

Linking the South Carolina SC READY Assessments to NWEA MAP Growth Tests^{*}

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

December 2016

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 South Carolina College- and Career-Ready Assessments (SC READY) English Language Arts (ELA) and math 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 benchmarks on the SC READY 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 SC READY 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

SC READY includes a series of achievement tests aligned to the 2015 South Carolina College- and Career-Ready Standards in ELA and math for grades 3-8. SC READY tests are delivered both online and in the paper-and-pencil form. For each grade and subject, there are three cut scores that distinguish between performance levels: Level 1: *Does Not Meet Expectations*, Level 2: *Approaches Expectations*, Level 3: *Meets Expectations*, and Level 4: *Exceeds Expectations*. 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 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 South Carolina State

Standards. Like SC READY, 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 SC READY Readiness Levels

Tables 1 to 4 report the SC READY scaled scores associated with each of the four performance levels, as well as the estimated score range on the MAP tests associated with each SC READY 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 SC READY performance level, based on their observed MAP scores. For example, a 5th 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 (Meets) on the SC READY taken during that same testing season (see Table 2). Similarly, a 3rd grade student who obtained a MAP reading score of 210 in the fall testing season is likely to be at Level 4 (Exceeds) on the SC READY taken in the spring of 3rd grade (see Table 3).

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

SC READY								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
3	1270-1329		1330-1349		1350-1367		1368-1430	
4	1370-1430		1431-1449		1450-1466		1467-1530	
5	1470-1528		1529-1549		1550-1567		1568-1630	
6	1570-1625		1626-1649		1650-1666		1667-1730	
7	1670-1727		1728-1749		1750-1767		1768-1830	
8	1770-1828		1829-1849		1850-1867		1868-1930	

MAP								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-176	1-21	177-192	22-59	193-204	60-85	205-350	86-99
3	100-186	1-21	187-202	22-60	203-214	61-85	215-350	86-99
4	100-195	1-24	196-210	25-62	211-221	63-85	222-350	86-99
5	100-202	1-26	203-217	27-65	218-228	66-87	229-350	88-99
6	100-202	1-18	203-220	19-62	221-230	63-84	231-350	85-99
7	100-207	1-24	208-223	25-63	224-234	64-85	235-350	86-99
8	100-210	1-27	211-226	28-65	227-237	66-86	238-350	87-99

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.

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

SC READY								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
3	1270-1334		1335-1349		1350-1368		1369-1430	
4	1370-1433		1434-1449		1450-1464		1465-1530	
5	1470-1531		1532-1549		1550-1565		1566-1630	
6	1570-1631		1632-1649		1650-1665		1666-1730	
7	1670-1729		1730-1749		1750-1764		1765-1830	
8	1770-1829		1830-1849		1850-1864		1865-1930	

MAP								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-179	1-17	180-189	18-42	190-201	43-75	202-350	76-99
3	100-190	1-17	191-201	18-44	202-213	45-76	214-350	77-99
4	100-199	1-17	200-212	18-47	213-222	48-72	223-350	73-99
5	100-205	1-16	206-222	17-52	223-234	53-79	235-350	80-99
6	100-211	1-20	212-226	21-52	227-236	53-74	237-350	75-99
7	100-215	1-22	216-234	23-63	235-244	64-81	245-350	82-99
8	100-220	1-29	221-240	30-69	241-251	70-85	252-350	86-99

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.

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

SC READY								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
3	1270-1329		1330-1349		1350-1367		1368-1430	
4	1370-1430		1431-1449		1450-1466		1467-1530	
5	1470-1528		1529-1549		1550-1567		1568-1630	
6	1570-1625		1626-1649		1650-1666		1667-1730	
7	1670-1727		1728-1749		1750-1767		1768-1830	
8	1770-1828		1829-1849		1850-1867		1868-1930	

MAP FALL								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-160	1-17	161-179	18-62	180-193	63-88	194-350	89-99
3	100-173	1-17	174-192	18-60	193-207	61-88	208-350	89-99
4	100-186	1-22	187-203	23-63	204-216	64-88	217-350	89-99
5	100-194	1-23	195-212	24-67	213-225	68-90	226-350	91-99
6	100-195	1-14	196-216	15-64	217-228	65-87	229-350	88-99
7	100-202	1-21	203-220	22-65	221-232	66-88	233-350	89-99
8	100-206	1-24	207-224	25-67	225-235	68-87	236-350	88-99

MAP WINTER								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-171	1-19	172-188	20-61	189-200	62-86	201-350	87-99
3	100-182	1-19	183-199	20-60	200-212	61-86	213-350	87-99
4	100-192	1-22	193-208	23-62	209-220	63-87	221-350	88-99
5	100-199	1-24	200-215	25-65	216-227	66-88	228-350	89-99
6	100-200	1-17	201-219	18-64	220-229	65-85	230-350	86-99
7	100-205	1-22	206-222	23-64	223-233	65-86	234-350	87-99
8	100-209	1-26	210-225	27-66	226-236	67-87	237-350	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.

