Linking the Alaska AMP Assessments to NWEA MAP Tests

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Northwest Evaluation Association

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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 Alaska Measures of Progress (AMP) English Language Arts (ELA) and Mathematics assessments with those of the MAP Reading and MAP for Mathematics assessments. In this report, we present the 3rd through 10th grade cut scores on MAP reading and mathematics scales that correspond to the benchmarks on the AMP 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 3 (i.e., "Proficient") or higher performance designation on the AMP 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

AMP assessments include a series of computer-based achievement tests aligned to the Alaska English Language Arts and Mathematics Standards (adopted in 2012) in ELA and math for grades 3 to 10. 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 Alaska state standards. Unlike AMP tests, 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 NWEA 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 AMP Readiness Levels

Tables 1 to 4 report the AMP scaled scores associated with each of the four performance levels, as well as the estimated cut scores on the MAP tests associated with the AMP 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 AMP 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 on the AMP taken during that same testing season (see Table 2). Similarly, a 3rd grade student who obtained a MAP reading score of 215 in the fall testing season is likely to be at Level 4 on the AMP taken in the spring of 3rd grade (see Table 3).

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

Grade	AMP			
	Level 1	Level 2	Level 3	Level 4
3	620-685	686-699	**700**-726	727-780
4	620-685	686-699	**700**-728	729-780
5	620-679	680-699	**700**-736	737-780
6	620-666	667-699	**700**-735	736-780
7	620-663	664-699	**700**-728	729-780
8	620-661	662-699	**700**-735	736-780
9	620-667	668-699	**700**-731	732-780
10	620-665	666-699	**700**-735	736-780

Grade	MAP							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-194	1-39	195-204	40-65	**205**-217	66-89	218-350	90-99
4	100-200	1-35	201-209	36-59	**210**-224	60-89	225-350	90-99
5	100-201	1-24	202-214	25-57	**215**-234	58-93	235-350	94-99
6	100-199	1-13	200-221	14-65	**222**-240	66-95	241-350	96-99
7	100-204	1-18	205-226	19-70	**227**-243	71-95[*]	244-350	95[*]-99
8	100-207	1-21	208-230	22-74	**231**-247	75-95	248-350	96-99
9	100-211	1-26	212-231	27-72	**232**-246	73-93	247-350	94-99
10	100-213	1-33	214-235	34-79	**236**-253	80-96	254-350	97-99

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.

Grade	AMP			
	Level 1	Level 2	Level 3	Level 4
3	620-674	675-699	**700**-725	726-780
4	620-670	671-699	**700**-731	732-780
5	620-670	671-699	**700**-740	741-780
6	620-672	673-699	**700**-730	731-780
7	620-667	668-699	**700**-746	747-780
8	620-664	665-699	**700**-753	754-780
9	620-680	681-699	**700**-739	740-780
10	620-677	678-699	**700**-736	737-780

Grade	MAP							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-185	1-9	186-203	10-50	**204**-215	51-80	216-350	81-99
4	100-192	1-8	193-214	9-52	**215**-231	53-88	232-350	89-99
5	100-199	1-8	200-226	9-62	**227**-248	63-95[*]	249-350	95[*]-99
6	100-206	1-12	207-231	13-64	**232**-247	65-90	248-350	91-99
7	100-209	1-14	210-237	15-69	**238**-257	70-94	258-350	95-99
8	100-210	1-14	211-244	15-76	**245**-269	77-97	270-350	98-99
9	100-228	1-40	229-247	41-76	**248**-268	77-96[*]	269-350	96[*]-99
10	100-239	1-63	240-257	64-88	**258**-269	89-96[*]	270-350	96[*]-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.

Grade	AMP			
	Level 1	Level 2	Level 3	Level 4
3	620-685	686-699	**700**-726	727-780
4	620-685	686-699	**700**-728	729-780
5	620-679	680-699	**700**-736	737-780
6	620-666	667-699	**700**-735	736-780
7	620-663	664-699	**700**-728	729-780
8	620-661	662-699	**700**-735	736-780
9	620-667	668-699	**700**-731	732-780
10	620-665	666-699	**700**-735	736-780

Grade	MAP FALL							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-183	1-38	184-195	39-67	**196**-210	68-91	211-350	92-99
4	100-191	1-33	192-202	34-60	**203**-219	61-91	220-350	92-99
5	100-193	1-21	194-208	22-57	**209**-232	58-96*	233-350	96*-99
6	100-192	1-10	193-217	11-66	**218**-238	67-96	239-350	97-99
7	100-198	1-14	199-223	15-72	**224**-241	73-96*	242-350	96*-99
8	100-202	1-17	203-228	18-76	**229**-245	77-96*	246-350	96*-99
9	100-208	1-22	209-229	23-72	**230**-244	73-93	245-350	94-99
10	100-211	1-29	212-233	30-78	**234**-251	79-96	252-350	97-99

