



# Linking the R-CBM and MAZE with The Lexile Framework<sup>®</sup> for Reading

*A Study to Link the Reading Curriculum-Based Measurement  
and Reading Maze with the Lexile Framework*

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*Prepared by MetaMetrics for:*  
**Pearson**



**MetaMetrics<sup>®</sup>**

1000 Park Forty Plaza Drive, Suite 120  
Durham, North Carolina 27713  
[www.MetaMetricsInc.com](http://www.MetaMetricsInc.com)  
[www.Lexile.com](http://www.Lexile.com)

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## Introduction

Often it is desirable to convey more information about test performance than can be incorporated into a single primary score scale. Two examples arise in large-scale assessment. In one situation, one test can provide a unique type of information (such as national comparisons available from NAEP) but is not administered very often. At the same time another test is administered more often, but is not able to provide the breadth of information (such as a state assessment). An auxiliary score scale for a test can be established to provide this additional information through assessment scale linkages. Once linkages are established between the two assessments, then the results of the more-frequently-administered assessment can be translated in terms of the scale for the other assessment.

In another situation, the linkage between two score scales can be used to provide a context for understanding the results of one of the assessments. For example, sometimes it is hard to explain what a student can read based on the results of a reading comprehension test. Parents typically ask the questions “If my child is in the fourth grade and scores 140 on the *Reading Curriculum-Based Measurement* (R-CBM), what does this mean?” or “Based on my child’s test results, what can he or she read and how well?” or “Is my child well prepared to meet the reading demands of grade-level materials?” Once a linkage is established with an assessment that is related to specific book or text titles, then the results of the assessment can be explained and interpreted in the context of the specific titles that a student can read.

Auxiliary score scales can be used to “convey additional normative information, test-content information, and information that is jointly normative and content based. For many test uses, an auxiliary scale conveys information that is more crucial than the information conveyed by the primary score scale. In such instances, the auxiliary score is the one that is focused on, and the primary scale can be viewed more as a vehicle for maintaining interpretability over time” (Petersen, Kolen, & Hoover, 1989, p. 222). One such auxiliary scale is The Lexile<sup>®</sup> Framework for Reading, which was developed to appropriately target readers with text at a level that provides challenge but not frustration.

Linking assessment results with the Lexile Framework<sup>®</sup> provides a mechanism for targeting each student’s reading ability with text on a common scale. It serves as an anchor to which texts and assessments can be connected allowing parents, teachers, and administrators to speak the same language. By using the Lexile Framework, the same

metric is applied to the books the children read, the tests they take, and the results that are reported. Parents often ask questions like the following:

- How can I help my child become a better reader?
- How do I challenge my child to read?

Questions like these can be challenging for parents and educators. By linking the R-CBM and MAZE with The Lexile Framework for Reading, educators and parents will be able to answer these questions and will be better able to use the results from the test to improve instruction and to develop each student's level of reading comprehension.

This research study was designed to determine a mechanism to provide reading levels that can be targeted to text based on the test scores. The study was funded by Pearson and conducted by the staff at MetaMetrics, Inc. in collaboration with the staff at Pearson. The primary purposes of this study were to:

- present a solution for targeting readers with text;
- provide Pearson with Lexile measures on R-CBM and MAZE;
- release conversion tables for predicting Lexile measures from the R-CBM and MAZE results; and
- produce a report that describes the linking analysis procedures.

# The Lexile Framework for Reading

All symbol systems share two features: a semantic component and a syntactic component. In language, the semantic units are words. Words are organized according to rules of syntax into thought units and sentences (Carver, 1974). In all cases, the semantic units vary in familiarity and the syntactic structures vary in complexity. The comprehensibility or complexity of a message is dominated by the familiarity of the semantic units and by the complexity of the syntactic structures used in constructing the message.

## The Semantic Component

As far as the semantic component is concerned, it is clear that most operationalizations are proxies for the probability that an individual will encounter a word in a familiar context and thus be able to infer its meaning (Bormuth, 1966). This is the basis of exposure theory, which explains the way receptive or hearing vocabulary develops (Miller & Gildea, 1987; Stenner, Smith, & Burdick, 1983). Klare (1963) hypothesized that the semantic component varied along a familiarity-to-rarity continuum. This concept was further developed by Carroll, Davies, and Richman (1971), whose word-frequency study examined the reoccurrence of words in a five-million-word corpus of running text. Knowing the frequency of words as they are used in written and oral communication provided the best means of inferring the likelihood that a word would be encountered by a reader and thus become a part of that individual's receptive vocabulary.

