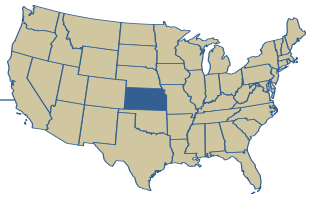
Kansas



Introduction

This study linked data from the 2006 administration of Kansas's reading and math tests to the Northwest Evaluation Association's Measures of Academic Progress (MAP) assessment, a computerized adaptive test used in schools nationwide. We found that Kansas's definitions of "proficiency" in reading and mathematics are relatively consistent with the standards set by the other 25 states in this study. In other words, Kansas's tests are about average in terms of difficulty.

Like many states, however, Kansas's math proficiency cut scores are easier in the earlier grades than in the later grades (taking into account the obvious differences in subject content and children's development). Therefore, the reported proficiency rates may overestimate the proportion of third-grade students who are actually on track to be proficient in eighth-grade mathematics. Moreover, Kansas's reading cut scores are generally easier than the state's corresponding math cut scores for a given grade. State policymakers might consider adjusting their math cut scores to ensure equivalent difficulty at all grades so that parents and schools can be assured that elementary school students scoring at the proficient level are truly prepared for success later in their educational careers. Furthermore, state leaders need to be aware of the disparity between math and reading standards when evaluating differences in teacher and student performance across these domains.

What We Studied: Kansas Assessment System

The current Kansas Assessment tests mathematics in students in grades 3-8, and grade 10, and reading in students in grades 3-8, and grade 11. This study linked data from spring 2006 to a common scale also administered in the 2006 school year.

To determine the difficulty of Kansas's proficiency cut scores, we linked data from state tests to the NWEA assessment. (A "proficiency cut score" is the score a student must achieve in order to be considered proficient.) This was done by analyzing a group of schools in which almost all students took both the Kansas Assessment and the NWEA test. (The methodology section of this report explains how performance on these two tests was compared.)

Part 1: How Difficult are Kansas's Definitions of Proficiency in Reading and Math?

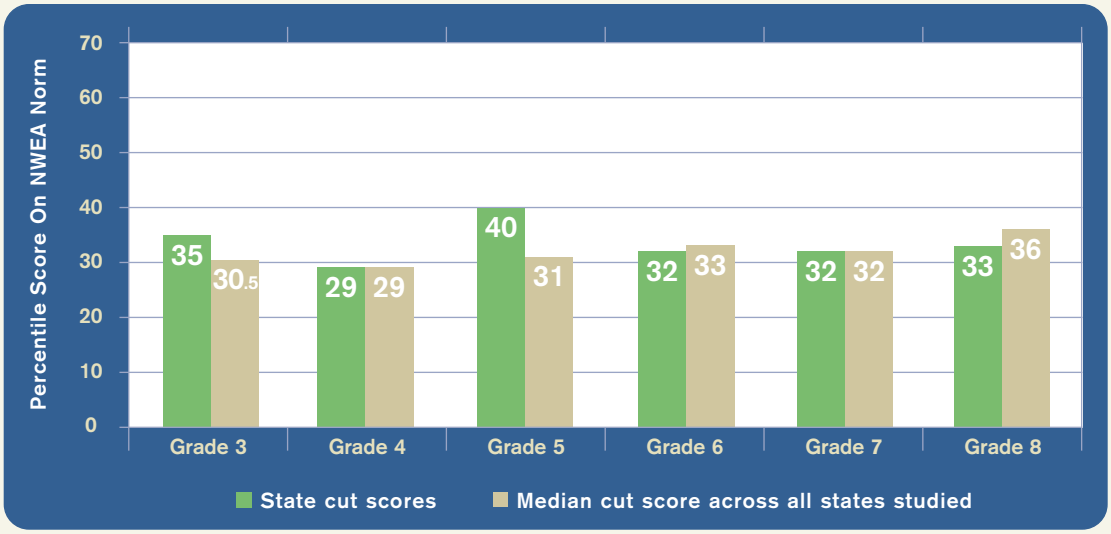
One way to assess the difficulty of a standard is to determine how many people attempting to attain it are likely to succeed. How do we know that a two-foot high jump bar is easy to leap? We know because if we asked 100 people at random to attempt such a jump, perhaps 80 percent would make it. How do we know that a six-foot high jump bar is challenging? We know because only one (or perhaps none) of those same 100 individuals would successfully meet that level of challenge. The same principle can be applied to academic standards. Common sense tells us that it is more difficult for students to solve algebraic equations with two unknown variables than it is for them to solve an equation with only one unknown variable. But we can figure out exactly how much more difficult by seeing how many eighth graders nationwide answer both types of questions correctly.