Grade	MAP WINTER							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-191	1-39	192-201	40-65	**202**-215	66-90	216-350	91-99
4	100-197	1-34	198-207	35-60	**208**-223	61-90	224-350	91-99
5	100-198	1-21	199-212	22-57	**213**-233	58-94	234-350	95-99
6	100-196	1-11	197-220	12-66	**221**-239	67-95	240-350	96-99
7	100-202	1-16	203-225	17-71	**226**-242	72-95	243-350	96-99
8	100-205	1-18	206-229	19-75	**230**-246	76-96*	247-350	96*-99
9	100-210	1-24	211-230	25-72	**231**-245	73-94*	246-350	94*-99
10	100-212	1-30	213-234	31-79	**235**-252	80-97*	253-350	97*-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 4. CONCORDANCE OF PERFORMANCE LEVEL SCORE RANGES BETWEEN AMP AND MAP MATH (WHEN MAP IS TAKEN IN FALL OR WINTER PRIOR TO SPRING AMP TESTS)

Grade	AMP			
	Level 1	Level 2	Level 3	Level 4
3	620-674	675-699	**700**-725	726-780
4	620-670	671-699	**700**-731	732-780
5	620-670	671-699	**700**-740	741-780
6	620-672	673-699	**700**-730	731-780
7	620-667	668-699	**700**-746	747-780
8	620-664	665-699	**700**-753	754-780
9	620-680	681-699	**700**-739	740-780
10	620-677	678-699	**700**-736	737-780

Grade	MAP FALL							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-171	1-7	172-190	8-50	**191**-203	51-84	204-350	85-99
4	100-180	1-5	181-202	6-51	**203**-220	52-91	221-350	92-99
5	100-189	1-6	190-216	7-63	**217**-238	64-96	239-350	97-99
6	100-198	1-10	199-223	11-64	**224**-240	65-92	241-350	93-99
7	100-203	1-12	204-231	13-70	**232**-251	71-95	252-350	96-99
8	100-205	1-12	206-240	13-78	**241**-265	79-98[*]	266-350	98[*]-99
9	100-225	1-39	226-244	40-78	**245**-266	79-97[*]	267-350	97[*]-99
10	100-237	1-64	238-255	65-90	**256**-267	91-97[*]	268-350	97[*]-99

Grade	MAP WINTER							
	Level 1		Level 2		Level 3		Level 4	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
3	100-179	1-7	180-198	8-50	**199**-210	51-82	211-350	83-99
4	100-187	1-6	188-209	7-52	**210**-226	53-89	227-350	90-99
5	100-195	1-7	196-222	8-63	**223**-244	64-96[*]	245-350	96[*]-99
6	100-203	1-12	204-228	13-65	**229**-244	66-91	245-350	92-99
7	100-207	1-13	208-235	14-70	**236**-255	71-95	256-350	96-99
8	100-208	1-12	209-242	13-76	**243**-267	77-98[*]	268-350	98[*]-99
9	100-227	1-39	228-246	40-77	**247**-266	78-96	267-350	97-99
10	100-238	1-63	239-256	64-89	**257**-268	90-96	269-350	97-99

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 AMP 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 AMP and MAP scores. The results in Table 5 demonstrate that on average, MAP reading scores can consistently classify students' proficiency (Level 3 or higher) status on AMP ELA test approximately 87% of the time and MAP math scores can consistently classify students on AMP math test approximately 89% 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 AMP tests.

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

Grade	ELA/Reading			Math		
	Consistency Rate	False		Consistency Rate	False	
		Positives	Negatives		Positives	Negatives
3	0.87	0.06	0.07	0.86	0.07	0.07
4	0.87	0.07	0.06	0.87	0.07	0.06
5	0.86	0.08	0.06	0.89	0.06	0.05
6	0.86	0.07	0.07	0.90	0.05	0.05
7	0.85	0.08	0.07	0.89	0.05	0.06
8	0.87	0.07	0.06	0.90	0.04	0.06
9	0.88	0.06	0.06	0.89	0.06	0.05
10	0.88	0.05	0.07	0.91	0.03	0.06

Proficiency Projection

Proficiency projection tells how likely a student is classified as "proficient" on AMP 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 AMP tests are presented in Tables 6 to 8. These tables estimate the probability of scoring at Level 3 or above on AMP in the spring and the prior fall or winter testing season. For example, if a 3rd grade student obtained a MAP math score of 195 in the fall, the probability of obtaining a Level 3 or higher AMP score in the spring of 3rd grade is 73%. 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 AMP tests.