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

SC READY								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
3	1270-1334		1335-1349		1350-1368		1369-1430	
4	1370-1433		1434-1449		1450-1464		1465-1530	
5	1470-1531		1532-1549		1550-1565		1566-1630	
6	1570-1631		1632-1649		1650-1665		1666-1730	
7	1670-1729		1730-1749		1750-1764		1765-1830	
8	1770-1829		1830-1849		1850-1864		1865-1930	

MAP FALL								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-162	1-13	163-173	14-39	174-187	40-78	188-350	79-99
3	100-176	1-14	177-188	15-44	189-201	45-80	202-350	81-99
4	100-187	1-14	188-200	15-45	201-211	46-75	212-350	76-99
5	100-195	1-13	196-212	14-52	213-224	53-81	225-350	82-99
6	100-203	1-18	204-218	19-52	219-228	53-75	229-350	76-99
7	100-209	1-21	210-228	22-63	229-238	64-83	239-350	84-99
8	100-215	1-27	216-236	28-71	237-247	72-88	248-350	89-99

MAP WINTER								
Grade	Level 1		Level 2		Level 3		Level 4	
	<i>Does Not Meet</i>		<i>Approaches</i>		<i>Meets</i>		<i>Exceeds</i>	
	RIT	%ile	RIT	%ile	RIT	%ile	RIT	%ile
2	100-173	1-16	174-183	17-41	184-196	42-77	197-350	78-99
3	100-184	1-15	185-196	16-44	197-208	45-78	209-350	79-99
4	100-194	1-15	195-207	16-46	208-217	47-73	218-350	74-99
5	100-201	1-15	202-218	16-53	219-230	54-80	231-350	81-99
6	100-208	1-19	209-223	20-53	224-233	54-76	234-350	77-99
7	100-213	1-22	214-232	23-64	233-242	65-83	243-350	84-99
8	100-218	1-28	219-238	29-69	239-249	70-86	250-350	87-99

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.

Consistency Rate of Classification

Consistency rate of classification (Pommerich, Hanson, Harris, & Scoring, 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 on the SC READY 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 “Meets” 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 SC READY and MAP cut scores. The results in Table 5 demonstrate that MAP reading scores can consistently classify students’ proficiency (Level 3 or higher) status on SC READY ELA test 84-86% of the time and MAP math scores can consistently classify students on SC READY math test 86-89% 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 SC READY tests.

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

Grade	ELA/Reading			Math		
	Consistency Rate	False		Consistency Rate	False	
		Positives	Negatives		Positives	Negatives
3	0.85	0.08	0.07	0.86	0.07	0.07
4	0.85	0.07	0.08	0.87	0.08	0.05
5	0.85	0.07	0.08	0.87	0.07	0.06
6	0.85	0.07	0.08	0.88	0.06	0.06
7	0.86	0.07	0.07	0.89	0.06	0.05
8	0.84	0.07	0.09	0.88	0.05	0.07

Proficiency Projection

Proficiency projection tells how likely a student is classified as “Meets” on SC READY 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 “Meets” on the SC READY tests are presented in Tables 6 to 8. These tables estimate the probability of scoring at Level 3 or above on SC READY in the spring and the prior fall or winter testing season. For example, if a 3rd grade student obtained a MAP reading score of 199 in the fall, the probability of obtaining a Level 3 or higher SC READY score in the spring of 3rd grade is 76%. 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 SC READY tests.

