



Common Core MAP Mathematics: NWEA Recommendations for Transitioning Students from 2 – 5 to 6+

In order to determine which mathematics test is more appropriate to administer to your elementary grade students, it is important to consider the purpose of the test in conjunction with the ability and grade level of your students. Northwest Evaluation Association™ (NWEA™) designed Measures of Academic Progress® (MAP®) Mathematics tests mindful of the amount of learning that occurs in elementary school students and the accelerated rate at which that learning occurs compared to middle and high school students.

Many students take the Common Core MAP 6+ Mathematics test for the first time in the fall of sixth grade. To help you determine the best test choice for individual students, NWEA recommends the following for consideration when making the decision to transition students from Common Core MAP 2 – 5 Mathematics to the 6+ version of the test.

- Has the student been exposed to content included in the Common Core State Standards above grade 5?
- Is the student scoring \geq the 90th percentile rank (231) on the Common Core MAP 2 – 5 Mathematics test in the fall of 5th grade?

Context for educators: Typical “summer loss” in mathematics

Recently, NWEA examined the degree to which observed RIT score drops between spring and the following fall occurred among a select group of students taking state-aligned and/or Common Core versions of MAP for Primary Grades or MAP Mathematics. For reference, Common Core MAP Mathematics tests debuted in fall 2012.

Using the two testing periods of spring and fall 2014, we looked at MAP Mathematics scores of approximately 4.6 million K – 12 students drawn from 19,000 schools across nearly 6,000 districts nationwide.

Table 1 shows average scores across the two testing seasons, along with the average change in RIT score observed among students within each grade.

In general, three broad patterns of summer loss were observed.

- Among students in the primary grades (K, 1, and 2), there were moderately large average changes (2-3 RIT points) between spring and the following fall, though the direction of change was not consistent for kindergartners versus first and second graders.
- For grade 5, there was a consistently large drop in RIT score (nearly 5 points, on average) between spring and fall.
- For all other grades, the magnitude of change in mathematics scores during the summer was relatively small (about 1 RIT point or less).

Table 1. Average RIT Score Change in Mathematics for all U.S. MAP/MPG Users from Spring to Fall of 2014

Grade in Spring	Number of Students	Average Spring RIT	Average Fall RIT	Average Change in RIT Score
K	342,964	161.3	163.4	2.1
1	446,173	181.5	178.4	-3.1
2	564,473	192.5	190.8	-1.7
3	587,618	203.5	202.9	-0.6
4	585,442	213.9	213.1	-0.8
5	556,965	222.5	217.9	-4.6
6	539,771	224.7	224.0	-0.7
7	519,574	229.4	229.3	-0.1
8	217,805	231.8	230.9	-0.9
9	160,784	232.1	231.9	-0.2
10	73,804	232.0	231.8	-0.2
11	22,601	228.4	227.2	-1.2
12	2039	215.5	214.3	-1.2

Contributing factors to 5th grade “summer loss”: transitioning from Common Core MAP Mathematics 2 – 5 to 6+

After noting the unusual pattern of decreased scores between spring of fifth and fall of sixth grades during the 2014 MAP testing seasons, we undertook a series of analyses to examine whether we could primarily attribute the shift to one of two issues: the 2 – 5 to 6+ transition or recent implementations of the Common Core State Standards for Mathematics.

In order to examine this, we compared the observed changes in RIT score over the summer for two groups of students. The first group took a Common Core-aligned version of the 2 – 5 math test in the spring and a Common Core-aligned version of the 6+ test the next fall. The second group took versions of the 2 – 5 and 6+ tests aligned to their individual state standards and not to Common Core. Changes in RIT score were examined for approximately 1.1 million students from 12,000 schools in 5,000 districts across the U.S. in the spring and following fall of 2012, 2013, and 2014. All of these students were fifth graders when they took the 2 – 5 test in the spring, and sixth graders when they took the 6+ test during the following fall.

Of these 1.1 million students, approximately:

- 700,000 took Common Core MAP
- 400,000 took a version of MAP aligned to their individual state standards

Table 2 compares the performance of students taking Common Core and non-Common Core versions of MAP during this fifth-to-sixth grade transition.

Fifth/sixth graders receiving a non-Common Core-aligned version of MAP showed an average decrease in score of about 3 RIT points, whereas those taking Common Core MAP showed average decreases of nearly 5 RIT points. These analyses suggest that two factors contributed to the observed pattern during the summer between fifth and sixth grades.

CONCLUSION: The transition from 2 – 5 to 6+ versions of the MAP test between spring of fifth grade and fall of sixth grade is itself associated with a moderate decrease in observed scores, but that drop has grown larger (from about 3 points to about 5 points) since implementation of the Common Core versions of the test.