TABLE 6. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING AMP LEVEL 3 (PROFICIENT) 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 3	Prob.			Cut Score	Level 3	Prob.
3	5	174	205	No	<0.01	5	181	204	No	<0.01
	10	179	205	No	<0.01	10	186	204	No	<0.01
	15	183	205	No	<0.01	15	189	204	No	<0.01
	20	186	205	No	<0.01	20	192	204	No	<0.01
	25	188	205	No	<0.01	25	194	204	No	<0.01
	30	191	205	No	<0.01	30	196	204	No	<0.01
	35	193	205	No	<0.01	35	198	204	No	0.02
	40	195	205	No	<0.01	40	200	204	No	0.08
	45	197	205	No	0.01	45	202	204	No	0.25
	50	199	205	No	0.03	50	203	204	No	0.37
	55	201	205	No	0.11	55	205	204	Yes	0.63
	60	202	205	No	0.17	60	207	204	Yes	0.85
	65	204	205	No	0.38	65	209	204	Yes	0.96
	70	207	205	Yes	0.73	70	211	204	Yes	0.99
	75	209	205	Yes	0.89	75	213	204	Yes	>0.99
	80	211	205	Yes	0.97	80	215	204	Yes	>0.99
	85	214	205	Yes	>0.99	85	218	204	Yes	>0.99
	90	218	205	Yes	>0.99	90	221	204	Yes	>0.99
	95	223	205	Yes	>0.99	95	226	204	Yes	>0.99
4	5	181	210	No	<0.01	5	189	215	No	<0.01
	10	187	210	No	<0.01	10	194	215	No	<0.01
	15	190	210	No	<0.01	15	198	215	No	<0.01
	20	193	210	No	<0.01	20	201	215	No	<0.01
	25	196	210	No	<0.01	25	203	215	No	<0.01
	30	198	210	No	<0.01	30	206	215	No	<0.01
	35	200	210	No	<0.01	35	208	215	No	0.01
	40	202	210	No	0.01	40	210	215	No	0.04
	45	204	210	No	0.03	45	212	215	No	0.15
	50	206	210	No	0.11	50	213	215	No	0.25
	55	208	210	No	0.27	55	215	215	Yes	0.50
	60	210	210	Yes	0.50	60	217	215	Yes	0.75
	65	212	210	Yes	0.73	65	219	215	Yes	0.92
	70	214	210	Yes	0.89	70	221	215	Yes	0.98
	75	216	210	Yes	0.97	75	224	215	Yes	>0.99
	80	218	210	Yes	0.99	80	226	215	Yes	>0.99
	85	221	210	Yes	>0.99	85	229	215	Yes	>0.99
	90	225	210	Yes	>0.99	90	233	215	Yes	>0.99
	95	230	210	Yes	>0.99	95	238	215	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 3	Prob.			Cut Score	Level 3	Prob.
5	5	188	215	No	<0.01	5	195	227	No	<0.01
	10	193	215	No	<0.01	10	201	227	No	<0.01
	15	197	215	No	<0.01	15	205	227	No	<0.01
	20	199	215	No	<0.01	20	208	227	No	<0.01
	25	202	215	No	<0.01	25	210	227	No	<0.01
	30	204	215	No	<0.01	30	213	227	No	<0.01
	35	206	215	No	<0.01	35	215	227	No	<0.01
	40	208	215	No	0.01	40	217	227	No	<0.01
	45	210	215	No	0.06	45	219	227	No	<0.01
	50	212	215	No	0.17	50	221	227	No	0.02
	55	214	215	No	0.38	55	223	227	No	0.08
	60	216	215	Yes	0.62	60	225	227	No	0.25
	65	217	215	Yes	0.73	65	228	227	Yes	0.63
	70	220	215	Yes	0.94	70	230	227	Yes	0.85
	75	222	215	Yes	0.99	75	232	227	Yes	0.96
	80	224	215	Yes	>0.99	80	235	227	Yes	>0.99
	85	227	215	Yes	>0.99	85	238	227	Yes	>0.99
	90	231	215	Yes	>0.99	90	242	227	Yes	>0.99
	95	236	215	Yes	>0.99	95	248	227	Yes	>0.99
6	5	192	222	No	<0.01	5	198	232	No	<0.01
	10	197	222	No	<0.01	10	204	232	No	<0.01
	15	201	222	No	<0.01	15	208	232	No	<0.01
	20	203	222	No	<0.01	20	211	232	No	<0.01
	25	206	222	No	<0.01	25	214	232	No	<0.01
	30	208	222	No	<0.01	30	217	232	No	<0.01
	35	210	222	No	<0.01	35	219	232	No	<0.01
	40	212	222	No	<0.01	40	221	232	No	<0.01
	45	214	222	No	0.01	45	223	232	No	<0.01
	50	216	222	No	0.03	50	225	232	No	0.01
	55	218	222	No	0.11	55	227	232	No	0.04
	60	219	222	No	0.17	60	230	232	No	0.25
	65	221	222	No	0.38	65	232	232	Yes	0.50
	70	223	222	Yes	0.62	70	234	232	Yes	0.75
	75	226	222	Yes	0.89	75	237	232	Yes	0.96
	80	228	222	Yes	0.97	80	239	232	Yes	0.99
	85	231	222	Yes	>0.99	85	243	232	Yes	>0.99
	90	235	222	Yes	>0.99	90	247	232	Yes	>0.99
