	219	232	No	0.03
	60	215	232	No	0.15	60	221	232	No	0.07
	65	217	232	No	0.23	65	223	232	No	0.15
	70	219	232	No	0.33	70	225	232	No	0.27
	75	221	232	No	0.44	75	228	232	Yes	0.50
	80	224	232	Yes	0.62	80	230	232	Yes	0.66
	85	227	232	Yes	0.77	85	233	232	Yes	0.85
	90	230	232	Yes	0.88	90	237	232	Yes	0.97
	95	236	232	Yes	0.98	95	242	232	Yes	>0.99
6	5	192	232	No	<0.01	5	196	232	No	<0.01
	10	198	232	No	<0.01	10	202	232	No	<0.01
	15	202	232	No	<0.01	15	205	232	No	<0.01
	20	205	232	No	<0.01	20	209	232	No	<0.01
	25	207	232	No	0.01	25	211	232	No	<0.01
	30	209	232	No	0.01	30	214	232	No	<0.01
	35	212	232	No	0.04	35	216	232	No	<0.01
	40	214	232	No	0.07	40	218	232	No	0.01
	45	216	232	No	0.12	45	220	232	No	0.03
	50	218	232	No	0.19	50	222	232	No	0.07
	55	220	232	No	0.28	55	224	232	No	0.15
	60	222	232	No	0.38	60	226	232	No	0.27
	65	224	232	Yes	0.50	65	228	232	No	0.42
	70	226	232	Yes	0.62	70	230	232	Yes	0.58
	75	228	232	Yes	0.72	75	233	232	Yes	0.80
	80	231	232	Yes	0.85	80	236	232	Yes	0.93
	85	234	232	Yes	0.91	85	239	232	Yes	0.98
	90	238	232	Yes	0.97	90	243	232	Yes	>0.99
	95	243	232	Yes	>0.99	95	248	232	Yes	>0.99

TABLE 8. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 3	Prob.			Cut-Score	Level 3	Prob.
7	5	195	241	No	<0.01	5	198	241	No	<0.01
	10	201	241	No	<0.01	10	204	241	No	<0.01
	15	205	241	No	<0.01	15	208	241	No	<0.01
	20	209	241	No	<0.01	20	212	241	No	<0.01
	25	211	241	No	<0.01	25	215	241	No	<0.01
	30	214	241	No	<0.01	30	217	241	No	<0.01
	35	216	241	No	<0.01	35	220	241	No	<0.01
	40	218	241	No	<0.01	40	222	241	No	<0.01
	45	221	241	No	0.02	45	224	241	No	<0.01
	50	223	241	No	0.03	50	226	241	No	<0.01
	55	225	241	No	0.06	55	228	241	No	0.01
	60	227	241	No	0.11	60	230	241	No	0.03
	65	229	241	No	0.18	65	233	241	No	0.10
	70	231	241	No	0.27	70	235	241	No	0.20
	75	234	241	No	0.44	75	238	241	No	0.42
	80	237	241	Yes	0.62	80	240	241	Yes	0.58
	85	240	241	Yes	0.78	85	244	241	Yes	0.85
	90	244	241	Yes	0.92	90	248	241	Yes	0.97
	95	250	241	Yes	0.99	95	254	241	Yes	>0.99
8	5	197	246	No	<0.01	5	199	246	No	<0.01
	10	203	246	No	<0.01	10	206	246	No	<0.01
	15	208	246	No	<0.01	15	210	246	No	<0.01
	20	211	246	No	<0.01	20	214	246	No	<0.01
	25	214	246	No	<0.01	25	217	246	No	<0.01
	30	217	246	No	<0.01	30	220	246	No	<0.01
	35	219	246	No	<0.01	35	222	246	No	<0.01
	40	222	246	No	0.01	40	225	246	No	<0.01
	45	224	246	No	0.01	45	227	246	No	<0.01
	50	226	246	No	0.02	50	229	246	No	<0.01
	55	229	246	No	0.06	55	231	246	No	<0.01
	60	231	246	No	0.10	60	234	246	No	0.02
	65	233	246	No	0.15	65	236	246	No	0.06
	70	236	246	No	0.22	70	239	246	No	0.16
	75	238	246	No	0.30	75	241	246	No	0.28
	80	241	246	No	0.45	80	245	246	Yes	0.58
	85	245	246	Yes	0.65	85	248	246	Yes	0.79
	90	249	246	Yes	0.82	90	253	246	Yes	0.96
	95	256	246	Yes	0.97	95	259	246	Yes	>0.99