TABLE 6. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING SC READY LEVEL 3 (MEETS) 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.
2	5	164	193	No	<0.01	5	170	190	No	<0.01
	10	169	193	No	<0.01	10	175	190	No	<0.01
	15	173	193	No	<0.01	15	178	190	No	<0.01
	20	176	193	No	<0.01	20	181	190	No	<0.01
	25	178	193	No	<0.01	25	183	190	No	0.01
	30	181	193	No	<0.01	30	185	190	No	0.04
	35	183	193	No	<0.01	35	187	190	No	0.15
	40	185	193	No	0.01	40	189	190	No	0.37
	45	187	193	No	0.03	45	190	190	Yes	0.50
	50	189	193	No	0.11	50	192	190	Yes	0.75
	55	191	193	No	0.27	55	194	190	Yes	0.92
	60	193	193	Yes	0.50	60	196	190	Yes	0.98
	65	195	193	Yes	0.73	65	197	190	Yes	0.99
	70	197	193	Yes	0.89	70	199	190	Yes	>0.99
	75	199	193	Yes	0.97	75	201	190	Yes	>0.99
	80	201	193	Yes	0.99	80	204	190	Yes	>0.99
	85	204	193	Yes	>0.99	85	206	190	Yes	>0.99
90	208	193	Yes	>0.99	90	209	190	Yes	>0.99	
95	214	193	Yes	>0.99	95	214	190	Yes	>0.99	
3	5	174	203	No	<0.01	5	181	202	No	<0.01
	10	179	203	No	<0.01	10	186	202	No	<0.01
	15	183	203	No	<0.01	15	189	202	No	<0.01
	20	186	203	No	<0.01	20	192	202	No	<0.01
	25	188	203	No	<0.01	25	194	202	No	<0.01
	30	191	203	No	<0.01	30	196	202	No	0.02
	35	193	203	No	<0.01	35	198	202	No	0.08
	40	195	203	No	0.01	40	200	202	No	0.25
	45	197	203	No	0.03	45	202	202	Yes	0.50
	50	199	203	No	0.11	50	203	202	Yes	0.63
	55	201	203	No	0.27	55	205	202	Yes	0.85
	60	202	203	No	0.38	60	207	202	Yes	0.96
	65	204	203	Yes	0.62	65	209	202	Yes	0.99
	70	207	203	Yes	0.89	70	211	202	Yes	>0.99
	75	209	203	Yes	0.97	75	213	202	Yes	>0.99
	80	211	203	Yes	0.99	80	215	202	Yes	>0.99
	85	214	203	Yes	>0.99	85	218	202	Yes	>0.99
90	218	203	Yes	>0.99	90	221	202	Yes	>0.99	
95	223	203	Yes	>0.99	95	226	202	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.
4	5	181	211	No	<0.01	5	189	213	No	<0.01
	10	187	211	No	<0.01	10	194	213	No	<0.01
	15	190	211	No	<0.01	15	198	213	No	<0.01
	20	193	211	No	<0.01	20	201	213	No	<0.01
	25	196	211	No	<0.01	25	203	213	No	<0.01
	30	198	211	No	<0.01	30	206	213	No	0.01
	35	200	211	No	<0.01	35	208	213	No	0.04
	40	202	211	No	<0.01	40	210	213	No	0.15
	45	204	211	No	0.01	45	212	213	No	0.37
	50	206	211	No	0.06	50	213	213	Yes	0.50
	55	208	211	No	0.17	55	215	213	Yes	0.75
	60	210	211	No	0.38	60	217	213	Yes	0.92
	65	212	211	Yes	0.62	65	219	213	Yes	0.98
	70	214	211	Yes	0.83	70	221	213	Yes	>0.99
	75	216	211	Yes	0.94	75	224	213	Yes	>0.99
	80	218	211	Yes	0.99	80	226	213	Yes	>0.99
85	221	211	Yes	>0.99	85	229	213	Yes	>0.99	
90	225	211	Yes	>0.99	90	233	213	Yes	>0.99	
95	230	211	Yes	>0.99	95	238	213	Yes	>0.99	
5	5	188	218	No	<0.01	5	195	223	No	<0.01
	10	193	218	No	<0.01	10	201	223	No	<0.01
	15	197	218	No	<0.01	15	205	223	No	<0.01
	20	199	218	No	<0.01	20	208	223	No	<0.01
	25	202	218	No	<0.01	25	210	223	No	<0.01
	30	204	218	No	<0.01	30	213	223	No	<0.01
	35	206	218	No	<0.01	35	215	223	No	<0.01
	40	208	218	No	<0.01	40	217	223	No	0.02