Variables such as the average number of letters or syllables per word have been observed to be proxies for word frequency. There is a strong negative correlation between the length of words and the frequency of word usage. Polysyllabic words are used less frequently than monosyllabic words, making word length a good proxy for the likelihood that an individual will be exposed to a word.

In a study examining receptive vocabulary, Stenner, Smith, and Burdick (1983) analyzed more than 50 semantic variables in order to identify those elements that contributed to the difficulty of the 350 vocabulary items on Forms L and M of the *Peabody Picture Vocabulary Test – Revised* (Dunn & Dunn, 1981). Variables included part of speech, number of letters, number of syllables, the modal grade at which the word appeared in school materials, content classification of the word, the frequency of the word from two different word counts, and various algebraic transformations of these measures.

The first word frequency measure used was the raw count of how often a given word appeared in a corpus of 5,088,721 words sampled from a broad range of school materials (Carroll, Davies, & Richman, 1971). For example, the word “accident” appears

176 times in the 5,088,721-word corpus. The second word frequency measure used was the frequency of the “word family.” A word family included: (1) the stimulus word; (2) all plurals (adding “-s” or “-es” or changing “-y” to “-ies”); (3) adverbial forms; (4) comparatives and superlatives; (5) verb forms (“-s,” “-d,” “-ed,” and “-ing”); (6) past participles; and (7) adjective forms. For example, the word family for “accident” would include “accidental,” “accidentally,” “accidentals,” and “accidents,” and they would all have the same word frequency of 334. The frequency of a word family was based on the sum of the individual word frequencies from each of the types listed.

Correlations were computed between algebraic transformations of these means (mean frequency of the words in the test item and mean frequency of the word families in the test item) and the rank order of the test items. Since the items were ordered according to increasing difficulty, the rank order was used as the observed item difficulty. The log of the mean word frequency provided the strongest correlation with item rank order ( $r = -.779$ ) for the items on the combined form.

The Lexile Framework currently employs a 330-million-word corpus when examining the semantic component of text. This corpus was assembled from the more than 15,000 texts that were measured by MetaMetrics for publishers from 1998 through 2002. When text is analyzed by MetaMetrics, all electronic files are initially edited according to established guidelines used with the Lexile Analyzer software. These guidelines include the removal of all incomplete sentences, chapter titles, and paragraph headings; running of a spell check; and re-punctuating where necessary to correspond to how the book would be read by a child (for example, at the end of a page). The text is then submitted to the Lexile Analyzer that examines the lengths of the sentences and the frequencies of the words and reports a Lexile measure for the book. When enough additional texts have been analyzed to make an adjustment to the corpus necessary and desirable, a linking study will be conducted to adjust the calibration equation such that the Lexile measure of a text based on the current corpus will be equivalent to the Lexile measure based on the new corpus.

## **The Syntactic Component**

Klare (1963) provides a possible interpretation for how sentence length works in predicting passage complexity. He speculated that the syntactic component varied with the load placed on short-term memory. Crain and Shankweiler (1988), Shankweiler and Crain (1986), and Liberman, Mann, Shankweiler, and Westelman (1982) have also supported this explanation. The work of these individuals has provided evidence that sentence length is a good proxy for the demand that structural complexity places upon verbal short-term memory.



While sentence length has been shown to be a powerful proxy for the syntactic complexity of a passage, an important caveat is that sentence length is not the underlying causal influence (Chall, 1988). Researchers sometimes incorrectly assume that manipulation of sentence length will have a predictable effect on passage complexity. Davidson and Kantor (1982), for example, illustrated rather clearly that sentence length can be reduced and complexity increased and vice versa.

Based on previous research, it was decided to use sentence length as a proxy for the syntactic component of reading complexity in the Lexile Framework.