	95	240	222	Yes	>0.99	95	253	232	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 3	Prob.			Cut Score	Level 3	Prob.
7	5	193	227	No	<0.01	5	199	238	No	<0.01
	10	199	227	No	<0.01	10	206	238	No	<0.01
	15	202	227	No	<0.01	15	210	238	No	<0.01
	20	205	227	No	<0.01	20	214	238	No	<0.01
	25	208	227	No	<0.01	25	217	238	No	<0.01
	30	210	227	No	<0.01	30	219	238	No	<0.01
	35	212	227	No	<0.01	35	222	238	No	<0.01
	40	214	227	No	<0.01	40	224	238	No	<0.01
	45	216	227	No	<0.01	45	226	238	No	<0.01
	50	218	227	No	<0.01	50	229	238	No	<0.01
	55	220	227	No	0.01	55	231	238	No	0.01
	60	222	227	No	0.06	60	233	238	No	0.04
	65	224	227	No	0.17	65	235	238	No	0.15
	70	226	227	No	0.38	70	238	238	Yes	0.50
	75	228	227	Yes	0.62	75	241	238	Yes	0.85
	80	231	227	Yes	0.89	80	244	238	Yes	0.98
	85	234	227	Yes	0.99	85	247	238	Yes	>0.99
	90	238	227	Yes	>0.99	90	251	238	Yes	>0.99
	95	243	227	Yes	>0.99	95	258	238	Yes	>0.99
8	5	194	231	No	<0.01	5	199	245	No	<0.01
	10	200	231	No	<0.01	10	206	245	No	<0.01
	15	204	231	No	<0.01	15	211	245	No	<0.01
	20	207	231	No	<0.01	20	215	245	No	<0.01
	25	209	231	No	<0.01	25	218	245	No	<0.01
	30	212	231	No	<0.01	30	221	245	No	<0.01
	35	214	231	No	<0.01	35	224	245	No	<0.01
	40	216	231	No	<0.01	40	226	245	No	<0.01
	45	218	231	No	<0.01	45	229	245	No	<0.01
	50	220	231	No	<0.01	50	231	245	No	<0.01
	55	222	231	No	<0.01	55	233	245	No	<0.01
	60	224	231	No	0.01	60	236	245	No	<0.01
	65	226	231	No	0.06	65	238	245	No	0.01
	70	228	231	No	0.17	70	241	245	No	0.08
	75	231	231	Yes	0.50	75	244	245	No	0.37
	80	233	231	Yes	0.73	80	247	245	Yes	0.75
	85	236	231	Yes	0.94	85	251	245	Yes	0.98
	90	240	231	Yes	>0.99	90	255	245	Yes	>0.99
	95	246	231	Yes	>0.99	95	262	245	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 3	Prob.			Cut Score	Level 3	Prob.
9	5	195	232	No	<0.01	5	201	248	No	<0.01
	10	201	232	No	<0.01	10	208	248	No	<0.01
	15	205	232	No	<0.01	15	213	248	No	<0.01
	20	208	232	No	<0.01	20	217	248	No	<0.01
	25	211	232	No	<0.01	25	220	248	No	<0.01
	30	213	232	No	<0.01	30	223	248	No	<0.01
	35	216	232	No	<0.01	35	226	248	No	<0.01
	40	218	232	No	<0.01	40	228	248	No	<0.01
	45	220	232	No	<0.01	45	231	248	No	<0.01
	50	222	232	No	<0.01	50	233	248	No	<0.01
	55	224	232	No	0.01	55	236	248	No	<0.01
	60	226	232	No	0.03	60	238	248	No	<0.01
	65	228	232	No	0.11	65	241	248	No	0.01
	70	230	232	No	0.27	70	244	248	No	0.08
	75	233	232	Yes	0.62	75	247	248	No	0.37
	80	236	232	Yes	0.89	80	250	248	Yes	0.75
	85	239	232	Yes	0.99	85	254	248	Yes	0.98
	90	243	232	Yes	>0.99	90	258	248	Yes	>0.99
	95	249	232	Yes	>0.99	95	266	248	Yes	>0.99
10	5	192	236	No	<0.01	5	198	258	No	<0.01
	10	199	236	No	<0.01	10	206	258	No	<0.01
	15	203	236	No	<0.01	15	211	258	No	<0.01
	20	206	236	No	<0.01	20	215	258	No	<0.01
	25	209	236	No	<0.01	25	218	258	No	<0.01
	30	212	236	No	<0.01	30	221	258	No	<0.01
	35	214	236	No	<0.01	35	224	258	No	<0.01
	40	217	236	No	<0.01	40	227	258	No	<0.01
	45	219	236	No	<0.01	45	230	258	No	<0.01
	50	221	236	No	<0.01	50	232	258	No	<0.01
	55	223	236	No	<0.01	55	235	258	No	<0.01
	60	226	236	No	<0.01	60	238	258	No	<0.01
	65	228	236	No	0.01	65	240	258	No	<0.01
	70	230	236	No	0.03	70	243	258	No	<0.01
	75	233	236	No	0.17	75	246	258	No	<0.01
	80	236	236	Yes	0.50	80	250	258	No	<0.01
	85	239	236	Yes	0.83	85	254	258	No	0.08
	90	244	236	Yes	0.99	90	259	258	Yes	0.63
	95	250	236	Yes	>0.99	95	267	258	Yes	>0.99