	45	210	218	No	0.01	45	219	223	No	0.08
	50	212	218	No	0.03	50	221	223	No	0.25
	55	214	218	No	0.11	55	223	223	Yes	0.50
	60	216	218	No	0.27	60	225	223	Yes	0.75
	65	217	218	No	0.38	65	228	223	Yes	0.96
	70	220	218	Yes	0.73	70	230	223	Yes	0.99
	75	222	218	Yes	0.89	75	232	223	Yes	>0.99
	80	224	218	Yes	0.97	80	235	223	Yes	>0.99
85	227	218	Yes	>0.99	85	238	223	Yes	>0.99	
90	231	218	Yes	>0.99	90	242	223	Yes	>0.99	
95	236	218	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 3	Prob.			Cut Score	Level 3	Prob.
6	5	192	221	No	<0.01	5	198	227	No	<0.01
	10	197	221	No	<0.01	10	204	227	No	<0.01
	15	201	221	No	<0.01	15	208	227	No	<0.01
	20	203	221	No	<0.01	20	211	227	No	<0.01
	25	206	221	No	<0.01	25	214	227	No	<0.01
	30	208	221	No	<0.01	30	217	227	No	<0.01
	35	210	221	No	<0.01	35	219	227	No	<0.01
	40	212	221	No	<0.01	40	221	227	No	0.02
	45	214	221	No	0.01	45	223	227	No	0.08
	50	216	221	No	0.06	50	225	227	No	0.25
	55	218	221	No	0.17	55	227	227	Yes	0.50
	60	219	221	No	0.27	60	230	227	Yes	0.85
	65	221	221	Yes	0.50	65	232	227	Yes	0.96
	70	223	221	Yes	0.73	70	234	227	Yes	0.99
	75	226	221	Yes	0.94	75	237	227	Yes	>0.99
	80	228	221	Yes	0.99	80	239	227	Yes	>0.99
85	231	221	Yes	>0.99	85	243	227	Yes	>0.99	
90	235	221	Yes	>0.99	90	247	227	Yes	>0.99	
95	240	221	Yes	>0.99	95	253	227	Yes	>0.99	
7	5	193	224	No	<0.01	5	199	235	No	<0.01
	10	199	224	No	<0.01	10	206	235	No	<0.01
	15	202	224	No	<0.01	15	210	235	No	<0.01
	20	205	224	No	<0.01	20	214	235	No	<0.01
	25	208	224	No	<0.01	25	217	235	No	<0.01
	30	210	224	No	<0.01	30	219	235	No	<0.01
	35	212	224	No	<0.01	35	222	235	No	<0.01
	40	214	224	No	<0.01	40	224	235	No	<0.01
	45	216	224	No	0.01	45	226	235	No	<0.01
	50	218	224	No	0.03	50	229	235	No	0.02
	55	220	224	No	0.11	55	231	235	No	0.08
	60	222	224	No	0.27	60	233	235	No	0.25
	65	224	224	Yes	0.50	65	235	235	Yes	0.50
	70	226	224	Yes	0.73	70	238	235	Yes	0.85
	75	228	224	Yes	0.89	75	241	235	Yes	0.98
	80	231	224	Yes	0.99	80	244	235	Yes	>0.99
85	234	224	Yes	>0.99	85	247	235	Yes	>0.99	
90	238	224	Yes	>0.99	90	251	235	Yes	>0.99	
95	243	224	Yes	>0.99	95	258	235	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.
8	5	194	227	No	<0.01	5	199	241	No	<0.01
	10	200	227	No	<0.01	10	206	241	No	<0.01
	15	204	227	No	<0.01	15	211	241	No	<0.01
	20	207	227	No	<0.01	20	215	241	No	<0.01
	25	209	227	No	<0.01	25	218	241	No	<0.01
	30	212	227	No	<0.01	30	221	241	No	<0.01
	35	214	227	No	<0.01	35	224	241	No	<0.01
	40	216	227	No	<0.01	40	226	241	No	<0.01
	45	218	227	No	<0.01	45	229	241	No	<0.01
	50	220	227	No	0.01	50	231	241	No	<0.01
	55	222	227	No	0.06	55	233	241	No	<0.01
	60	224	227	No	0.17	60	236	241	No	0.04
	65	226	227	No	0.38	65	238	241	No	0.15
	70	228	227	Yes	0.62	70	241	241	Yes	0.50
	75	231	227	Yes	0.89	75	244	241	Yes	0.85
	80	233	227	Yes	0.97	80	247	241	Yes	0.98
	85	236	227	Yes	>0.99	85	251	241	Yes	>0.99
90	240	227	Yes	>0.99	90	255	241	Yes	>0.99	
95	246	227	Yes	>0.99	95	262	241	Yes	>0.99	

