

**Equating Study**  
**Final Concordance Tables Between**  
**Metropolitan 8 and Iowa Test of Basic Skills**  
**For**  
**Grade K**

**Prepared by Pearson**  
**for the Arkansas Department of Education**

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## EXECUTIVE SUMMARY

**Purpose.** In the fall of 2008, Arkansas school systems administered the Metropolitan Achievement Tests, 8th Edition (MAT8) to kindergarten for the first time. Previously, the Iowa Test of Basic Skills (ITBS) had been administered to kindergarten. In order to be able to make comparisons of scores between ITBS and MAT8, the Arkansas Department of Education required that Pearson conduct an equating study between the two tests.

**Procedure.** Pearson conducted a study that used a randomly equivalent groups design that assumes the group of students tested with the ITBS in 2007 was equivalent to the group of students tested with the MAT8 in 2008.

The scores of those students tested in the fall of 2008 in first grade who had valid scores in the subtests of Sounds and Print and Mathematics were equated to the scores of those students in 2007 who had valid scores in the two subtests of Word Analysis and Mathematics Problems and Data Interpretation. While the final tables are meant for kindergarten, first graders from the fall were used because the MAT8 subtests used can appropriately be administered in the spring to kindergarten or in the fall to grade 1. The linking of the subjects was based on samples of approximately 35,000 students per grade and subject. Thus, the score comparisons for the equating study were based on a substantial number of Arkansas students.

The first step in the production of the equating tables was the creation of pairs of relative cumulative frequency distributions for each grade and subject by test. For example, separate frequency distributions of the ITBS Word Analysis scores from 2007 and the MAT8 Sounds and Print scores from 2008 were developed for kindergarten. In the second step, the score points in the distributions were matched, and statistically equivalent pairs of scores were identified. For example, if 65% of students obtained a scale score of 480 on the MAT8, and 65% of the students obtained a scale score of 128 on the ITBS, then a scale score of 480 on the MAT8 is said to be equivalent to a scale score of 128 on the ITBS. After the second step, an analytical procedure was used to smooth the final set of distributions.

**The Equating Tables.** For each of the subtests, two matched columns of Scale Scores (SS) are given. Table 1 displays equated scale scores for the MAT8 and the ITBS for kindergarten Mathematics. The two columns show all possible SS between 314 and 621 for MAT8 and the corresponding ITBS SS, as estimated by the equating study. For example, at kindergarten a MAT8 Mathematics Problem Solving SS of 383 is statistically equivalent to an ITBS SS of 105. Without the equating study one might erroneously conclude that there has been a loss of 278 SS in achievement from 2007 to 2008, while achievement has actually remained relatively stable. Tables 1 and 2 display equated Scale Scores (SS) for kindergarten Reading and Mathematics and were derived using the same procedure. It must be emphasized that the design used in this analysis is sufficiently precise to permit the *one-time* comparison of scores when Arkansas transitioned from administering the ITBS tests to the MAT8 tests. These concordance tables are based *only* on Arkansas students and these tables are not meant to map ITBS norms to MAT8 norms. *These equated scores are estimations and, thus, small differences of a few scale score points should not be overly emphasized.* Additionally, the lowest inclusive score for the Basic, Proficient, and Advanced performance levels are indicated in bold in each table.

**NOTE:** When states update their testing programs by administering a new norm-referenced test (NRT), there are often observed differences in the norm-referenced scores between the new and previous tests. Frequently, administering a new test results in lower scores because, along with other possible reasons, students and teachers are not familiar with the structure of the new test. However, scores tend to rise as familiarity increases. Therefore, there is often a concern about an artificial drop in scores when a new test is adopted, and the Arkansas Department of Education shared these concerns.

**Table 1**

**Grade K Math: Metropolitan 8 (MAT8) to ITBS Scale Score Concordance Table**

<b>MAT8 SS</b>	<b>ITBS SS</b>
314	92
342	97
359	101
372	103
383	105
392	107
401	109
409	111
416	113
423	113
429	115
436	118
442	120
<b>448</b>	<b>122</b>
455	123
461	123
467	125
474	126
480	128
<b>487</b>	<b>130</b>
494	131
501	133
509	136
<b>518</b>	<b>139</b>
528	139
539	142
552	145
569	150
596	150
621	157

Table 2

Grade K Reading: Metropolitan 8 (MAT8) to ITBS Scale Score Concordance Table

MAT8 SS	ITBS SS
366	94
373	96
379	96
385	99
390	101
395	103
399	105
404	106
408	106
412	108
417	110
421	110
425	113
428	113
432	115
436	117
440	117
444	119
<b>448</b>	<b>121</b>

MAT8 SS	ITBS SS
452	121
457	123
461	125
466	125
470	127
<b>475</b>	<b>130</b>
481	130
486	132
492	135
499	135
<b>507</b>	<b>138</b>
516	142
528	145
543	149
569	153
592	166