Note. %ile=percentile

TABLE 7. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING AMP ELA LEVEL 3 (PROFICIENT) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING AMP 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	205	No	<0.01	5	171	205	No	<0.01
	10	168	205	No	<0.01	10	176	205	No	<0.01
	15	172	205	No	<0.01	15	180	205	No	<0.01
	20	175	205	No	0.01	20	183	205	No	<0.01
	25	178	205	No	0.02	25	185	205	No	<0.01
	30	180	205	No	0.03	30	188	205	No	0.01
	35	182	205	No	0.05	35	190	205	No	0.01
	40	184	205	No	0.08	40	192	205	No	0.03
	45	186	205	No	0.13	45	194	205	No	0.06
	50	188	205	No	0.16	50	196	205	No	0.13
	55	190	205	No	0.24	55	198	205	No	0.22
	60	192	205	No	0.34	60	199	205	No	0.28
	65	194	205	No	0.39	65	201	205	No	0.42
	70	197	205	Yes	0.56	70	204	205	Yes	0.65
	75	199	205	Yes	0.66	75	206	205	Yes	0.72
	80	202	205	Yes	0.76	80	208	205	Yes	0.83
	85	205	205	Yes	0.87	85	211	205	Yes	0.94
	90	209	205	Yes	0.94	90	215	205	Yes	0.99
	95	214	205	Yes	0.98	95	221	205	Yes	>0.99
4	5	173	210	No	<0.01	5	179	210	No	<0.01
	10	178	210	No	<0.01	10	184	210	No	<0.01
	15	182	210	No	<0.01	15	188	210	No	<0.01
	20	185	210	No	0.01	20	191	210	No	<0.01
	25	188	210	No	0.03	25	194	210	No	0.01
	30	190	210	No	0.05	30	196	210	No	0.02
	35	192	210	No	0.09	35	198	210	No	0.04
	40	194	210	No	0.12	40	200	210	No	0.08
	45	196	210	No	0.18	45	202	210	No	0.12
	50	198	210	No	0.27	50	204	210	No	0.22
	55	200	210	No	0.33	55	205	210	No	0.28
	60	202	210	No	0.44	60	207	210	No	0.42
	65	204	210	Yes	0.56	65	209	210	Yes	0.58
	70	206	210	Yes	0.67	70	211	210	Yes	0.72
	75	209	210	Yes	0.77	75	214	210	Yes	0.88
	80	211	210	Yes	0.85	80	216	210	Yes	0.94
	85	214	210	Yes	0.91	85	219	210	Yes	0.98
	90	218	210	Yes	0.97	90	223	210	Yes	>0.99
	95	224	210	Yes	>0.99	95	228	210	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	215	No	<0.01	5	186	215	No	<0.01
	10	186	215	No	<0.01	10	191	215	No	<0.01
	15	190	215	No	0.01	15	195	215	No	<0.01
	20	193	215	No	0.02	20	197	215	No	<0.01
	25	195	215	No	0.04	25	200	215	No	0.01
	30	198	215	No	0.07	30	202	215	No	0.02
	35	200	215	No	0.12	35	204	215	No	0.04
	40	202	215	No	0.19	40	206	215	No	0.09
	45	204	215	No	0.23	45	208	215	No	0.17
	50	206	215	No	0.33	50	210	215	No	0.28
	55	208	215	No	0.44	55	212	215	No	0.42
	60	210	215	Yes	0.56	60	214	215	Yes	0.58
	65	212	215	Yes	0.62	65	215	215	Yes	0.65
	70	214	215	Yes	0.72	70	218	215	Yes	0.83
	75	216	215	Yes	0.81	75	220	215	Yes	0.88
	80	218	215	Yes	0.85	80	222	215	Yes	0.94
	85	221	215	Yes	0.93	85	225	215	Yes	0.98
	90	225	215	Yes	0.97	90	229	215	Yes	>0.99
	95	231	215	Yes	>0.99	95	234	215	Yes	>0.99
6	5	186	222	No	<0.01	5	190	222	No	<0.01
	10	192	222	No	<0.01	10	196	222	No	<0.01
	15	196	222	No	<0.01	15	199	222	No	<0.01
	20	198	222	No	<0.01	20	202	222	No	<0.01
	25	201	222	No	0.01	25	204	222	No	<0.01
	30	203	222	No	0.03	30	207	222	No	0.01
	35	205	222	No	0.06	35	209	222	No	0.02
	40	207	222	No	0.07	40	211	222	No	0.04
	45	209	222	No	0.12	45	212	222	No	0.06
	50	211	222	No	0.19	50	214	222	No	0.12
	55	213	222	No	0.28	55	216	222	No	0.17
	60	215	222	No	0.33	60	218	222	No	0.28
	65	217	222	No	0.44	65	220	222	No	0.42
	70	219	222	Yes	0.56	70	222	222	Yes	0.58
	75	221	222	Yes	0.61	75	224	222	Yes	0.72
	80	224	222	Yes	0.77	80	226	222	Yes	0.83
	85	226	222	Yes	0.84	85	229	222	Yes	0.94
	90	230	222	Yes	0.93	90	233	222	Yes	0.99
	95	236	222	Yes	0.99	95	238	222	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	227	No	<0.01	5	192	227	No	<0.01
	10	195	227	No	<0.01	10	198	227	No	<0.01
	15	199	227	No	<0.01	15	201	227	No	<0.01
	20	202	227	No	<0.01	20	204	227	No	<0.01
	25	204	227	No	<0.01	25	207	227	No	<0.01
	30	206	227	No	0.01	30	209	227	No	<0.01
	35	209	227	No	0.02	35	211	227	No	<0.01
	40	211	227	No	0.04	40	213	227	No	0.01
	45	213	227	No	0.07	45	215	227	No	0.02
	50	214	227	No	0.10	50	217	227	No	0.04
	55	216	227	No	0.12	55	219	227	No	0.09
	60	218	227	No	0.19	60	221	227	No	0.17
	65	220	227	No	0.28	65	223	227	No	0.28
	70	222	227	No	0.39	70	225	227	No	0.42
	75	225	227	Yes	0.50	75	227	227	Yes	0.58
	80	227	227	Yes	0.61	80	230	227	Yes	0.78
	85	230	227	Yes	0.77	85	232	227	Yes	0.83
	90	234	227	Yes	0.88	90	236	227	Yes	0.96
	95	240	227	Yes	0.98	95	242	227	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