Note. %ile=percentile

TABLE 7. PROFICIENCY PROJECTION AND PROBABILITY FOR PASSING SC READY ELA LEVEL 3 (MEETS) WHEN MAP IS TAKEN IN THE FALL OR WINTER PRIOR TO SPRING SC READY TESTS

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
2	5	149	193	No	<0.01	5	160	193	No	<0.01
	10	155	193	No	<0.01	10	165	193	No	<0.01
	15	159	193	No	0.01	15	169	193	No	<0.01
	20	162	193	No	0.03	20	172	193	No	<0.01
	25	164	193	No	0.05	25	174	193	No	0.01
	30	167	193	No	0.08	30	176	193	No	0.01
	35	169	193	No	0.12	35	178	193	No	0.03
	40	171	193	No	0.19	40	180	193	No	0.07
	45	173	193	No	0.22	45	182	193	No	0.14
	50	175	193	No	0.30	50	184	193	No	0.23
	55	177	193	No	0.40	55	186	193	No	0.29
	60	179	193	No	0.45	60	188	193	No	0.43
	65	181	193	Yes	0.55	65	190	193	Yes	0.57
	70	183	193	Yes	0.65	70	192	193	Yes	0.71
	75	185	193	Yes	0.70	75	194	193	Yes	0.82
	80	188	193	Yes	0.81	80	197	193	Yes	0.93
	85	191	193	Yes	0.88	85	200	193	Yes	0.98
90	195	193	Yes	0.95	90	203	193	Yes	0.99	
95	200	193	Yes	0.99	95	209	193	Yes	>0.99	
3	5	162	203	No	<0.01	5	171	203	No	<0.01
	10	168	203	No	<0.01	10	176	203	No	<0.01
	15	172	203	No	0.01	15	180	203	No	<0.01
	20	175	203	No	0.01	20	183	203	No	<0.01
	25	178	203	No	0.03	25	185	203	No	<0.01
	30	180	203	No	0.06	30	188	203	No	0.02
	35	182	203	No	0.08	35	190	203	No	0.03
	40	184	203	No	0.13	40	192	203	No	0.06
	45	186	203	No	0.20	45	194	203	No	0.13
	50	188	203	No	0.24	50	196	203	No	0.22
	55	190	203	No	0.34	55	198	203	No	0.35
	60	192	203	No	0.44	60	199	203	No	0.42
	65	194	203	Yes	0.50	65	201	203	Yes	0.58
	70	197	203	Yes	0.66	70	204	203	Yes	0.78
	75	199	203	Yes	0.76	75	206	203	Yes	0.83
	80	202	203	Yes	0.84	80	208	203	Yes	0.91
	85	205	203	Yes	0.92	85	211	203	Yes	0.97
90	209	203	Yes	0.97	90	215	203	Yes	>0.99	
95	214	203	Yes	0.99	95	221	203	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.
4	5	173	211	No	<0.01	5	179	211	No	<0.01
	10	178	211	No	<0.01	10	184	211	No	<0.01
	15	182	211	No	<0.01	15	188	211	No	<0.01
	20	185	211	No	0.01	20	191	211	No	<0.01
	25	188	211	No	0.02	25	194	211	No	<0.01
	30	190	211	No	0.04	30	196	211	No	0.01
	35	192	211	No	0.07	35	198	211	No	0.02
	40	194	211	No	0.09	40	200	211	No	0.06
	45	196	211	No	0.15	45	202	211	No	0.08
	50	198	211	No	0.23	50	204	211	No	0.16
	55	200	211	No	0.27	55	205	211	No	0.22
	60	202	211	No	0.38	60	207	211	No	0.35
	65	204	211	Yes	0.50	65	209	211	Yes	0.50
	70	206	211	Yes	0.62	70	211	211	Yes	0.65
	75	209	211	Yes	0.73	75	214	211	Yes	0.84
	80	211	211	Yes	0.82	80	216	211	Yes	0.92
	85	214	211	Yes	0.88	85	219	211	Yes	0.96
90	218	211	Yes	0.96	90	223	211	Yes	0.99	
95	224	211	Yes	0.99	95	228	211	Yes	>0.99	
5	5	181	218	No	<0.01	5	186	218	No	<0.01
	10	186	218	No	<0.01	10	191	218	No	<0.01
	15	190	218	No	<0.01	15	195	218	No	<0.01
	20	193	218	No	0.01	20	197	218	No	<0.01
	25	195	218	No	0.01	25	200	218	No	<0.01
	30	198	218	No	0.03	30	202	218	No	<0.01
	35	200	218	No	0.05	35	204	218	No	0.01
