

Linking the Louisiana LEAP Assessments to NWEA MAP Growth Tests^{*}

^{*}As of June 2017 Measures of Academic Progress® (MAP®) is known as MAP® Growth™.

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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 Louisiana Educational Assessment Program (LEAP) English language arts (ELA) and Mathematics with those of the MAP Reading and MAP for Mathematics assessments. In this report, we present the 2nd through 8th grade cut scores on MAP reading and mathematics scales that correspond to the 2016-2017 benchmarks on the LEAP ELA 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 4 (i.e., “Mastery”) or higher performance designation on the LEAP 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

LEAP includes a series of achievement tests aligned to the Louisiana academic content standards in ELA, mathematics, and social studies. LEAP tests can be delivered online or in the paper-and-pencil form. For each grade and subject, there are four cut scores that distinguish between performance levels: Level 1: *Unsatisfactory*, Level 2: *Approaching Basic*, Level 3: *Basic*, Level 4: *Mastery*, and Level 5: *Advanced*. The Level 4 cut score demarks the minimum level of performance considered to be “proficient” for accountability purposes.

MAP tests are vertically scaled 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 are aligned to the Louisiana state standards. Unlike LEAP, MAP assessments are vertically scaled across grades, a

feature that supports direct measurement of academic growth and change. MAP scores are reported on a **Rasch Unit (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 LEAP Readiness Levels

Tables 1 to 4 report the LEAP scaled scores associated with each of the five performance levels, as well as the estimated score range on the MAP tests associated with each LEAP performance level. 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 LEAP performance level, based on their observed MAP scores. For example, a 6th grade student who obtained a MAP math score of 240 in the spring testing season is likely to be at the very high end of Level 4 (Mastery) on the LEAP 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 5 (Advanced) on the LEAP taken in the spring of 3rd grade (see Table 3).

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

Grade	LEAP									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
3	650-699		700-724		725-749		750-809		810-850	
4	650-699		700-724		725-749		750-789		790-850	
5	650-699		700-724		725-749		750-798		799-850	
6	650-699		700-724		725-749		750-789		790-850	
7	650-699		700-724		725-749		750-784		785-850	
8	650-699		700-724		725-749		750-793		794-850	

Grade	MAP									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-170	1-11	171-181	12-31	182-191	32-57	192-213	58-94	214-350	95-99
3	100-180	1-11	181-191	12-31	192-201	32-57	202-223	58-95	224-350	95-99
4	100-179	1-3	180-195	4-24	196-207	25-54	208-223	55-88	224-350	89-99
5	100-184	1-3*	185-200	3*-22	201-213	23-54	214-232	55-91*	233-350	91*-99
6	100-184	1-1*	185-202	1*-18	203-216	19-52	217-232	53-87	233-350	88-99
7	100-194	1-5	195-207	6-24	208-218	25-50	219-231	51-81	232-350	82-99
8	100-192	1-3	193-208	4-23	209-220	24-51	221-238	52-87	239-350	88-99

Notes. 1. %ile=percentile.

2. Bolded numbers indicate the cut scores considered to be at least “proficient” for accountability purposes.

3. High-lighted text denotes Grade 2 benchmarks are extrapolated from Grade 3 cut scores.

4. * 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 2. CONCORDANCE OF PERFORMANCE LEVEL SCORE RANGES BETWEEN LEAP AND MAP MATH (WHEN MAP IS TAKEN IN SPRING)

Grade	LEAP									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
3	650-699		700-724		725-749		750-789		790-850	
4	650-699		700-724		725-749		750-795		796-850	
5	650-699		700-724		725-749		750-789		790-850	
6	650-699		700-724		725-749		750-787		788-850	
7	650-699		700-724		725-749		750-785		786-850	
8	650-699		700-724		725-749		750-800		801-850	

Grade	MAP									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-167	1-3	168-179	4-17	180-188	18-39	189-201	40-75	202-350	76-99
3	100-179	1-4*	180-190	4*-17	191-200	18-41	201-213	42-76	214-350	77-99
4	100-185	1-3*	186-199	3*-17	200-210	18-42	211-227	43-82	228-350	83-99
5	100-192	1-3	193-208	4-21	209-222	22-52	223-238	53-85	239-350	86-99
6	100-195	1-3	196-213	4-23	214-227	24-55	228-244	56-87	245-350	88-99
7	100-195	1-3*	196-217	3*-26	218-233	27-60	234-251	61-90	252-350	91-99
8	100-207	1-11	208-221	12-31	222-233	32-55	234-254	56-89	255-350	90-99

Notes. 1. %ile=percentile.

2. Bolded numbers indicate the cut scores considered to be at least “proficient” for accountability purposes.

3. High-lighted text denotes Grade 2 benchmarks are extrapolated from Grade 3 cut scores.

4. * 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 LEAP ELA AND MAP READING (WHEN MAP IS TAKEN IN FALL OR WINTER PRIOR TO SPRING LEAP TESTS)

		LEAP									
Grade	Level 1		Level 2		Level 3		Level 4		Level 5		
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>		
3	650-699		700-724		725-749		750-809		810-850		
4	650-699		700-724		725-749		750-789		790-850		
5	650-699		700-724		725-749		750-798		799-850		
6	650-699		700-724		725-749		750-789		790-850		
7	650-699		700-724		725-749		750-784		785-850		
8	650-699		700-724		725-749		750-793		794-850		