Note. %ile=percentile

Summary and Discussion

This study produced a set of cut scores on MAP reading and math tests for Grades 3 to 8 that correspond to each NYSTP performance level. By using matched score data from a sample of students from New York State, the study demonstrates that MAP scores can accurately predict whether a student could be NYS Level 3 or above on the basis of his/her MAP scores. This study also used the 2015 NWEA norming study results to project a student's probability to meet proficiency based on that student's prior MAP scores in fall and winter. These results will help educators predict student performance in NYSTP tests as early as possible and identify those students who are at risk of failing to meet required standards so that they can receive necessary resources and assistance to meet their goals.

While concordance tables can be helpful and informative, they have general limitations. First, the concordance tables provide information about score comparability on different tests, but the scores cannot be assumed to be interchangeable. In the case for NYSTP and MAP tests, as they are not parallel in content, scores from these two tests should not be directly compared. Second, the sample data used in this study were collected from 2 school districts New York State, which may limit the generalizability of the results to test takers who differ significantly from this sample. Finally, cautions should also be exercised if the concorded scores are used for a subpopulation. NWEA will continue to gather information about NYSTP performance from other school districts in New York State to enhance the quality and generalizability of the study.

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Appendix

Data and Analysis

Data

Data used in this study were collected from 2 school districts in New York State. The sample contained matched NYSTP ELA and MAP reading scores from 6,156 students in Grades 3 to 8 and matched NYSTP and MAP math scores from 6,150 students in Grades 3 to 8 who completed both NYSTP and MAP in the spring of 2013.

To understand the statistical characteristics of the test scores, descriptive statistics are provided in Table A1 below. As Table A1 indicates, the correlation coefficients between MAP reading and NYSTP ELA scores range from 0.70 to 0.74, and the correlation coefficients between MAP and NYSTP math scores range from 0.74 to 0.77. In general, all these correlations indicate a strong relationship between MAP and NYSTP test scores.

TABLE A1. DESCRIPTIVE STATISTICS OF THE SAMPLE DATA

				NYSTP				MAP			
Subject	**Grade**	**N**	***r***	**Mean**	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
ELA/ Reading	3	1,027	0.73	297	35.44	171	394	198	15.78	142	238
	4	1,070	0.74	295	37.34	175	394	205	15.73	143	244
	5	1,047	0.72	296	35.64	166	406	212	15.12	148	250
	6	1,026	0.70	298	33.47	184	399	216	13.68	152	252
	7	1,028	0.70	298	35.54	179	401	220	14.73	159	256
	8	958	0.71	295	37.22	175	395	222	16.26	153	254
Math	3	1,025	0.75	299	37.24	164	407	201	12.78	130	243
	4	1,074	0.76	294	36.68	163	396	212	15.48	155	254
	5	1,048	0.76	297	35.12	164	401	222	17.60	168	283
	6	1,018	0.74	300	35.19	160	396	224	15.64	154	262
	7	1,029	0.76	298	35.71	159	405	229	18.38	160	274
	8	956	0.77	295	40.36	139	409	232	19.61	154	292

Equipercentile Linking Procedure

The equipercentile procedure (e.g., Kolen & Brennan, 2004) was used to establish the concordance relationship between NYSTP and MAP scores for grades 3 to 8 in ELA/reading and math. This procedure matches scores on the two scales that have the same percentile rank (i.e., the proportion of scores at or below each score).