	40	202	218	No	0.09	40	206	218	No	0.03
	45	204	218	No	0.12	45	208	218	No	0.06
	50	206	218	No	0.19	50	210	218	No	0.12
	55	208	218	No	0.28	55	212	218	No	0.22
	60	210	218	No	0.38	60	214	218	No	0.35
	65	212	218	No	0.44	65	215	218	No	0.42
	70	214	218	Yes	0.56	70	218	218	Yes	0.65
	75	216	218	Yes	0.67	75	220	218	Yes	0.72
	80	218	218	Yes	0.72	80	222	218	Yes	0.83
	85	221	218	Yes	0.85	85	225	218	Yes	0.94
90	225	218	Yes	0.93	90	229	218	Yes	0.99	
95	231	218	Yes	0.99	95	234	218	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.
6	5	186	221	No	<0.01	5	190	221	No	<0.01
	10	192	221	No	<0.01	10	196	221	No	<0.01
	15	196	221	No	<0.01	15	199	221	No	<0.01
	20	198	221	No	0.01	20	202	221	No	<0.01
	25	201	221	No	0.02	25	204	221	No	<0.01
	30	203	221	No	0.04	30	207	221	No	0.01
	35	205	221	No	0.07	35	209	221	No	0.03
	40	207	221	No	0.10	40	211	221	No	0.06
	45	209	221	No	0.16	45	212	221	No	0.09
	50	211	221	No	0.23	50	214	221	No	0.17
	55	213	221	No	0.33	55	216	221	No	0.22
	60	215	221	No	0.39	60	218	221	No	0.35
	65	217	221	Yes	0.50	65	220	221	Yes	0.50
	70	219	221	Yes	0.61	70	222	221	Yes	0.65
	75	221	221	Yes	0.67	75	224	221	Yes	0.78
	80	224	221	Yes	0.81	80	226	221	Yes	0.88
	85	226	221	Yes	0.88	85	229	221	Yes	0.96
90	230	221	Yes	0.94	90	233	221	Yes	0.99	
95	236	221	Yes	0.99	95	238	221	Yes	>0.99	
7	5	189	224	No	<0.01	5	192	224	No	<0.01
	10	195	224	No	<0.01	10	198	224	No	<0.01
	15	199	224	No	<0.01	15	201	224	No	<0.01
	20	202	224	No	0.01	20	204	224	No	<0.01
	25	204	224	No	0.01	25	207	224	No	<0.01
	30	206	224	No	0.03	30	209	224	No	0.01
	35	209	224	No	0.05	35	211	224	No	0.02
	40	211	224	No	0.10	40	213	224	No	0.03
	45	213	224	No	0.15	45	215	224	No	0.06
	50	214	224	No	0.19	50	217	224	No	0.12
	55	216	224	No	0.23	55	219	224	No	0.22
	60	218	224	No	0.33	60	221	224	No	0.35
	65	220	224	No	0.44	65	223	224	Yes	0.50
	70	222	224	Yes	0.56	70	225	224	Yes	0.65
	75	225	224	Yes	0.67	75	227	224	Yes	0.78
	80	227	224	Yes	0.77	80	230	224	Yes	0.91
	85	230	224	Yes	0.88	85	232	224	Yes	0.94
90	234	224	Yes	0.95	90	236	224	Yes	0.99	
95	240	224	Yes	0.99	95	242	224	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.
8	5	191	227	No	<0.01	5	194	227	No	<0.01
	10	197	227	No	<0.01	10	199	227	No	<0.01
	15	201	227	No	<0.01	15	203	227	No	<0.01
	20	204	227	No	0.01	20	206	227	No	<0.01
	25	207	227	No	0.02	25	209	227	No	<0.01
	30	209	227	No	0.04	30	211	227	No	<0.01
	35	211	227	No	0.06	35	213	227	No	0.01
	40	213	227	No	0.08	40	215	227	No	0.02
	45	215	227	No	0.13	45	217	227	No	0.05
	50	217	227	No	0.19	50	219	227	No	0.10
	55	219	227	No	0.26	55	221	227	No	0.18
	60	221	227	No	0.31	60	223	227	No	0.29
	65	223	227	No	0.40	65	225	227	No	0.43
	70	225	227	Yes	0.50	70	227	227	Yes	0.57
	75	228	227	Yes	0.60	75	229	227	Yes	0.71
	80	230	227	Yes	0.69	80	232	227	Yes	0.82
	85	234	227	Yes	0.84	85	235	227	Yes	0.93
90	237	227	Yes	0.90	90	239	227	Yes	0.99	
95	243	227	Yes	0.98	95	244	227	Yes	>0.99	