		MAP FALL									
Grade	Level 1		Level 2		Level 3		Level 4		Level 5		
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>		
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	
2	100-153	1-8	154-166	9-29	167-178	30-59	179-204	60-97*	205-350	97*-99	
3	100-166	1-8	167-179	9-28	180-191	29-58	192-217	59-96	218-350	97-99	
4	100-167	1-2*	168-186	2*-22	187-199	23-53	200-218	54-90	219-350	91-99	
5	100-174	1-1	175-192	2-19	193-207	20-54	208-229	55-94*	230-350	94*-99	
6	100-174	1-1*	175-195	1*-14	196-211	15-51	212-230	52-90	231-350	91-99	
7	100-187	1-3	188-202	4-21	203-214	22-50	215-229	51-83	230-350	84-99	
8	100-185	1-2*	186-203	2*-19	204-217	20-50	218-236	51-88	237-350	89-99	

		MAP WINTER									
Grade	Level 1		Level 2		Level 3		Level 4		Level 5		
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>		
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	
2	100-164	1-9	165-176	10-30	177-187	31-58	188-210	59-96*	211-350	96*-99	
3	100-176	1-10	177-187	11-29	188-198	30-57	199-222	58-96*	223-350	96*-99	
4	100-175	1-3*	176-192	3*-22	193-205	23-55	206-222	56-89	223-350	90-99	
5	100-180	1-2*	181-197	2*-20	198-211	21-54	212-231	55-93*	232-350	93*-99	
6	100-181	1-1*	182-200	1*-17	201-215	18-53	216-231	54-88	232-350	89-99	
7	100-192	1-5*	193-205	5*-22	206-217	23-51	218-230	52-81	231-350	82-99	
8	100-190	1-3*	191-207	3*-22	208-219	23-51	220-237	52-88	238-350	89-99	

Notes. 1. %ile=percentile.

2. Bolded numbers indicate the cut scores considered to be at least “proficient” for accountability purposes.

3. High-lighted text denotes Grade 2 benchmarks are extrapolated from Grade 3 cut scores.

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

Grade	LEAP									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
3	650-699		700-724		725-749		750-789		790-850	
4	650-699		700-724		725-749		750-795		796-850	
5	650-699		700-724		725-749		750-789		790-850	
6	650-699		700-724		725-749		750-787		788-850	
7	650-699		700-724		725-749		750-785		786-850	
8	650-699		700-724		725-749		750-800		801-850	

Grade	MAP FALL									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-148	1-1*	149-162	1*-13	163-172	14-36	173-187	37-78	188-350	79-99
3	100-164	1-2*	165-176	2*-14	177-187	15-41	188-201	42-80	202-350	81-99
4	100-173	1-1	174-187	2-14	188-198	15-40	199-216	41-85	217-350	86-99
5	100-182	1-2*	183-198	2*-18	199-212	19-52	213-228	53-87	229-350	88-99
6	100-187	1-2	188-205	3-21	206-219	22-54	220-237	55-89	238-350	90-99
7	100-189	1-2*	190-211	2*-25	212-227	26-61	228-245	62-91	246-350	92-99
8	100-202	1-9	203-216	10-29	217-228	30-54	229-250	55-91	251-350	92-99

Grade	MAP WINTER									
	Level 1		Level 2		Level 3		Level 4		Level 5	
	<i>Unsatisfactory</i>		<i>Approaching Basic</i>		<i>Basic</i>		<i>Mastery</i>		<i>Advanced</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-160	1-2*	161-173	2*-16	174-182	17-38	183-196	39-77	197-350	78-99
3	100-173	1-3*	174-184	3*-15	185-195	16-41	196-208	42-78	209-350	79-99
4	100-180	1-2*	181-194	2*-15	195-205	16-41	206-222	42-83	223-350	84-99
5	100-188	1-3*	189-204	3*-20	205-218	21-53	219-234	54-87	235-350	88-99
6	100-192	1-3*	193-210	3*-23	211-224	24-56	225-241	57-88	242-350	89-99
7	100-193	1-2	194-215	3-26	216-231	27-62	232-249	63-91	250-350	92-99
8	100-205	1-9	206-219	10-29	220-231	30-55	232-252	56-89	253-350	90-99

Notes. 1. %ile=percentile.

2. Bolded numbers indicate the cut scores considered to be at least “proficient” for accountability purposes.

3. High-lighted text denotes Grade 2 benchmarks are extrapolated from Grade 3 cut scores.

4. * 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 LEAP 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 “mastery” 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 LEAP and MAP cut scores. The results in Table 5 demonstrate that MAP reading scores can consistently classify students’ proficiency (Level 4 or higher) status on LEAP ELA test 79-83% of the time, and MAP math scores can consistently classify students on LEAP math test 85-90% 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 LEAP tests.

TABLE 5. CONSISTENCY RATE OF CLASSIFICATION FOR MAP AND LEAP LEVEL 4 EQUIPERCENTILE CONCORDANCES

Grade	ELA/Reading			Math		
	Consistency Rate	False		Consistency Rate	False	
		Positives	Negatives		Positives	Negatives
3	0.83	0.09	0.08	0.85	0.07	0.08
4	0.82	0.10	0.08	0.87	0.08	0.05
5	0.82	0.09	0.09	0.87	0.06	0.07
6	0.79	0.11	0.10	0.88	0.06	0.06
7	0.80	0.11	0.09	0.90	0.05	0.05
8	0.80	0.11	0.09	0.86	0.07	0.07

Proficiency Projection

Proficiency projection tells how likely a student is classified as “mastery” on LEAP 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 “mastery” on the LEAP tests are presented

in Tables 6 to 8. These tables estimate the probability of scoring at Level 4 or above on LEAP 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 4 or higher LEAP score in the spring of 3rd grade is 80%. Table 6 presents the estimated probability of meeting Level 4 benchmark when MAP is taken in the spring, whereas Tables 7 and 8 present the estimated probability of meeting Level 4 benchmark when MAP is taken in the fall or winter prior to taking the LEAP tests.