Suppose we need to establish the concorded scores between two tests. x is a score on Test X (e.g., NYSTP). Its equipercentile equivalent score on Test Y (e.g., MAP), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined in Equation (A1):

$$e_y(x) = G^{-1}[P(x)] \quad \text{(A1)}$$

where $e_y(x)$ is the equipercentile equivalent of scores on NYSTP on the scale of MAP, $P(x)$ is the percentile rank of a given score on Test X. G^{-1} is the inverse of the percentile rank function for scores on Test Y which indicates the scores on Test Y corresponding to a given percentile. Polynomial loglinear pre-smoothing was applied to reduce irregularities of the frequency distributions as well as equipercentile linking curve.

Consistency rate of Classification

Consistency rate of classification accuracy, expressed in the form of a rate between 0 and 1, measures the extent to which MAP scores (and the estimated MAP cut scores) accurately predicted whether students in the sample would be NYS Level 3(i.e., Level 3 or higher) on NYSTP tests.

To calculate consistency rate of classification, sample students were designated “Below NYSTP cut” or “At or above NYSTP cut” based on their actual NYSTP scores. Similarly, they were also designated as “Below MAP cut” or “At or above MAP cut” based on their actual MAP scores. A 2-way contingency table was then tabulated (see Table A2), classifying students as “Proficient” on the basis of NYSTP cut score and concordant MAP cut score. Students classified in the *true positive* (TP) category were those predicted to be NYS Level 3 based on the MAP cut scores and were also classified as NYS Level 3 based on the NYSTP cut scores. Students classified in the *true negative* (TN) category were those predicted to be Not NYS Level 3 based on the MAP cut scores and were also classified as Not NYS Level 3 based on the NYSTP cut scores. Students classified in the *false positive* (FP) category were those predicted to be NYS Level 3 based on the MAP cut scores but were classified as Not NYS Level 3 based on the NYSTP cut scores. Students classified in the *false negative* (FN) category were those predicated to be Not NYS Level 3 based on the MAP cut scores but were classified as NYS Level 3 based on the NYSTP cut scores. The overall consistency rate of classification was computed as the proportion of correct classifications among the entire sample by (TP+TN) / (TP+TN+FP+FN).

TABLE A2. DEFINITION OF CONSISTENCY RATE FOR NYSTP TO MAP CONCORDANCE

		NYSTP Score	
		Below NYSTP cut	At or Above NYSTP cut
MAP Score	Below MAP cut	True Negative	False Positive
	At or Above MAP cut	False Negative	True Positive

Note. Shaded cells are summed to compute the consistency rate.

Proficiency Projection

MAP conditional growth norms provide student's expected gain scores across testing seasons (Thum & Hauser, 2015). This information is utilized to predict a student's performance on the NYSTP based on that student's MAP scores in prior seasons (e.g. fall and winter). The probability of a student achieving Level 3 (Proficient) on NYSTP, based on his/her fall or winter MAP score is given in Equation (A2):

$$Pr(Achieveing\ Level\ 3\ in\ spring | a\ RIT\ score\ of\ x) = 1 - \Phi\left(\frac{x + g - c}{SD}\right) \qquad (A2)$$

where, Φ is a standardized normal cumulative distribution, x is the student's RIT score in fall or winter, g is the expected growth from fall or winter to spring corresponding to x, c is the MAP cut-score for spring, and SD is the conditional standard deviation of growth from fall or winter to spring.

For the probability of a student achieving Level 3 on the NYSTP tests, based on his/her spring score s, it can be calculated by Equation (A3):

$$Pr(Achieveing\ Level\ 3\ in\ spring | a\ RIT\ score\ of\ s\ in\ spring) = 1 - \Phi\left(\frac{s - c}{SE}\right) \qquad (A3)$$

where *SE* is the standard error of measurement for MAP reading or math test.

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