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.
9	5	194	232	No	<0.01	5	196	232	No	<0.01
	10	200	232	No	<0.01	10	201	232	No	<0.01
	15	204	232	No	<0.01	15	205	232	No	<0.01
	20	207	232	No	<0.01	20	208	232	No	<0.01
	25	210	232	No	0.01	25	211	232	No	<0.01
	30	212	232	No	0.02	30	213	232	No	<0.01
	35	214	232	No	0.03	35	215	232	No	<0.01
	40	216	232	No	0.05	40	217	232	No	0.01
	45	218	232	No	0.08	45	219	232	No	0.02
	50	220	232	No	0.12	50	221	232	No	0.04
	55	222	232	No	0.18	55	223	232	No	0.08
	60	224	232	No	0.24	60	225	232	No	0.14
	65	226	232	No	0.32	65	227	232	No	0.24
	70	228	232	No	0.41	70	229	232	No	0.36
	75	231	232	Yes	0.55	75	232	232	Yes	0.57
	80	233	232	Yes	0.64	80	234	232	Yes	0.70
	85	236	232	Yes	0.76	85	237	232	Yes	0.86
	90	240	232	Yes	0.88	90	241	232	Yes	0.96
	95	246	232	Yes	0.97	95	247	232	Yes	>0.99
10	5	193	236	No	<0.01	5	194	236	No	<0.01
	10	199	236	No	<0.01	10	200	236	No	<0.01
	15	203	236	No	<0.01	15	204	236	No	<0.01
	20	206	236	No	<0.01	20	207	236	No	<0.01
	25	209	236	No	<0.01	25	210	236	No	<0.01
	30	212	236	No	0.01	30	212	236	No	<0.01
	35	214	236	No	0.02	35	215	236	No	<0.01
	40	216	236	No	0.03	40	217	236	No	<0.01
	45	218	236	No	0.04	45	219	236	No	<0.01
	50	220	236	No	0.07	50	221	236	No	0.01
	55	223	236	No	0.12	55	223	236	No	0.02
	60	225	236	No	0.17	60	225	236	No	0.05
	65	227	236	No	0.23	65	227	236	No	0.09
	70	229	236	No	0.30	70	230	236	No	0.20
	75	232	236	No	0.42	75	232	236	No	0.31
	80	235	236	Yes	0.54	80	235	236	Yes	0.50
	85	238	236	Yes	0.66	85	238	236	Yes	0.69
	90	242	236	Yes	0.80	90	242	236	Yes	0.88
	95	248	236	Yes	0.93	95	248	236	Yes	0.99