Applying that concept to this analysis, we evaluated the difficulty of the Kansas proficiency cut scores by estimating the proportion of students in NWEA's norm group who would perform above the cut score on a test of equivalent difficulty. The following two figures show the difficulty of Kansas proficiency cut scores for reading (Figure 1) and mathematics (Figure 2) in 2006 in relation to the median cut score for all the states in the study. The proficiency cut scores for **reading** in Kansas ranged between the 29th and 40th percentiles of the norm group, with the fifth grade being most challenging. In **mathematics**, the cut scores ranged between the 30th and 45th percentiles with the seventh grade being most challenging.

With a few exceptions, Kansas's cut scores in reading and math are near the median level of difficulty of all 26 states in this study. Note, though, that Kansas's reading cut scores are generally easier than the corresponding math cut score for a given grade. Thus, reported differences in achievement between the two subjects may be more a product of differences in cut scores than in actual student achievement. In other words, Kansas students might be performing worse in reading and better in mathematics than is apparent by just looking at the percentage of students passing state tests in those subjects.

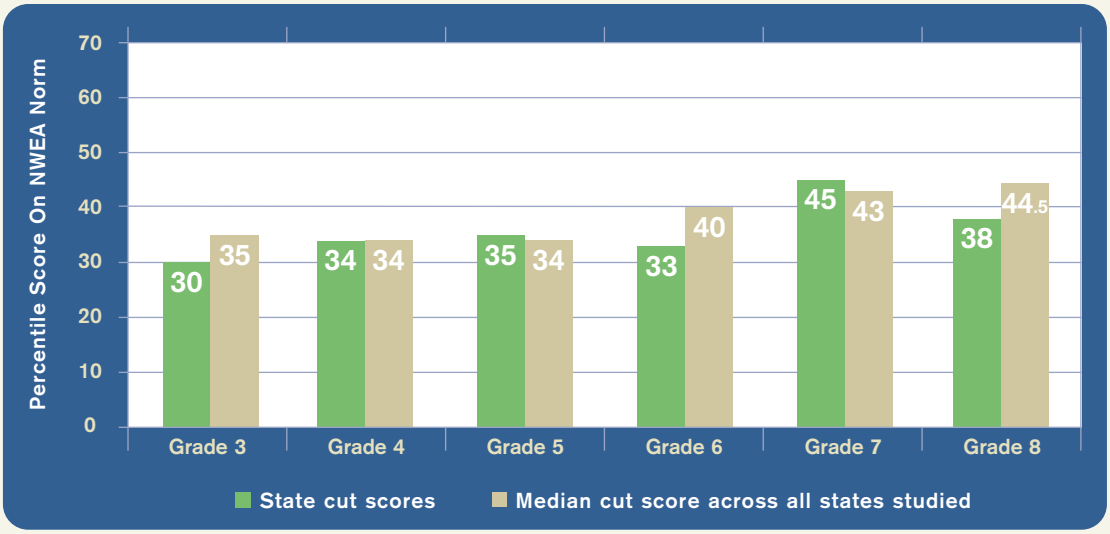
Another way of assessing difficulty is to evaluate how Kansas's proficiency cut scores rank relative to other states. Table 1 shows that the Kansas cut scores generally rank in the middle third in difficulty among the 26 states studied for this report.

Figure 1 – Kansas Reading Cut Scores in Relation to All 26 States Studied, 2006
(Expressed in 2005 MAP Percentiles)



Note: This figure compares reading test cut scores ("proficiency passing scores") as percentiles of the NWEA norm. These percentiles are compared with the median cut scores of other states reviewed in this study. Kansas's cut scores are generally near the median except in grades 3 and 5, which are respectively 4.5 and 9 percentile points above the median.