TABLE 6. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING LEAP LEVEL 4 (MASTERY) WHEN MAP IS TAKEN IN THE SPRING

Grade	ELA/Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 4	Prob.			Cut Score	Level 4	Prob.
2	5	164	192	No	<0.01	5	170	189	No	<0.01
	10	169	192	No	<0.01	10	175	189	No	<0.01
	15	173	192	No	<0.01	15	178	189	No	<0.01
	20	176	192	No	<0.01	20	181	189	No	<0.01
	25	178	192	No	<0.01	25	183	189	No	0.02
	30	181	192	No	<0.01	30	185	189	No	0.08
	35	183	192	No	<0.01	35	187	189	No	0.25
	40	185	192	No	0.01	40	189	189	Yes	0.50
	45	187	192	No	0.06	45	190	189	Yes	0.63
	50	189	192	No	0.17	50	192	189	Yes	0.85
	55	191	192	No	0.38	55	194	189	Yes	0.96
	60	193	192	Yes	0.62	60	196	189	Yes	0.99
	65	195	192	Yes	0.83	65	197	189	Yes	>0.99
	70	197	192	Yes	0.94	70	199	189	Yes	>0.99
	75	199	192	Yes	0.99	75	201	189	Yes	>0.99
	80	201	192	Yes	>0.99	80	204	189	Yes	>0.99
85	204	192	Yes	>0.99	85	206	189	Yes	>0.99	
90	208	192	Yes	>0.99	90	209	189	Yes	>0.99	
95	214	192	Yes	>0.99	95	214	189	Yes	>0.99	
3	5	174	202	No	<0.01	5	181	201	No	<0.01
	10	179	202	No	<0.01	10	186	201	No	<0.01
	15	183	202	No	<0.01	15	189	201	No	<0.01
	20	186	202	No	<0.01	20	192	201	No	<0.01
	25	188	202	No	<0.01	25	194	201	No	0.01
	30	191	202	No	<0.01	30	196	201	No	0.04
	35	193	202	No	<0.01	35	198	201	No	0.15
	40	195	202	No	0.01	40	200	201	No	0.37
	45	197	202	No	0.06	45	202	201	Yes	0.63
	50	199	202	No	0.17	50	203	201	Yes	0.75
	55	201	202	No	0.38	55	205	201	Yes	0.92
	60	202	202	Yes	0.50	60	207	201	Yes	0.98
	65	204	202	Yes	0.73	65	209	201	Yes	>0.99
	70	207	202	Yes	0.94	70	211	201	Yes	>0.99
	75	209	202	Yes	0.99	75	213	201	Yes	>0.99
	80	211	202	Yes	>0.99	80	215	201	Yes	>0.99
85	214	202	Yes	>0.99	85	218	201	Yes	>0.99	
90	218	202	Yes	>0.99	90	221	201	Yes	>0.99	
95	223	202	Yes	>0.99	95	226	201	Yes	>0.99	

TABLE 6. (CONTINUED)

Grade	ELA/Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 4	Prob.			Cut Score	Level 4	Prob.
4	5	181	208	No	<0.01	5	189	211	No	<0.01
	10	187	208	No	<0.01	10	194	211	No	<0.01
	15	190	208	No	<0.01	15	198	211	No	<0.01
	20	193	208	No	<0.01	20	201	211	No	<0.01
	25	196	208	No	<0.01	25	203	211	No	<0.01
	30	198	208	No	<0.01	30	206	211	No	0.04
	35	200	208	No	0.01	35	208	211	No	0.15
	40	202	208	No	0.03	40	210	211	No	0.37
	45	204	208	No	0.11	45	212	211	Yes	0.63
	50	206	208	No	0.27	50	213	211	Yes	0.75
	55	208	208	Yes	0.50	55	215	211	Yes	0.92
	60	210	208	Yes	0.73	60	217	211	Yes	0.98
	65	212	208	Yes	0.89	65	219	211	Yes	>0.99
	70	214	208	Yes	0.97	70	221	211	Yes	>0.99
	75	216	208	Yes	0.99	75	224	211	Yes	>0.99
	80	218	208	Yes	>0.99	80	226	211	Yes	>0.99
85	221	208	Yes	>0.99	85	229	211	Yes	>0.99	
90	225	208	Yes	>0.99	90	233	211	Yes	>0.99	
95	230	208	Yes	>0.99	95	238	211	Yes	>0.99	
5	5	188	214	No	<0.01	5	195	223	No	<0.01
	10	193	214	No	<0.01	10	201	223	No	<0.01
	15	197	214	No	<0.01	15	205	223	No	<0.01
	20	199	214	No	<0.01	20	208	223	No	<0.01
	25	202	214	No	<0.01	25	210	223	No	<0.01
	30	204	214	No	<0.01	30	213	223	No	<0.01
	35	206	214	No	0.01	35	215	223	No	<0.01
	40	208	214	No	0.03	40	217	223	No	0.02
	45	210	214	No	0.11	45	219	223	No	0.08
	50	212	214	No	0.27	50	221	223	No	0.25
	55	214	214	Yes	0.50	55	223	223	Yes	0.50
	60	216	214	Yes	0.73	60	225	223	Yes	0.75
	65	217	214	Yes	0.83	65	228	223	Yes	0.96
	70	220	214	Yes	0.97	70	230	223	Yes	0.99
	75	222	214	Yes	0.99	75	232	223	Yes	>0.99
	80	224	214	Yes	>0.99	80	235	223	Yes	>0.99
85	227	214	Yes	>0.99	85	238	223	Yes	>0.99	
90	231	214	Yes	>0.99	90	242	223	Yes	>0.99	
95	236	214	Yes	>0.99	95	248	223	Yes	>0.99	