Table 2. MAP Mathematics 2 – 5 to MAP 6+ Transition for Fifth Graders Taking Common Core-Aligned or Non-Common Core-Aligned Versions of MAP in 2012, 2013, and 2014

MAP Version	Number of Students	Average Spring RIT	Average Fall RIT	Average Change in RIT Score
Non-Common Core	393,869	223.2	220.0	-3.20
Common Core	730,217	222.5	217.6	-4.90

Summer math “loss” among 5th grade students: associations with 2 – 5 to 6+ and Common Core transitions

The next series of comparisons examined the extent to which the summer loss patterns observed in fifth graders were seen among all students, or whether they were seen primarily among high achievers. Table 3 shows summer loss among fifth/sixth graders, disaggregated by spring status norm achievement decile.

For students receiving Common Core and non-Common Core aligned versions of the tests, the summer loss patterns were systematically greater for high achievers than for lower achievers, but at every point in the achievement distribution, the summer loss issue was more pronounced (by about 1–2 RIT points) for the Common Core versions of the 2 – 5 test than for the non-Common Core versions.

Table 3. MAP Mathematics 2 – 5 to MAP 6+ Transition for Fifth Graders in 2012, 2013, and 2014 by Initial Achievement Decile

Spring Status Decile	Number of Students	Average Spring RIT	Average Fall RIT	Average Change in RIT Score
Non-Common Core MAP Test Events				
0	35,634	191.9	193.8	1.9
10	32,680	205.3	205.2	-0.1
20	34,061	211.1	210.3	-0.8
30	32,581	215.6	214.2	-1.4
40	27,739	219.0	216.9	-2.1
50	39,529	222.5	219.6	-2.9
60	40,783	226.5	222.7	-3.8
70	46,648	230.9	226.4	-4.5
80	44,649	236.4	230.7	-5.7
90	59,565	247.2	239.4	-7.8
Common Core MAP Test Events				
0	71,716	192.4	192.6	0.2
10	67,346	205.3	204.1	-1.2
20	66,126	211.1	209.1	-2.0
30	62,449	215.5	212.7	-2.8
40	51,794	219.0	215.4	-3.6
50	72,103	222.5	218.0	-4.5
60	73,002	226.5	220.9	-5.6
70	82,269	230.9	224.3	-6.6
80	78,501	236.3	228.5	-7.8
90	104,911	247.5	237.0	-10.5

Interpretation and Recommendations

These analyses suggest that the transition between the 2 – 5 to 6+ versions of MAP Mathematics has always been associated with a small amount of “summer loss” between spring of fifth grade and fall of sixth grade. However, the implementation of Common Core MAP has made the issue more visible. This is likely due to the fact that there are larger differences between the content strands (and sub-strands) measured by the 2 – 5 and 6+ versions of the MAP Mathematics test under Common Core than were commonly seen before. Table 4 outlines the differences in goal areas measured by the Common Core versions of 2 – 5 and 6+ MAP Mathematics tests.

Table 4. Content Strands and Sub-Strands of the Common Core MAP Mathematics Tests

Goal Number	Goal Name	Sub-Goal 1	Sub-Goal 2	Sub-Goal 3
Mathematics 2 – 5 Test				
1	Operations and Algebraic Thinking	Represent and Solve Problems	Analyze Patterns and Relationships	n/a
2	Numbers and Operations	Understand Place Value, Counting and Cardinality	Number and Operations in Base Ten	Number and Operations - Fractions
3	Measurement and Data	Geometric Measurement and Problem Solving	Represent and Interpret Data	n/a
4	Geometry	Reason with Shapes, Attributes, & Coordinate Plane		n/a
Mathematics 6+ Test				
1	Operations and Algebraic Thinking	Expressions and Equations	Use Functions to Model Relationships	n/a
2	The Real and Complex Number Systems	Ratios and Proportional Relationships	Perform Operations	Extend and Use Properties
3	Geometry	Geometric Measurement and Relationships	Congruence, Similarity, Right Triangles, & Trigonometry	n/a
4	Statistics and Probability	Interpreting Categorical and Quantitative Data	Using Sampling and Probability to Make Decisions	n/a

Although the items contained within the 2 – 5 and 6+ versions of the test are all calibrated to the same RIT scale, the differences in content between the two versions of the test can mean that a new sixth grade student, particularly a high-performing one, may see items within the 6+ test that measure content areas to which s/he has never been exposed. This can result in a perceived drop in performance when transitioning between the 2 – 5 test in the spring of fifth grade to the 6+ test in the fall of sixth grade. This may partially explain why the drop in score is higher for high-achieving students than for lower-achieving ones.

Based on these observations, our recommendation is that students who score at the 90th percentile (231) or higher on the 2 – 5 mathematics test in the fall of fifth grade be transitioned into more advanced sixth grade (or higher) instruction, if their teachers and parents agree that they are ready, and if other indicators such as grades are consistent with their high MAP test scores. Going forward, they should be transitioned into the 6+ MAP test during any subsequent testing seasons, after they have begun to receive instruction in the more advanced content.