### **Calibration of Text Complexity**

The research study on semantic units (Stenner, Smith, & Burdick, 1983) was extended to examine the relationship of word frequency and sentence length to reading comprehension. In 1987(a), Stenner, Smith, Horabin, and Smith performed exploratory regression analyses to test the explanatory power of these variables. This analysis involved calculating the mean word frequency and the log of the mean sentence length for each of the 66 reading comprehension passages on the *Peabody Individual Achievement Test* (Dunn & Markwardt, 1970). The observed difficulty of each passage was the mean difficulty of the items associated with the passage (provided by the publisher) converted to the logit scale. A regression analysis based on the word-frequency and sentence-length measures produced a regression equation that explained most of the variance found in the set of reading comprehension tasks. The resulting correlation between the observed logit difficulties and the theoretical calibrations was 0.97 after correction for range restriction and measurement error. The regression equation was further refined based on its use in predicting the observed difficulty of the reading comprehension passages on 8 other standardized tests. The resulting correlation between the observed logit difficulties and the theoretical calibrations across the 9 tests was 0.93 after correction for range restriction and measurement error.

Once a regression equation is established linking the syntactic and semantic features of text to the complexity of text, the equation can be used to calibrate test items and text.

### **The Lexile Scale**

In developing the Lexile Scale, the Rasch model (Wright & Stone, 1979) was used to estimate the difficulties of the items and the abilities of the persons on the logit scale.

The calibrations of the items from the Rasch model are objective in the sense that the relative difficulties of the items will remain the same across different samples of persons (specific objectivity). When two items are administered to the same group it can be

determined which item is harder and which one is easier. This ordering should hold when the same two items are administered to a second group. If two different items are administered to the second group, there is no way to know which set of items is harder and which set is easier. The problem is that the location of the scale is not known. General objectivity requires that scores obtained from different test administrations be tied to a common zero – absolute location must be sample independent (Stenner, 1990). To achieve general objectivity, the theoretical logit difficulties must be transformed to a scale where the ambiguity regarding the location of zero is resolved.

The first step in developing a scale with a fixed zero was to identify two anchor points for the scale. The following criteria were used to select the two anchor points: they should be intuitive, easily reproduced, and widely recognized. For example, with most thermometers the anchor points are the freezing and boiling points of water. For the Lexile Scale, the anchor points are text from seven basal primers for the low end and text from *The Electronic Encyclopedia* (Grolier, Inc., 1986) for the high end. These points correspond to the middle of first grade text and the midpoint of workplace text.

The next step was to determine the unit size for the scale. For the Celsius thermometer, the unit size (a degree) is 1/100<sup>th</sup> of the difference between freezing (0 degrees) and boiling (100 degrees) water. For the Lexile Scale the unit size (a Lexile) was defined as 1/1000<sup>th</sup> of the difference between the mean complexity of the primer material and the mean complexity of the encyclopedia samples. Therefore, a Lexile by definition equals 1/1000<sup>th</sup> of the difference between the complexity of the primers and the complexity of the encyclopedia.

The third step was to assign a value to the lower anchor point. The low-end anchor on the Lexile Scale was assigned a value of 200.

Finally, a linear equation of the form

$$[(\text{Logit} + \text{constant}) \times \text{CF}] + 200 = \text{Lexile text measure} \quad \text{Equation (1)}$$

was developed to convert logit difficulties to Lexile calibrations. The values of the conversion factor (CF) and the constant were determined by substituting in the low-end anchor point and then solving the system of equations.

The Lexile Scale ranges from below zero to above 2000L. There is not an explicit bottom or top to the scale, but rather two anchor points on the scale (described above) that describe different levels of reading comprehension. The Lexile Map, a graphic representation of the Lexile Scale from 200L to 1700L, provides a context for understanding reading comprehension.

## Validity of The Lexile Framework for Reading

Validity refers to the “degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests” (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999). In other words, does the test measure what it is supposed to measure? For the Lexile Framework, which measures a skill, the most important aspect of validity that should be examined is construct validity. The validity of the Lexile Framework can be evaluated by examining how well Lexile measures relate to other measures of reading comprehension and text complexity.

*Lexile Framework and other Measures of Reading Comprehension.* Table 1 presents the results from studies where students were administered a Lexile assessment and another assessment of reading comprehension. There is a strong relationship between reading comprehension ability as measured by the Lexile Framework and reading comprehension ability as measured by other assessments.