TABLE 6. (CONTINUED)

Grade	ELA/Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 4	Prob.			Cut Score	Level 4	Prob.
6	5	192	217	No	<0.01	5	198	228	No	<0.01
	10	197	217	No	<0.01	10	204	228	No	<0.01
	15	201	217	No	<0.01	15	208	228	No	<0.01
	20	203	217	No	<0.01	20	211	228	No	<0.01
	25	206	217	No	<0.01	25	214	228	No	<0.01
	30	208	217	No	<0.01	30	217	228	No	<0.01
	35	210	217	No	0.01	35	219	228	No	<0.01
	40	212	217	No	0.06	40	221	228	No	0.01
	45	214	217	No	0.17	45	223	228	No	0.04
	50	216	217	No	0.38	50	225	228	No	0.15
	55	218	217	Yes	0.62	55	227	228	No	0.37
	60	219	217	Yes	0.73	60	230	228	Yes	0.75
	65	221	217	Yes	0.89	65	232	228	Yes	0.92
	70	223	217	Yes	0.97	70	234	228	Yes	0.98
	75	226	217	Yes	>0.99	75	237	228	Yes	>0.99
	80	228	217	Yes	>0.99	80	239	228	Yes	>0.99
85	231	217	Yes	>0.99	85	243	228	Yes	>0.99	
90	235	217	Yes	>0.99	90	247	228	Yes	>0.99	
95	240	217	Yes	>0.99	95	253	228	Yes	>0.99	
7	5	193	219	No	<0.01	5	199	234	No	<0.01
	10	199	219	No	<0.01	10	206	234	No	<0.01
	15	202	219	No	<0.01	15	210	234	No	<0.01
	20	205	219	No	<0.01	20	214	234	No	<0.01
	25	208	219	No	<0.01	25	217	234	No	<0.01
	30	210	219	No	<0.01	30	219	234	No	<0.01
	35	212	219	No	0.01	35	222	234	No	<0.01
	40	214	219	No	0.06	40	224	234	No	<0.01
	45	216	219	No	0.17	45	226	234	No	<0.01
	50	218	219	No	0.38	50	229	234	No	0.04
	55	220	219	Yes	0.62	55	231	234	No	0.15
	60	222	219	Yes	0.83	60	233	234	No	0.37
	65	224	219	Yes	0.94	65	235	234	Yes	0.63
	70	226	219	Yes	0.99	70	238	234	Yes	0.92
	75	228	219	Yes	>0.99	75	241	234	Yes	0.99
	80	231	219	Yes	>0.99	80	244	234	Yes	>0.99
85	234	219	Yes	>0.99	85	247	234	Yes	>0.99	
90	238	219	Yes	>0.99	90	251	234	Yes	>0.99	
95	243	219	Yes	>0.99	95	258	234	Yes	>0.99	

TABLE 6. (CONTINUED)

Grade	ELA/Reading					Math				
	Start %ile	RIT Spring	Projected Proficiency			Start %ile	RIT Spring	Projected Proficiency		
			Cut Score	Level 4	Prob.			Cut Score	Level 4	Prob.
8	5	194	221	No	<0.01	5	199	234	No	<0.01
	10	200	221	No	<0.01	10	206	234	No	<0.01
	15	204	221	No	<0.01	15	211	234	No	<0.01
	20	207	221	No	<0.01	20	215	234	No	<0.01
	25	209	221	No	<0.01	25	218	234	No	<0.01
	30	212	221	No	<0.01	30	221	234	No	<0.01
	35	214	221	No	0.01	35	224	234	No	<0.01
	40	216	221	No	0.06	40	226	234	No	<0.01
	45	218	221	No	0.17	45	229	234	No	0.04
	50	220	221	No	0.38	50	231	234	No	0.15
	55	222	221	Yes	0.62	55	233	234	No	0.37
	60	224	221	Yes	0.83	60	236	234	Yes	0.75
	65	226	221	Yes	0.94	65	238	234	Yes	0.92
	70	228	221	Yes	0.99	70	241	234	Yes	0.99
	75	231	221	Yes	>0.99	75	244	234	Yes	>0.99
	80	233	221	Yes	>0.99	80	247	234	Yes	>0.99
	85	236	221	Yes	>0.99	85	251	234	Yes	>0.99
90	240	221	Yes	>0.99	90	255	234	Yes	>0.99	
95	246	221	Yes	>0.99	95	262	234	Yes	>0.99	

Note. %ile=percentile

TABLE 7. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING LEAP ELA LEVEL 4 (MASTERY) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING LEAP TESTS