Note. %ile=percentile

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

Grade	Start %ile	RIT Fall	Projected Proficiency			Start %ile	RIT Winter	Projected Proficiency		
			Cut Score	Level 3	Prob.			Cut Score	Level 3	Prob.
2	5	155	190	No	0.01	5	165	190	No	<0.01
	10	160	190	No	0.03	10	170	190	No	<0.01
	15	163	190	No	0.07	15	173	190	No	0.01
	20	166	190	No	0.16	20	175	190	No	0.03
	25	168	190	No	0.19	25	178	190	No	0.11
	30	170	190	No	0.28	30	180	190	No	0.21
	35	172	190	No	0.39	35	181	190	No	0.27
	40	174	190	Yes	0.50	40	183	190	No	0.42
	45	175	190	Yes	0.50	45	185	190	Yes	0.58
	50	177	190	Yes	0.61	50	186	190	Yes	0.66
	55	179	190	Yes	0.72	55	188	190	Yes	0.79
	60	180	190	Yes	0.76	60	190	190	Yes	0.89
	65	182	190	Yes	0.84	65	191	190	Yes	0.92
	70	184	190	Yes	0.88	70	193	190	Yes	0.95
	75	186	190	Yes	0.93	75	195	190	Yes	0.98
	80	188	190	Yes	0.96	80	197	190	Yes	0.99
	85	191	190	Yes	0.98	85	200	190	Yes	>0.99
90	194	190	Yes	0.99	90	203	190	Yes	>0.99	
95	199	190	Yes	>0.99	95	208	190	Yes	>0.99	
3	5	169	202	No	<0.01	5	176	202	No	<0.01
	10	174	202	No	0.01	10	181	202	No	<0.01
	15	177	202	No	0.04	15	184	202	No	0.01
	20	179	202	No	0.08	20	187	202	No	0.02
	25	182	202	No	0.17	25	189	202	No	0.05
	30	184	202	No	0.22	30	191	202	No	0.10
	35	185	202	No	0.27	35	193	202	No	0.20
	40	187	202	No	0.38	40	195	202	No	0.34
	45	189	202	Yes	0.50	45	197	202	Yes	0.50
	50	190	202	Yes	0.56	50	198	202	Yes	0.58
	55	192	202	Yes	0.68	55	200	202	Yes	0.74
	60	194	202	Yes	0.78	60	202	202	Yes	0.86
	65	195	202	Yes	0.83	65	203	202	Yes	0.90
	70	197	202	Yes	0.89	70	205	202	Yes	0.95
	75	199	202	Yes	0.92	75	207	202	Yes	0.98
	80	201	202	Yes	0.96	80	209	202	Yes	0.99
	85	204	202	Yes	0.99	85	212	202	Yes	>0.99
90	207	202	Yes	>0.99	90	215	202	Yes	>0.99	
95	212	202	Yes	>0.99	95	220	202	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.
4	5	179	213	No	<0.01	5	185	213	No	<0.01
	10	184	213	No	<0.01	10	190	213	No	<0.01
	15	188	213	No	0.02	15	194	213	No	<0.01
	20	190	213	No	0.04	20	197	213	No	0.01
	25	193	213	No	0.11	25	199	213	No	0.03
	30	195	213	No	0.17	30	201	213	No	0.07
	35	197	213	No	0.27	35	203	213	No	0.14
	40	198	213	No	0.32	40	205	213	No	0.26
	45	200	213	No	0.44	45	207	213	No	0.42
	50	202	213	Yes	0.56	50	209	213	Yes	0.58
	55	204	213	Yes	0.68	55	211	213	Yes	0.74
	60	205	213	Yes	0.68	60	212	213	Yes	0.80
	65	207	213	Yes	0.78	65	214	213	Yes	0.90
	70	209	213	Yes	0.86	70	216	213	Yes	0.95
	75	211	213	Yes	0.92	75	218	213	Yes	0.98
	80	214	213	Yes	0.97	80	221	213	Yes	>0.99
	85	216	213	Yes	0.99	85	223	213	Yes	>0.99
90	220	213	Yes	>0.99	90	227	213	Yes	>0.99	
95	225	213	Yes	>0.99	95	232	213	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 3	Prob.			Cut-Score	Level 3	Prob.
6	5	192	227	No	<0.01	5	196	227	No	<0.01
	10	198	227	No	<0.01	10	202	227	No	<0.01
	15	202	227	No	0.01	15	205	227	No	<0.01
	20	205	227	No	0.02	20	209	227	No	<0.01
	25	207	227	No	0.04	25	211	227	No	<0.01
	30	209	227	No	0.07	30	214	227	No	0.02
	35	212	227	No	0.15	35	216	227	No	0.05
	40	214	227	No	0.23	40	218	227	No	0.11
	45	216	227	No	0.33	45	220	227	No	0.20
	50	218	227	No	0.44	50	222	227	No	0.34
	55	220	227	Yes	0.56	55	224	227	Yes	0.50
	60	222	227	Yes	0.67	60	226	227	Yes	0.66
	65	224	227	Yes	0.77	65	228	227	Yes	0.80
	70	226	227	Yes	0.85	70	230	227	Yes	0.89
	75	228	227	Yes	0.91	75	233	227	Yes	0.97
	80	231	227	Yes	0.96	80	236	227	Yes	0.99
	85	234	227	Yes	0.98	85	239	227	Yes	>0.99
90	238	227	Yes	>0.99	90	243	227	Yes	>0.99	
95	243	227	Yes	>0.99	95	248	227	Yes	>0.99	
7	5	195	235	No	<0.01	5	198	235	No	<0.01
	10	201	235	No	<0.01	10	204	235	No	<0.01
	15	205	235	No	<0.01	15	208	235	No	<0.01
	20	209	235	No	<0.01	20	212	235	No	<0.01
	25	211	235	No	<0.01	25	215	235	No	<0.01
	30	214	235	No	0.01	30	217	235	No	<0.01
	35	216	235	No	0.02	35	220	235	No	<0.01
	40	218	235	No	0.05	40	222	235	No	0.01
	45	221	235	No	0.11	45	224	235	No	0.03
	50	223	235	No	0.18	50	226	235	No	0.07
	55	225	235	No	0.27	55	228	235	No	0.15
	60	227	235	No	0.38	60	230	235	No	0.26
	65	229	235	Yes	0.50	65	233	235	Yes	0.50
	70	231	235	Yes	0.62	70	235	235	Yes	0.66
	75	234	235	Yes	0.78	75	238	235	Yes	0.85
	80	237	235	Yes	0.89	80	240	235	Yes	0.93
	85	240	235	Yes	0.95	85	244	235	Yes	0.99
90	244	235	Yes	0.99	90	248	235	Yes	>0.99	
95	250	235	Yes	>0.99	95	254	235	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.
8	5	197	241	No	<0.01	5	199	241	No	<0.01
	10	203	241	No	<0.01	10	206	241	No	<0.01
	15	208	241	No	<0.01	15	210	241	No	<0.01
	20	211	241	No	<0.01	20	214	241	No	<0.01
	25	214	241	No	<0.01	25	217	241	No	<0.01
	30	217	241	No	0.01	30	220	241	No	<0.01
	35	219	241	No	0.01	35	222	241	No	<0.01
	40	222	241	No	0.03	40	225	241	No	<0.01
	45	224	241	No	0.06	45	227	241	No	0.01
	50	226	241	No	0.10	50	229	241	No	0.02
	55	229	241	No	0.18	55	231	241	No	0.06
	60	231	241	No	0.26	60	234	241	No	0.16
	65	233	241	No	0.35	65	236	241	No	0.28
	70	236	241	No	0.45	70	239	241	Yes	0.50
	75	238	241	Yes	0.55	75	241	241	Yes	0.65
	80	241	241	Yes	0.70	80	245	241	Yes	0.88
	85	245	241	Yes	0.85	85	248	241	Yes	0.96
90	249	241	Yes	0.94	90	253	241	Yes	>0.99	
95	256	241	Yes	0.99	95	259	241	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 SC READY performance level. By using matched score data from a sample of students from South Carolina, 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 SC READY 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 SC READY 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 246 schools in South Carolina, which may limit the generalizability of 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 SC READY performance from other schools in South Carolina to enhance the quality and generalizability of the study.