Note. %ile=percentile

TABLE 8. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING AMP MATH LEVEL 3 (PROFICIENT) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING AMP 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	204	No	<0.01	5	176	204	No	<0.01
	10	174	204	No	0.01	10	181	204	No	<0.01
	15	177	204	No	0.02	15	184	204	No	<0.01
	20	179	204	No	0.04	20	187	204	No	0.01
	25	182	204	No	0.11	25	189	204	No	0.02
	30	184	204	No	0.14	30	191	204	No	0.05
	35	185	204	No	0.17	35	193	204	No	0.10
	40	187	204	No	0.27	40	195	204	No	0.20
	45	189	204	No	0.38	45	197	204	No	0.34
	50	190	204	No	0.44	50	198	204	No	0.42
	55	192	204	Yes	0.56	55	200	204	Yes	0.58
	60	194	204	Yes	0.68	60	202	204	Yes	0.74
	65	195	204	Yes	0.73	65	203	204	Yes	0.80
	70	197	204	Yes	0.83	70	205	204	Yes	0.90
	75	199	204	Yes	0.86	75	207	204	Yes	0.95
	80	201	204	Yes	0.92	80	209	204	Yes	0.98
	85	204	204	Yes	0.97	85	212	204	Yes	>0.99
	90	207	204	Yes	0.99	90	215	204	Yes	>0.99
	95	212	204	Yes	>0.99	95	220	204	Yes	>0.99
4	5	179	215	No	<0.01	5	185	215	No	<0.01
	10	184	215	No	<0.01	10	190	215	No	<0.01
	15	188	215	No	0.01	15	194	215	No	<0.01
	20	190	215	No	0.02	20	197	215	No	<0.01
	25	193	215	No	0.06	25	199	215	No	0.01
	30	195	215	No	0.11	30	201	215	No	0.03
	35	197	215	No	0.17	35	203	215	No	0.07
	40	198	215	No	0.22	40	205	215	No	0.14
	45	200	215	No	0.32	45	207	215	No	0.26
	50	202	215	No	0.44	50	209	215	No	0.42
	55	204	215	Yes	0.56	55	211	215	Yes	0.58
	60	205	215	Yes	0.56	60	212	215	Yes	0.66
	65	207	215	Yes	0.68	65	214	215	Yes	0.80
	70	209	215	Yes	0.78	70	216	215	Yes	0.90
	75	211	215	Yes	0.86	75	218	215	Yes	0.95
	80	214	215	Yes	0.94	80	221	215	Yes	0.99
	85	216	215	Yes	0.97	85	223	215	Yes	>0.99
	90	220	215	Yes	0.99	90	227	215	Yes	>0.99
	95	225	215	Yes	>0.99	95	232	215	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	227	No	<0.01	5	192	227	No	<0.01
	10	193	227	No	<0.01	10	198	227	No	<0.01
	15	196	227	No	<0.01	15	201	227	No	<0.01
	20	199	227	No	<0.01	20	204	227	No	<0.01
	25	202	227	No	0.01	25	207	227	No	<0.01
	30	204	227	No	0.03	30	209	227	No	<0.01
	35	206	227	No	0.05	35	211	227	No	0.01
	40	208	227	No	0.09	40	213	227	No	0.02
	45	210	227	No	0.15	45	215	227	No	0.05
	50	211	227	No	0.19	50	217	227	No	0.11
	55	213	227	No	0.28	55	219	227	No	0.20
	60	215	227	No	0.38	60	221	227	No	0.34
	65	217	227	Yes	0.50	65	223	227	Yes	0.50
	70	219	227	Yes	0.62	70	225	227	Yes	0.66
	75	221	227	Yes	0.72	75	228	227	Yes	0.85
	80	224	227	Yes	0.85	80	230	227	Yes	0.93
	85	227	227	Yes	0.93	85	233	227	Yes	0.98
	90	230	227	Yes	0.97	90	237	227	Yes	>0.99
	95	236	227	Yes	>0.99	95	242	227	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	238	No	<0.01	5	198	238	No	<0.01
	10	201	238	No	<0.01	10	204	238	No	<0.01
	15	205	238	No	<0.01	15	208	238	No	<0.01
	20	209	238	No	<0.01	20	212	238	No	<0.01
	25	211	238	No	<0.01	25	215	238	No	<0.01
	30	214	238	No	<0.01	30	217	238	No	<0.01
	35	216	238	No	0.01	35	220	238	No	<0.01
	40	218	238	No	0.02	40	222	238	No	<0.01
	45	221	238	No	0.05	45	224	238	No	0.01
	50	223	238	No	0.08	50	226	238	No	0.02
	55	225	238	No	0.14	55	228	238	No	0.05
	60	227	238	No	0.22	60	230	238	No	0.10
	65	229	238	No	0.32	65	233	238	No	0.26
	70	231	238	No	0.44	70	235	238	No	0.42
	75	234	238	Yes	0.62	75	238	238	Yes	0.66
	80	237	238	Yes	0.78	80	240	238	Yes	0.80
	85	240	238	Yes	0.89	85	244	238	Yes	0.95
	90	244	238	Yes	0.97	90	248	238	Yes	0.99
	95	250	238	Yes	>0.99	95	254	238	Yes	>0.99
8	5	197	245	No	<0.01	5	199	245	No	<0.01
	10	203	245	No	<0.01	10	206	245	No	<0.01
	15	208	245	No	<0.01	15	210	245	No	<0.01
	20	211	245	No	<0.01	20	214	245	No	<0.01
	25	214	245	No	<0.01	25	217	245	No	<0.01
	30	217	245	No	<0.01	30	220	245	No	<0.01
	35	219	245	No	<0.01	35	222	245	No	<0.01
	40	222	245	No	0.01	40	225	245	No	<0.01
	45	224	245	No	0.02	45	227	245	No	<0.01
	50	226	245	No	0.03	50	229	245	No	<0.01
	55	229	245	No	0.08	55	231	245	No	0.01
	60	231	245	No	0.12	60	234	245	No	0.04
	65	233	245	No	0.18	65	236	245	No	0.08
	70	236	245	No	0.26	70	239	245	No	0.21
	75	238	245	No	0.35	75	241	245	No	0.35
	80	241	245	Yes	0.50	80	245	245	Yes	0.65
	85	245	245	Yes	0.70	85	248	245	Yes	0.84
	90	249	245	Yes	0.85	90	253	245	Yes	0.98
	95	256	245	Yes	0.98	95	259	245	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.
9	5	200	248	No	<0.01	5	202	248	No	<0.01
	10	207	248	No	<0.01	10	208	248	No	<0.01
	15	211	248	No	<0.01	15	213	248	No	<0.01
	20	215	248	No	<0.01	20	217	248	No	<0.01
	25	218	248	No	<0.01	25	220	248	No	<0.01
	30	221	248	No	<0.01	30	222	248	No	<0.01
	35	223	248	No	<0.01	35	225	248	No	<0.01
	40	226	248	No	0.01	40	228	248	No	<0.01
	45	228	248	No	0.02	45	230	248	No	<0.01
	50	230	248	No	0.03	50	232	248	No	<0.01
	55	233	248	No	0.07	55	235	248	No	0.01
	60	235	248	No	0.11	60	237	248	No	0.03
	65	237	248	No	0.16	65	239	248	No	0.06
	70	240	248	No	0.27	70	242	248	No	0.17
	75	243	248	No	0.40	75	245	248	No	0.35
	80	246	248	Yes	0.55	80	248	248	Yes	0.58
	85	249	248	Yes	0.69	85	252	248	Yes	0.83
	90	254	248	Yes	0.87	90	256	248	Yes	0.96
	95	260	248	Yes	0.97	95	263	248	Yes	>0.99
10	5	198	258	No	<0.01	5	199	258	No	<0.01
	10	205	258	No	<0.01	10	206	258	No	<0.01
	15	210	258	No	<0.01	15	211	258	No	<0.01
	20	214	258	No	<0.01	20	215	258	No	<0.01
	25	217	258	No	<0.01	25	218	258	No	<0.01
	30	220	258	No	<0.01	30	221	258	No	<0.01
	35	223	258	No	<0.01	35	224	258	No	<0.01
	40	225	258	No	<0.01	40	226	258	No	<0.01
	45	228	258	No	<0.01	45	229	258	No	<0.01
	50	230	258	No	<0.01	50	232	258	No	<0.01
	55	233	258	No	<0.01	55	234	258	No	<0.01
	60	235	258	No	0.01	60	237	258	No	<0.01
	65	238	258	No	0.02	65	239	258	No	<0.01
	70	240	258	No	0.04	70	242	258	No	<0.01
	75	243	258	No	0.07	75	245	258	No	0.01
	80	247	258	No	0.16	80	248	258	No	0.05
	85	250	258	No	0.25	85	252	258	No	0.18
	90	255	258	No	0.46	90	257	258	Yes	0.50
	95	262	258	Yes	0.75	95	264	258	Yes	0.90