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut Score	Level 4	Prob.			Cut Score	Level 4	Prob.
2	5	149	192	No	<0.01	5	160	192	No	<0.01
	10	155	192	No	0.01	10	165	192	No	<0.01
	15	159	192	No	0.01	15	169	192	No	<0.01
	20	162	192	No	0.04	20	172	192	No	<0.01
	25	164	192	No	0.06	25	174	192	No	0.01
	30	167	192	No	0.10	30	176	192	No	0.02
	35	169	192	No	0.15	35	178	192	No	0.05
	40	171	192	No	0.22	40	180	192	No	0.10
	45	173	192	No	0.26	45	182	192	No	0.18
	50	175	192	No	0.35	50	184	192	No	0.29
	55	177	192	No	0.45	55	186	192	No	0.36
	60	179	192	Yes	0.50	60	188	192	Yes	0.50
	65	181	192	Yes	0.60	65	190	192	Yes	0.64
	70	183	192	Yes	0.70	70	192	192	Yes	0.77
	75	185	192	Yes	0.74	75	194	192	Yes	0.86
	80	188	192	Yes	0.85	80	197	192	Yes	0.95
	85	191	192	Yes	0.90	85	200	192	Yes	0.99
90	195	192	Yes	0.96	90	203	192	Yes	>0.99	
95	200	192	Yes	0.99	95	209	192	Yes	>0.99	
3	5	162	202	No	<0.01	5	171	202	No	<0.01
	10	168	202	No	<0.01	10	176	202	No	<0.01
	15	172	202	No	0.01	15	180	202	No	<0.01
	20	175	202	No	0.02	20	183	202	No	<0.01
	25	178	202	No	0.05	25	185	202	No	0.01
	30	180	202	No	0.08	30	188	202	No	0.03
	35	182	202	No	0.10	35	190	202	No	0.04
	40	184	202	No	0.16	40	192	202	No	0.09
	45	186	202	No	0.24	45	194	202	No	0.17
	50	188	202	No	0.29	50	196	202	No	0.28
	55	190	202	No	0.39	55	198	202	No	0.42
	60	192	202	Yes	0.50	60	199	202	Yes	0.50
	65	194	202	Yes	0.56	65	201	202	Yes	0.65
	70	197	202	Yes	0.71	70	204	202	Yes	0.83
	75	199	202	Yes	0.80	75	206	202	Yes	0.87
	80	202	202	Yes	0.87	80	208	202	Yes	0.94
	85	205	202	Yes	0.94	85	211	202	Yes	0.98
90	209	202	Yes	0.97	90	215	202	Yes	>0.99	
95	214	202	Yes	0.99	95	221	202	Yes	>0.99	

TABLE 7. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 4	Prob.			Cut-Score	Level 4	Prob.
4	5	173	208	No	<0.01	5	179	208	No	<0.01
	10	178	208	No	<0.01	10	184	208	No	<0.01
	15	182	208	No	0.01	15	188	208	No	<0.01
	20	185	208	No	0.03	20	191	208	No	<0.01
	25	188	208	No	0.05	25	194	208	No	0.02
	30	190	208	No	0.09	30	196	208	No	0.04
	35	192	208	No	0.15	35	198	208	No	0.08
	40	194	208	No	0.18	40	200	208	No	0.16
	45	196	208	No	0.27	45	202	208	No	0.22
	50	198	208	No	0.38	50	204	208	No	0.35
	55	200	208	No	0.44	55	205	208	No	0.42
	60	202	208	Yes	0.56	60	207	208	Yes	0.58
	65	204	208	Yes	0.67	65	209	208	Yes	0.72
	70	206	208	Yes	0.77	70	211	208	Yes	0.84
	75	209	208	Yes	0.85	75	214	208	Yes	0.94
	80	211	208	Yes	0.91	80	216	208	Yes	0.98
	85	214	208	Yes	0.95	85	219	208	Yes	0.99
90	218	208	Yes	0.99	90	223	208	Yes	>0.99	
95	224	208	Yes	>0.99	95	228	208	Yes	>0.99	
5	5	181	214	No	<0.01	5	186	214	No	<0.01
	10	186	214	No	<0.01	10	191	214	No	<0.01
	15	190	214	No	0.01	15	195	214	No	<0.01
	20	193	214	No	0.03	20	197	214	No	<0.01
	25	195	214	No	0.05	25	200	214	No	0.02
	30	198	214	No	0.09	30	202	214	No	0.03
	35	200	214	No	0.15	35	204	214	No	0.06
	40	202	214	No	0.23	40	206	214	No	0.12
	45	204	214	No	0.28	45	208	214	No	0.22
	50	206	214	No	0.38	50	210	214	No	0.35
	55	208	214	Yes	0.50	55	212	214	Yes	0.50
	60	210	214	Yes	0.62	60	214	214	Yes	0.65
	65	212	214	Yes	0.67	65	215	214	Yes	0.72
	70	214	214	Yes	0.77	70	218	214	Yes	0.88
	75	216	214	Yes	0.85	75	220	214	Yes	0.91
	80	218	214	Yes	0.88	80	222	214	Yes	0.96
	85	221	214	Yes	0.95	85	225	214	Yes	0.99
90	225	214	Yes	0.98	90	229	214	Yes	>0.99	
95	231	214	Yes	>0.99	95	234	214	Yes	>0.99	

TABLE 7. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 4	Prob.			Cut-Score	Level 4	Prob.
6	5	186	217	No	<0.01	5	190	217	No	<0.01
	10	192	217	No	<0.01	10	196	217	No	<0.01
	15	196	217	No	0.02	15	199	217	No	<0.01
	20	198	217	No	0.03	20	202	217	No	0.01
	25	201	217	No	0.07	25	204	217	No	0.02
	30	203	217	No	0.12	30	207	217	No	0.06
	35	205	217	No	0.19	35	209	217	No	0.12
	40	207	217	No	0.23	40	211	217	No	0.22
	45	209	217	No	0.33	45	212	217	No	0.28
	50	211	217	No	0.44	50	214	217	No	0.42
	55	213	217	Yes	0.56	55	216	217	Yes	0.50
	60	215	217	Yes	0.61	60	218	217	Yes	0.65
	65	217	217	Yes	0.72	65	220	217	Yes	0.78
	70	219	217	Yes	0.81	70	222	217	Yes	0.88
	75	221	217	Yes	0.84	75	224	217	Yes	0.94
	80	224	217	Yes	0.93	80	226	217	Yes	0.97
	85	226	217	Yes	0.96	85	229	217	Yes	0.99
90	230	217	Yes	0.99	90	233	217	Yes	>0.99	
95	236	217	Yes	>0.99	95	238	217	Yes	>0.99	
7	5	189	219	No	<0.01	5	192	219	No	<0.01
	10	195	219	No	<0.01	10	198	219	No	<0.01
	15	199	219	No	0.02	15	201	219	No	<0.01
	20	202	219	No	0.04	20	204	219	No	0.01
	25	204	219	No	0.07	25	207	219	No	0.03
	30	206	219	No	0.12	30	209	219	No	0.06
	35	209	219	No	0.19	35	211	219	No	0.12
	40	211	219	No	0.28	40	213	219	No	0.17
	45	213	219	No	0.39	45	215	219	No	0.28
	50	214	219	No	0.44	50	217	219	No	0.42
	55	216	219	Yes	0.50	55	219	219	Yes	0.58
	60	218	219	Yes	0.61	60	221	219	Yes	0.72
	65	220	219	Yes	0.72	65	223	219	Yes	0.83
	70	222	219	Yes	0.81	70	225	219	Yes	0.91
	75	225	219	Yes	0.88	75	227	219	Yes	0.96
	80	227	219	Yes	0.93	80	230	219	Yes	0.99
	85	230	219	Yes	0.97	85	232	219	Yes	0.99
90	234	219	Yes	0.99	90	236	219	Yes	>0.99	
95	240	219	Yes	>0.99	95	242	219	Yes	>0.99	