Figure 2 – Kansas Mathematics Cut Scores in Relation to All 26 States Studied, 2006
(Expressed in 2005 MAP Percentiles)



Note: Kansas's math test cut scores are shown as percentiles of the NWEA norm and compared with the median cut scores of all 26 states reviewed in this study. The cut scores are close to the median in grades 4, 5, and 7, but slip below in grades 3, 6, and 8.

Table 1 – Kansas Rank for Proficiency Cut Scores Among 26 States in Reading and Mathematics, 2006

	Ranking (Out of 26 States)					
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Reading	7	13	6	14	13	14
Mathematics	14	13	11	18	8	14

Note: This table ranks Kansas's cut scores relative to the cut scores of the other 25 states in the study, where 1 is highest and 26 is lowest.

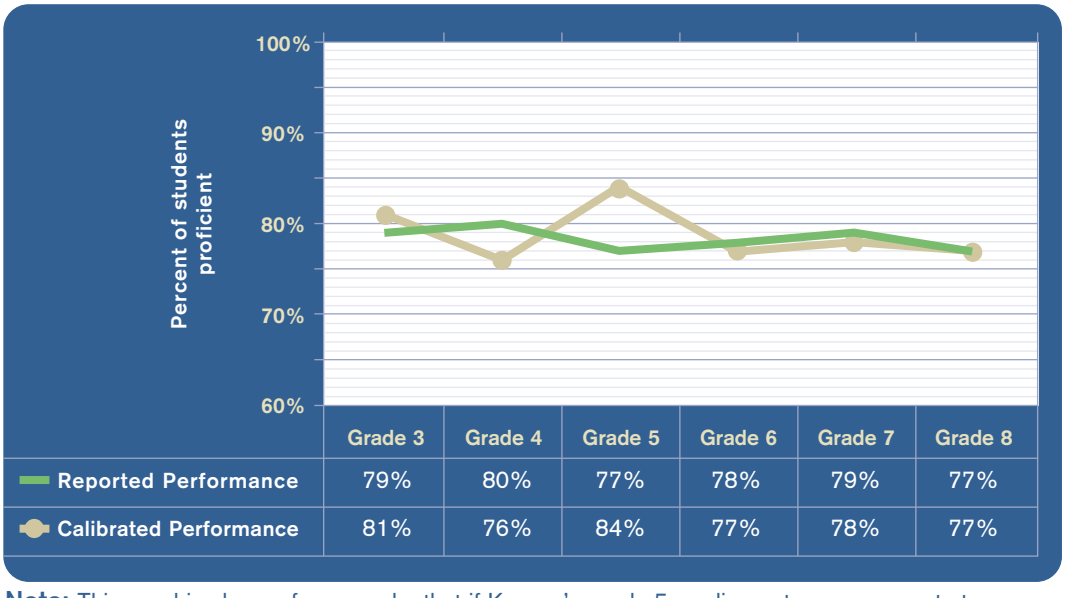
Part 2: Calibration across Grades*

Calibrated proficiency cut scores are those that are relatively equal in difficulty across all grades. Thus, an eighth-grade cut score would be no more or less difficult for eighth graders to achieve than a third-grade cut score is for third graders. When cut scores are so calibrated, parents and educators have some assurance that achieving the third-grade proficiency cut score puts a student on track to achieve the standards at eighth grade. It also provides assurance to the public that reported differences in performance across grades are a product of differences in actual educational attainment and not simply differences in the difficulty of the test.

Examining Kansas's cut scores, we find that they are not well calibrated across grades. Figures 1 and 2 above illustrated the relative difficulties of the Kansas's reading and math cut scores, showing how the mathematics proficiency cut scores for the lower grades were somewhat less difficult than for the higher grades. The two figures that follow show Kansas's reported performance in reading (Figure 3) and mathematics (Figure 4) on the state test, compared with the rates of proficiency that would be achieved if the cut scores were all calibrated to the grade 8 standard. This has little effect in reading but when the differences in grade-to-grade difficulty of the cut score are removed in math, student performance changes, suggesting that the higher rates of mathematics proficiency that the state has reported for elementary school students are somewhat misleading.