Note. %ile=percentile

Summary and Discussion

This study produced a set of cut scores on MAP reading and math tests for Grades 3-10 that correspond to each AMP performance level. By using matched score data from a sample of students from Alaska, 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 NWEA 2015 RIT Scale 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 AMP 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 AMP 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 80 schools in Alaska, 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 AMP performance from other schools to enhance the quality and generalizability of the study.

References

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Appendix

Data and Analysis

Data

Data used in this study were collected from 80 schools in Alaska. The sample contained matched AMP ELA and MAP reading scores from 11,816 students in Grades 3 to 10 and matched AMP and MAP math scores from 11,925 students in Grades 3 to 10 who completed both AMP and MAP in the spring of 2015.

To understand the statistical characteristics of the test scores, descriptive statistics are provided in Table A1. As Table A1 indicates, the correlation coefficients between MAP reading and AMP ELA scores range from 0.80 to 0.85, and the correlation coefficients between MAP and AMP math scores range from 0.70 to 0.87. All these correlations indicate a strong relationship between MAP and AMP test scores.

TABLE A1. DESCRIPTIVE STATISTICS OF THE SAMPLE DATA

Subject	Grade	N	r	AMP				MAP			
				Mean	SD	Min	Max	Mean	SD	Min	Max
ELA/ Reading	3	1,748	0.82	689	23.51	637	763	195	17.31	139	235
	4	1,639	0.83	691	24.22	638	771	202	17.62	146	240
	5	1,764	0.85	691	25.45	634	760	207	17.96	149	243
	6	1,599	0.84	686	24.63	635	763	211	17.60	150	255
	7	1,633	0.83	683	24.50	627	759	216	17.21	154	261
	8	1,673	0.83	686	24.76	627	753	221	16.62	149	257
	9	980	0.80	681	24.26	621	752	218	17.69	146	261
	10	780	0.81	680	23.67	620	756	222	17.18	155	268
Math	3	1,744	0.81	697	22.83	642	780	200	14.12	143	243
	4	1,644	0.87	695	24.61	636	780	210	16.72	149	266
	5	1,770	0.84	693	23.80	644	779	218	18.79	144	273
	6	1,603	0.80	690	21.86	640	779	221	17.61	156	300
	7	1,643	0.82	689	22.97	637	780	226	17.64	149	273
	8	1,677	0.81	689	22.82	631	780	233	18.47	152	287
	9	1,055	0.71	688	21.13	647	780	233	19.31	178	302
	10	789	0.70	677	20.77	620	764	235	18.92	172	285

Equipercentile Linking Procedure

The equipercentile procedure (e.g., Kolen & Brennan, 2004) was used to establish the concordance relationship between AMP and MAP scores for grades 3-10 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., AMP). 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):

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

where $e_y(x)$ is the equipercentile equivalent of scores on AMP 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 proficient (i.e., Level 3 or higher) on AMP tests.

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

		AMP Score	
		Below AMP cut	At or Above AMP 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 AMP 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 AMP, 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 AMP 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.