TABLE 7. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 4	Prob.			Cut-Score	Level 4	Prob.
8	5	191	221	No	<0.01	5	194	221	No	<0.01
	10	197	221	No	0.01	10	199	221	No	<0.01
	15	201	221	No	0.03	15	203	221	No	<0.01
	20	204	221	No	0.06	20	206	221	No	0.01
	25	207	221	No	0.10	25	209	221	No	0.02
	30	209	221	No	0.16	30	211	221	No	0.05
	35	211	221	No	0.22	35	213	221	No	0.10
	40	213	221	No	0.26	40	215	221	No	0.18
	45	215	221	No	0.35	45	217	221	No	0.29
	50	217	221	No	0.45	50	219	221	No	0.43
	55	219	221	Yes	0.55	55	221	221	Yes	0.57
	60	221	221	Yes	0.60	60	223	221	Yes	0.71
	65	223	221	Yes	0.69	65	225	221	Yes	0.82
	70	225	221	Yes	0.78	70	227	221	Yes	0.90
	75	228	221	Yes	0.84	75	229	221	Yes	0.95
	80	230	221	Yes	0.90	80	232	221	Yes	0.98
	85	234	221	Yes	0.96	85	235	221	Yes	0.99
90	237	221	Yes	0.98	90	239	221	Yes	>0.99	
95	243	221	Yes	>0.99	95	244	221	Yes	>0.99	

Note. %ile=percentile

TABLE 8. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING LEAP MATH LEVEL 4 (MASTERY) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING LEAP TESTS

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut Score	Level 4	Prob.			Cut Score	Level 4	Prob.
2	5	155	189	No	0.01	5	165	189	No	<0.01
	10	160	189	No	0.04	10	170	189	No	<0.01
	15	163	189	No	0.10	15	173	189	No	0.02
	20	166	189	No	0.19	20	175	189	No	0.05
	25	168	189	No	0.24	25	178	189	No	0.15
	30	170	189	No	0.33	30	180	189	No	0.27
	35	172	189	No	0.44	35	181	189	No	0.34
	40	174	189	Yes	0.56	40	183	189	Yes	0.50
	45	175	189	Yes	0.56	45	185	189	Yes	0.66
	50	177	189	Yes	0.67	50	186	189	Yes	0.73
	55	179	189	Yes	0.76	55	188	189	Yes	0.85
	60	180	189	Yes	0.81	60	190	189	Yes	0.92
	65	182	189	Yes	0.88	65	191	189	Yes	0.95
	70	184	189	Yes	0.90	70	193	189	Yes	0.97
	75	186	189	Yes	0.94	75	195	189	Yes	0.99
	80	188	189	Yes	0.97	80	197	189	Yes	>0.99
	85	191	189	Yes	0.99	85	200	189	Yes	>0.99
90	194	189	Yes	>0.99	90	203	189	Yes	>0.99	
95	199	189	Yes	>0.99	95	208	189	Yes	>0.99	
3	5	169	201	No	<0.01	5	176	201	No	<0.01
	10	174	201	No	0.02	10	181	201	No	<0.01
	15	177	201	No	0.06	15	184	201	No	0.01
	20	179	201	No	0.11	20	187	201	No	0.03
	25	182	201	No	0.22	25	189	201	No	0.07
	30	184	201	No	0.27	30	191	201	No	0.14
	35	185	201	No	0.32	35	193	201	No	0.26
	40	187	201	No	0.44	40	195	201	No	0.42
	45	189	201	Yes	0.56	45	197	201	Yes	0.58
	50	190	201	Yes	0.62	50	198	201	Yes	0.66
	55	192	201	Yes	0.73	55	200	201	Yes	0.80
	60	194	201	Yes	0.83	60	202	201	Yes	0.90
	65	195	201	Yes	0.86	65	203	201	Yes	0.93
	70	197	201	Yes	0.92	70	205	201	Yes	0.97
	75	199	201	Yes	0.94	75	207	201	Yes	0.99
	80	201	201	Yes	0.97	80	209	201	Yes	>0.99
	85	204	201	Yes	0.99	85	212	201	Yes	>0.99
90	207	201	Yes	>0.99	90	215	201	Yes	>0.99	
95	212	201	Yes	>0.99	95	220	201	Yes	>0.99	