*Kansas was one of seven states in this study for which cut score estimates could be determined for only one time period. Therefore, it was not possible to examine whether the state's cut scores have changed over time.

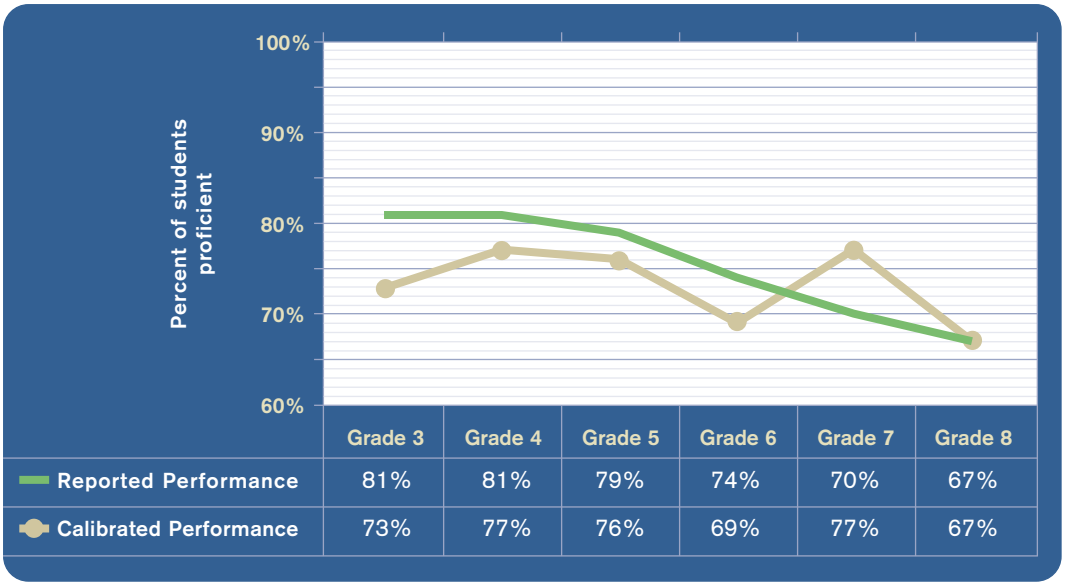
Figure 3 – Kansas Reading Performance as Reported and as Calibrated to the Grade-8 Standard, 2006



	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Reported Performance	79%	80%	77%	78%	79%	77%
Calibrated Performance	81%	76%	84%	77%	78%	77%

Note: This graphic shows, for example, that if Kansas's grade-5 reading cut score was set at the same level of difficulty as its grade-8 cut score, 84 percent of fifth graders would achieve the proficient level, rather than 77 percent, as was reported by the state.

Figure 4 – Kansas Mathematics Performance as Reported and as Calibrated to the Grade-8 Standard, 2006



	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Reported Performance	81%	81%	79%	74%	70%	67%
Calibrated Performance	73%	77%	76%	69%	77%	67%

Note: This graphic shows, for example, that if Kansas's grade-3 mathematics cut score was set at the same level of difficulty as its grade-8 standard, 73 percent of third graders would achieve the proficient level, rather than 81 percent, as was reported by the state.

Policy Implications

When setting its cut scores for what it takes for a student to be considered proficient in reading and math, Kansas is generally near the middle of the pack, compared to the other 25 states in this study. This finding is fairly consistent with the recent National Center for Education Statistics report, *Mapping 2005 State Proficiency Standards Onto the NAEP Scales,* which found Kansas's standards to be in the middle-third of the distribution of all states studied in grade-8 reading. Kansas's math proficiency cut scores are not smoothly calibrated across grades, however; students who are proficient in third-grade math are not necessarily on track to be proficient by the eighth grade. Kansas policymakers might consider adjusting their math cut scores across grades so that parents and schools can be assured that elementary school students scoring at the proficient level are truly prepared for success later in their educational careers. Furthermore, state leaders need to be aware of the disparity between math and reading standards when evaluating differences in teacher and student performance across these domains.