References

- Hanson, B. A., Harris, D. J., Pommerich, M., Sconing, J. A., & Yi, Q. (2001). *Suggestions for the evaluation and use of concordance results*. (ACT Research Report No. 2001-1). Iowa City, IA: ACT, Inc.
- Kolen, M. J., & Brennan, R. L. (2004). *Test equating, scaling, and linking*. New York: Springer.
- Pommerich, M., Hanson, B., Harris, D., & Sconing, J. (2004). Issues in conducting linkage between distinct tests. *Applied Psychological Measurement*, 28(4), 247-273.
- Thum Y. M., & Hauser, C. H. (2015). *NWEA 2015 MAP Norms for Student and School Achievement Status and Growth*. NWEA Research Report. Portland, OR: NWEA.

Appendix

Data and Analysis

Data

Data used in this study were collected from 246 schools in South Carolina. The sample contained matched SC READY ELA and MAP reading scores from 78,320 students in Grades 3 to 8 and matched SC READY and MAP math scores from 78,063 students in Grades 3 to 8 who completed both SC READY and MAP 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 SC READY ELA scores range from 0.84 to 0.86, and the correlation coefficients between MAP and SC READY math scores range from 0.85 to 0.86. In general, all these correlations indicate a strong relationship between MAP and SC READY test scores.

TABLE A1. DESCRIPTIVE STATISTICS OF THE SAMPLE DATA

Subject	Grade	N	<i>r</i>	SC READY				MAP			
				Mean	SD	Min	Max	Mean	SD	Min	Max
ELA/ Reading	3	13644	0.85	1348.40	20.29	1270	1426	200.15	15.91	138	244
	4	13505	0.86	1447.20	20.15	1370	1530	207.43	15.77	143	278
	5	12774	0.86	1546.30	20.10	1488	1630	213.84	15.18	145	258
	6	12907	0.84	1646.80	20.21	1589	1713	216.73	15.28	143	267
	7	12901	0.84	1747.00	20.26	1690	1827	220.35	15.40	143	267
	8	12589	0.84	1847.80	19.69	1782	1930	223.75	15.14	147	277
Math	3	13599	0.85	1354.10	20.33	1272	1430	203.12	13.74	137	260
	4	13455	0.85	1452.00	20.17	1370	1530	212.44	14.66	142	282
	5	12717	0.86	1550.60	20.29	1496	1630	221.30	16.42	144	298
	6	12773	0.86	1649.30	21.46	1595	1730	223.50	15.91	138	283
	7	12938	0.85	1746.70	21.03	1675	1830	229.37	17.34	145	289
	8	12581	0.85	1844.50	20.35	1774	1930	233.46	18.14	143	323

Equipercentile Linking Procedure

The equipercentile procedure (e.g., Kolen & Brennan, 2004) was used to establish the concordance relationship between SC READY 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 concordance scores between two tests. x is a score on Test X (e.g., SC READY). 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 SC READY 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 SC READY tests.

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

		SC READY Score	
		Below SC READY cut	At or Above SC READY 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 SC READY based on that student’s MAP scores in prior seasons (e.g. fall and winter). The probability of a student achieving Level 3 (Meets) on SC READY, based on his/her fall or winter MAP score is given in Equation (A2):

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

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

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

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

NWEA is a not-for-profit organization that supports students and educators worldwide by providing assessment solutions, insightful reports, professional learning offerings, and research services. Visit NWEA.org to find out how NWEA can partner with you to help all kids learn.

© NWEA 2017. MAP is a registered trademark, and NWEA, MAP Growth, and Measuring What Matters are trademarks, of NWEA in the US and in other countries. The names of other companies and their products mentioned are the trademarks of their respective owners.