TABLE 8. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 4	Prob.			Cut-Score	Level 4	Prob.
4	5	179	211	No	<0.01	5	185	211	No	<0.01
	10	184	211	No	0.01	10	190	211	No	<0.01
	15	188	211	No	0.04	15	194	211	No	0.01
	20	190	211	No	0.08	20	197	211	No	0.03
	25	193	211	No	0.17	25	199	211	No	0.07
	30	195	211	No	0.27	30	201	211	No	0.14
	35	197	211	No	0.38	35	203	211	No	0.26
	40	198	211	No	0.44	40	205	211	No	0.42
	45	200	211	Yes	0.56	45	207	211	Yes	0.58
	50	202	211	Yes	0.68	50	209	211	Yes	0.74
	55	204	211	Yes	0.78	55	211	211	Yes	0.86
	60	205	211	Yes	0.78	60	212	211	Yes	0.90
	65	207	211	Yes	0.86	65	214	211	Yes	0.95
	70	209	211	Yes	0.92	70	216	211	Yes	0.98
	75	211	211	Yes	0.96	75	218	211	Yes	0.99
	80	214	211	Yes	0.99	80	221	211	Yes	>0.99
	85	216	211	Yes	0.99	85	223	211	Yes	>0.99
90	220	211	Yes	>0.99	90	227	211	Yes	>0.99	
95	225	211	Yes	>0.99	95	232	211	Yes	>0.99	
5	5	187	223	No	<0.01	5	192	223	No	<0.01
	10	193	223	No	<0.01	10	198	223	No	<0.01
	15	196	223	No	0.01	15	201	223	No	<0.01
	20	199	223	No	0.02	20	204	223	No	<0.01
	25	202	223	No	0.05	25	207	223	No	0.01
	30	204	223	No	0.09	30	209	223	No	0.02
	35	206	223	No	0.15	35	211	223	No	0.05
	40	208	223	No	0.23	40	213	223	No	0.11
	45	210	223	No	0.33	45	215	223	No	0.20
	50	211	223	No	0.38	50	217	223	No	0.34
	55	213	223	Yes	0.50	55	219	223	Yes	0.50
	60	215	223	Yes	0.62	60	221	223	Yes	0.66
	65	217	223	Yes	0.72	65	223	223	Yes	0.80
	70	219	223	Yes	0.81	70	225	223	Yes	0.89
	75	221	223	Yes	0.88	75	228	223	Yes	0.97
	80	224	223	Yes	0.95	80	230	223	Yes	0.99
	85	227	223	Yes	0.98	85	233	223	Yes	>0.99
90	230	223	Yes	0.99	90	237	223	Yes	>0.99	
95	236	223	Yes	>0.99	95	242	223	Yes	>0.99	

TABLE 8. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 4	Prob.			Cut-Score	Level 4	Prob.
6	5	192	228	No	<0.01	5	196	228	No	<0.01
	10	198	228	No	<0.01	10	202	228	No	<0.01
	15	202	228	No	<0.01	15	205	228	No	<0.01
	20	205	228	No	0.01	20	209	228	No	<0.01
	25	207	228	No	0.03	25	211	228	No	<0.01
	30	209	228	No	0.05	30	214	228	No	0.01
	35	212	228	No	0.12	35	216	228	No	0.03
	40	214	228	No	0.19	40	218	228	No	0.07
	45	216	228	No	0.28	45	220	228	No	0.15
	50	218	228	No	0.38	50	222	228	No	0.27
	55	220	228	Yes	0.50	55	224	228	No	0.42
	60	222	228	Yes	0.62	60	226	228	Yes	0.58
	65	224	228	Yes	0.72	65	228	228	Yes	0.73
	70	226	228	Yes	0.81	70	230	228	Yes	0.85
	75	228	228	Yes	0.88	75	233	228	Yes	0.95
	80	231	228	Yes	0.95	80	236	228	Yes	0.99
	85	234	228	Yes	0.97	85	239	228	Yes	>0.99
90	238	228	Yes	0.99	90	243	228	Yes	>0.99	
95	243	228	Yes	>0.99	95	248	228	Yes	>0.99	
7	5	195	234	No	<0.01	5	198	234	No	<0.01
	10	201	234	No	<0.01	10	204	234	No	<0.01
	15	205	234	No	<0.01	15	208	234	No	<0.01
	20	209	234	No	<0.01	20	212	234	No	<0.01
	25	211	234	No	<0.01	25	215	234	No	<0.01
	30	214	234	No	0.02	30	217	234	No	<0.01
	35	216	234	No	0.03	35	220	234	No	0.01
	40	218	234	No	0.06	40	222	234	No	0.02
	45	221	234	No	0.14	45	224	234	No	0.05
	50	223	234	No	0.22	50	226	234	No	0.10
	55	225	234	No	0.32	55	228	234	No	0.20
	60	227	234	No	0.44	60	230	234	No	0.34
	65	229	234	Yes	0.56	65	233	234	Yes	0.58
	70	231	234	Yes	0.68	70	235	234	Yes	0.74
	75	234	234	Yes	0.82	75	238	234	Yes	0.90
	80	237	234	Yes	0.92	80	240	234	Yes	0.95
	85	240	234	Yes	0.97	85	244	234	Yes	0.99
90	244	234	Yes	0.99	90	248	234	Yes	>0.99	
95	250	234	Yes	>0.99	95	254	234	Yes	>0.99	

TABLE 8. (CONTINUED)