*Table 1. Results from linking studies conducted with The Lexile Framework for Reading.*

Standardized Test	Grades in Study	<i>N</i>	Correlation Between Test Score and Lexile Measure
Stanford Achievement Tests (Ninth Edition)	4, 6, 8, 10	1,167	0.92
Stanford Diagnostic Reading Test (Version 4)	4, 6, 8, 10	1,169	0.91
North Carolina End-of-Grade Test of Reading Comprehension (NCEOG) ) and English I End-of-Course Test (NCEOC)	4, 6, 7, and English I	6,397	0.91 and 0.87
TerraNova Assessment Series (CTBS/5)	2, 4, 6, 8	2,713	0.92
Texas Assessment of Academic Skills (TAAS)	3 through 8	3,623	0.73 to 0.78*
Gates-MacGinitie Reading Test	2, 4, 6, 8, 10	4,644	0.90
Metropolitan Achievement Test (Eighth Edition)	2, 4, 6, 8, 10	2,382	0.93
Texas Assessment of Knowledge and Skills (TAKS)	3, 5, 8	1,960	0.60 to 0.73*
The Iowa Tests (Iowa Tests of Basic Skills and Iowa Tests of Educational Development)	3, 5, 7, 9, and 11	4,666	0.88
Stanford Achievement Test (Tenth Edition)	2, 4, 6, 8, and 10	3,064	0.93
Oregon Reading/Literature Knowledge and Skills Test	3, 5, 8, and 10	3,180	0.89
Mississippi Curriculum Test	2, 4, 6, and 8	7,045	0.90
Georgia Criterion Referenced Competency Test (CRCT and GHSGT)	1 – 8, and 11	16,363	0.72 to 0.88*
Wyoming Performance Assessment for Wyoming Students (PAWS)	3, 5, 7, and 11	3,871	0.91
Arizona Instrument to Measure Progress (AIMS)	3, 5, 7, and 10	7,735	0.89
South Carolina Palmetto Achievement Challenge Tests (PACT)	3 – 8	15,559	0.87 to 0.88*

Notes: Results are based on final samples used with each linking study.

\*TAAS, TAKS, CRCT/GHSGT, and PACT were not vertically equated; separate linking equations were derived for each grade.

*Lexile Framework and the Complexity of Basal Readers.* In a study conducted by Stenner, Smith, Horabin, and Smith (1987b) Lexile calibrations were obtained for units in 11 basal series. It was presumed that each basal series was sequenced by difficulty. So, for example, the latter portion of a third-grade reader is presumably more difficult than the first portion of the same book. Likewise, a fourth-grade reader is presumed to be more difficult than a third-grade reader. Observed difficulties for each unit in a basal series were estimated by the rank order of the unit in the series. Thus, the first unit in the first book of the first grade was assigned a rank order of one and the last unit of the eighth-grade reader was assigned the highest rank order number.

Correlations were computed between the rank order and the Lexile calibration of each unit in each series. After correction for range restriction and measurement error, the average disattenuated correlation between the Lexile calibration of text comprehensibility and the rank order of the basal units was 0.995 (see *Table 2*).

*Table 2.* Correlations between theory-based calibrations produced by the Lexile equation and rank order of unit in basal readers.

Basal Series	Number of Units	$r_{OT}$	$R_{OT}$	$R'_{OT}$
Ginn Rainbow Series (1985)	53	.93	.98	1.00
HBJ Eagle Series (1983)	70	.93	.98	1.00
Scott Foresman Focus Series (1985)	92	.84	.99	1.00
Riverside Reading Series (1986)	67	.87	.97	1.00
Houghton-Mifflin Reading Series (1983)	33	.88	.96	.99
Economy Reading Series (1986)	67	.86	.96	.99
Scott Foresman American Tradition (1987)	88	.85	.97	.99
HBJ Odyssey Series (1986)	38	.79	.97	.99
Holt Basic Reading Series (1986)	54	.87	.96	.98
Houghton-Mifflin Reading Series (1986)	46	.81	.95	.98
Open Court Headway Program (1985)	52	.54	.94	.97
Total/Means*	660	.839	.965	.995

$r_{OT}$  = raw correlation between observed difficulties (*O*) and theory-based calibrations (*T*).

$R_{OT}$  = correlation between observed difficulties (*O*) and theory-based calibrations (*T*) corrected for range restriction.

$R'_{OT}$  = correlation between observed difficulties (*O*) and theory-based calibrations (*T*) corrected for range restriction and measurement error.

\*Mean correlations are the weighted averages of the respective correlations.

Based on the consistency of the results in *Table 2*, the Lexile theory was able to account for the unit rank ordering of the 11 basal series even with numerous differences in the series – prose selections, developmental range addressed, types of prose introduced (i.e., narrative versus expository), and purported skills and objectives emphasized.