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut-Score	Level 4	Prob.			Cut-Score	Level 4	Prob.
8	5	197	234	No	<0.01	5	199	234	No	<0.01
	10	203	234	No	<0.01	10	206	234	No	<0.01
	15	208	234	No	<0.01	15	210	234	No	<0.01
	20	211	234	No	0.01	20	214	234	No	<0.01
	25	214	234	No	0.02	25	217	234	No	<0.01
	30	217	234	No	0.06	30	220	234	No	0.01
	35	219	234	No	0.10	35	222	234	No	0.02
	40	222	234	No	0.18	40	225	234	No	0.08
	45	224	234	No	0.26	45	227	234	No	0.16
	50	226	234	No	0.35	50	229	234	No	0.28
	55	229	234	Yes	0.50	55	231	234	No	0.42
	60	231	234	Yes	0.60	60	234	234	Yes	0.65
	65	233	234	Yes	0.70	65	236	234	Yes	0.79
	70	236	234	Yes	0.78	70	239	234	Yes	0.92
	75	238	234	Yes	0.85	75	241	234	Yes	0.96
	80	241	234	Yes	0.92	80	245	234	Yes	>0.99
	85	245	234	Yes	0.98	85	248	234	Yes	>0.99
90	249	234	Yes	0.99	90	253	234	Yes	>0.99	
95	256	234	Yes	>0.99	95	259	234	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 2 to 8 that correspond to each LEAP performance level. By using matched score data from a sample of students from Louisiana, the study demonstrates that MAP scores can accurately predict whether a student could be proficient 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 LEAP 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 LEAP and MAP tests, as they are not parallel in content, scores from these two tests should not be directly compared. Second, while the sample data used in this study were collected from 43 schools in Louisiana, caution should be exercised when generalizing the results to test takers who differ significantly from this sample. Finally, caution should be exercised if the concorded scores are used for a subpopulation. NWEA will continue to gather information about LEAP performance from other schools in Louisiana 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 43 schools in Louisiana. The sample contained matched LEAP and MAP reading scores of 15,711 students in Grades 3 to 8 and matched LEAP and MAP math scores of 15,718 students in Grades 3 to 8 who completed both MAP and LEAP in the spring of 2016.

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 LEAP ELA scores range from 0.76 to 0.82, and the correlation coefficients between MAP and LEAP math scores range from 0.75 to 0.88. In general, all these correlations indicate a strong relationship between MAP and LEAP test scores.

TABLE A1. DESCRIPTIVE STATISTICS OF THE SAMPLE DATA

Subject	Grade	N	<i>r</i>	LEAP				MAP			
				Mean	SD	Min	Max	Mean	SD	Min	Max
ELA/ Reading	3	2756	0.76	737.34	36.05	650	850	195.79	16.05	141	236
	4	2756	0.79	742.94	32.10	650	850	202.60	16.34	144	247
	5	2605	0.75	741.59	30.58	650	840	207.75	16.18	148	243
	6	2632	0.73	743.17	27.72	662	850	211.27	15.60	144	260
	7	2461	0.75	743.39	33.90	650	850	214.71	15.87	147	256
	8	2501	0.76	747.04	31.21	650	850	218.20	15.92	145	258
Math	3	2743	0.84	749.72	35.04	650	850	199.35	13.72	139	239
	4	2772	0.85	746.00	33.69	653	850	207.82	15.37	134	255
	5	2635	0.85	739.75	32.09	650	850	215.44	17.03	142	272
	6	2656	0.84	737.00	27.95	650	850	219.01	16.30	142	275
	7	2468	0.84	737.17	27.01	650	850	223.75	18.42	151	270
	8	2444	0.83	739.24	33.51	650	850	227.53	17.22	149	267

Equipercntile Linking Procedure

The equipercntile procedure (e.g., Kolen & Brennan, 2004) was used to establish the concordance relationship between LEAP 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 percntile 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., LEAP). Its equipercntile 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 equipercntile equivalent of scores on LEAP on the scale of MAP, $P(x)$ is the percntile rank of a given score on Test X . G^{-1} is the inverse of the percntile rank function for scores on Test Y which indicates the scores on Test Y corresponding to a given percntile. Polynomial loglinear pre-smoothing was applied to reduce irregularities of the frequency distributions as well as equipercntile 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 pass (i.e., Level 4 or higher) on LEAP tests.

To calculate consistency rate of classification, sample students were designated “Below LEAP cut” or “At or above LEAP cut” based on their actual LEAP 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 “Mastery” on the basis of LEAP cut score and concordant MAP cut score. Students classified in the *true positive* (TP) category were those predicted to be Pass based on the MAP cut scores and were also classified as Pass based on the LEAP cut scores. Students classified in the *true negative* (TN) category were those predicted to be Not Pass based on the MAP cut scores and were also classified as Not Pass based on the LEAP cut scores. Students classified in the *false positive* (FP) category were those predicted to be Pass based on the MAP cut scores but were classified as Not Pass based on the LEAP cut scores. Students classified in the *false negative* (FN) category were those predicted to be Not Pass based on the MAP cut scores but were classified as Pass based on the LEAP 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 LEAP TO MAP CONCORDANCE

		LEAP Score	
		Below LEAP cut	At or Above LEAP cut
MAP Score	Below MAP cut	True Negative	False Negative
	At or Above MAP cut	False Positive	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 LEAP based on that student’s MAP scores in prior seasons (e.g. fall and winter). The probability of a student achieving Level 4 (Mastery) on LEAP, based on his/her fall or winter MAP score is given in Equation (A2):

$$Pr(\text{Achieving Level 4 in spring} | a \text{ RIT score of } x) = \Phi\left(\frac{x + g - c}{SD}\right) \quad (A2)$$

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 4 on the LEAP tests, based on his/her spring score s , it can be calculated by Equation (A3):

$$Pr(\text{Achieving Level 4 in spring} | a \text{ RIT score of } s \text{ in spring}) = \Phi\left(\frac{s - c}{SE}\right) \quad (A3)$$

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

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