*Lexile Framework and the Difficulty of Reading Test Items.* In a study conducted by Stenner, Smith, Horabin, and Smith (1987a), 1,780 reading comprehension test items appearing on nine nationally-normed tests were analyzed. The study correlated empirical item difficulties provided by the publishers with the Lexile calibrations specified by the computer analysis of the text of each item. The empirical difficulties were obtained in one of three ways. Three of the tests included observed logit difficulties from either a Rasch or three-parameter analysis (e.g., NAEP). For four of the tests, logit difficulties were estimated from item *p*-values and raw score means and standard deviations (Poznanski, 1990; Wright & Linacre, 1994). Two of the tests provided no item parameters, but in each case items were ordered on the test in terms of difficulty (e.g., PIAT). For these two tests, the empirical difficulties were approximated by the difficulty rank order of the items. In those cases where multiple questions were asked about a single passage, empirical item difficulties were averaged to yield a single observed difficulty for the passage.

Once theory-specified calibrations and empirical item difficulties were computed, the two arrays were correlated and plotted separately for each test. The plots were checked for unusual residual distributions and curvature, and it was discovered that the Lexile equation did not fit poetry items or noncontinuous prose items (e.g., recipes, menus, or shopping lists). This indicated that the universe to which the Lexile equation could be generalized was limited to continuous prose. The poetry and noncontinuous prose items were removed and correlations were recalculated. *Table 3* contains the results of this analysis.

Table 3. Correlations between theory-based calibrations produced by the Lexile equation and empirical item difficulties.

Test	Number of Questions	Number of Passages	Mean	SD	Range	Min	Max	$r_{OT}$	$R_{OT}$	$R'_{OT}$
SRA	235	46	644	353	1303	33	1336	.95	.97	1.00
CAT-E	418	74	789	258	1339	212	1551	.91	.95	.98
Lexile	262	262	771	463	1910	-304	1606	.93	.95	.97
PIAT	66	66	939	451	1515	242	1757	.93	.94	.97
CAT-C	253	43	744	238	810	314	1124	.83	.93	.96
CTBS	246	50	703	271	1133	173	1306	.74	.92	.95
NAEP	189	70	833	263	1162	169	1331	.65	.92	.94
Battery	26	26	491	560	2186	-702	1484	.88	.84	.87
Mastery	85	85	593	488	2135	-586	1549	.74	.75	.77
Total/ Mean	1780	722	767	343	1441	50	1491	.84	.91	.93

$r_{OT}$  = raw correlation between observed difficulties ( $O$ ) and theory-based calibrations ( $T$ ).

$R_{OT}$  = correlation between observed difficulties ( $O$ ) and theory-based calibrations ( $T$ ) corrected for range restriction.

$R'_{OT}$  = correlation between observed difficulties ( $O$ ) and theory-based calibrations ( $T$ ) corrected for range restriction and measurement error.

\*Means are computed on Fisher  $Z$  transformed correlations.

The last three columns in *Table 3* show the raw correlation between observed ( $O$ ) item difficulties and theoretical ( $T$ ) item calibrations, with the correlations corrected for restriction in range and measurement error. The Fisher  $Z$  mean of the raw correlations ( $r_{OT}$ ) is 0.84. When corrections are made for range restriction and measurement error, the Fisher  $Z$  mean disattenuated correlation between theory-based calibration and empirical difficulty in an unrestricted group of reading comprehension items ( $R'_{OT}$ ) is 0.93. These results show that most attempts to measure reading comprehension, no matter what the item form, type of skill objectives assessed, or response requirement used, measure a common comprehension factor specified by the Lexile theory.

### Text Measure Error Associated with the Lexile Framework

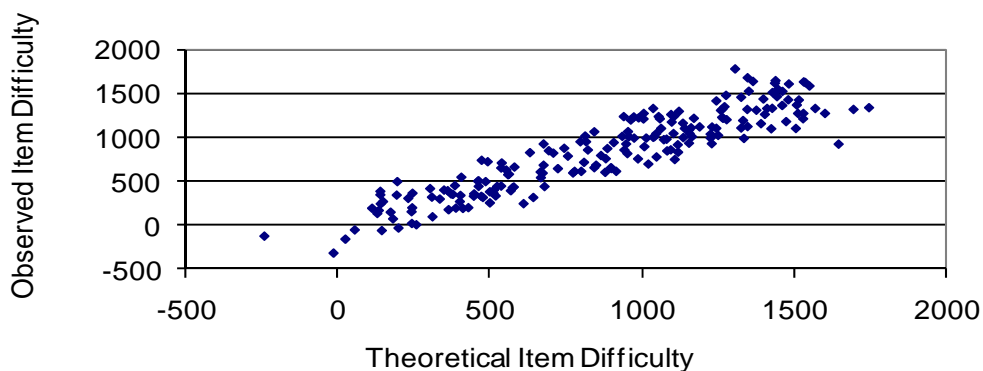
To determine a Lexile measure for a text, the standard procedure is to process the entire text. All pages in the work are concatenated into an electronic file that is processed by a software package called the Lexile Analyzer (developed by MetaMetrics, Inc.). The analyzer “slices” the text file into as many 125-word passages as possible, analyzes the set of slices, and then calibrates each slice in terms of the logit metric. That set of calibrations is then processed to determine the Lexile measure corresponding to a 75% comprehension rate. The analyzer uses the slice calibrations as test item calibrations and

then solves for the measure corresponding to a raw score of 75% (e.g., 30 out of 40 correct, as if the slices were test items). The Lexile Analyzer automates this process, but what “certainty” can be attached to each text measure?

Using the bootstrap procedure to examine error due to the text samples, the above analysis could be repeated (Efron, 1981; Sitter, 1992). The result would be an identical text measure to the first because there is no sampling error when a complete text is calibrated.

There is, however, another source of error that increases the uncertainty about where a text is located on the Lexile Map. The Lexile Theory is imperfect in its calibration of the complexity of individual text slices. To examine this source of error, 200 items that had been previously calibrated and shown to fit the model were administered to 3,026 students in Grades 2 through 12 in a large urban school district. For each item the observed item difficulty calibrated from the Rasch model was compared with the theoretical item difficulty calibrated from the regression equation used to calibrate texts. A scatter plot of the data is presented in *Figure 1*.

*Figure 1.* Scatter plot between observed item difficulty and theoretical item difficulty.



The correlation between the observed and the theoretical calibrations for the 200 items was 0.92 and the root mean square error was 178L. Therefore, for an individual slice of text the measurement error is 178L.

The standard error of measurement associated with a text is a function of the error associated with one slice of text (178L) and the number of slices that are calibrated from a text. Very short books have larger uncertainties than longer books. A book with only



four slices would have an uncertainty of 89L whereas a longer book, such as *War and Peace* (4,082 slices of text), would only have an uncertainty of 3L (Table 4).

Table 4. Standard errors for selected values of the length of the text.

Title	Number of Slices	Text Measure	Standard Error of Text
<i>The Stories Julian Tells</i>	46	520	26
<i>Bunnicula</i>	102	710	18
<i>The Pizza Mystery</i>	137	620	15
<i>Meditations of First Philosophy</i>	206	1720	12
<i>Metaphysics of Morals</i>	209	1620	12
<i>Adventures of Pinocchio</i>	294	780	10
<i>Red Badge of Courage</i>	348	900	10
<i>Scarlet Letter</i>	597	1420	7
<i>Pride and Prejudice</i>	904	1100	6
<i>Decameron</i>	2431	1510	4
<i>War and Peace</i>	4082	1200	3

A typical Grade 3 reading test has approximately 2,000 words in the passages. To calibrate this text, it would be sliced into 16 125-word passages. The error associated with this text measure would be 45L. A typical Grade 7 reading test has approximately 3,000 words in the passages and the error associated with the text measure would be 36L. A typical Grade 10 reading test has approximately 4,000 words in the passages and the error associated with the text measure would be 30L.

The Lexile Titles Database ([www.Lexile.com](http://www.Lexile.com)) contains information about each book analyzed: author, Lexile measure and Lexile Code, awards, ISBN, and developmental level as determined by the publisher. Information concerning the length of a book and the extent of illustrations – factors that affect a reader’s perception of the difficulty of a book – can be obtained from MetaMetrics.

### Lexile Item Bank

The Lexile Item Bank contains over 10,000 items that have been developed between 1986 and 2000 for research purposes with the Lexile Framework.

*Passage Selection.* Passages selected for use are selected from “real world” reading materials that students may encounter both in and out of the classroom. Sources include textbooks, literature, and periodicals from a variety of interest areas and material

written by authors of different backgrounds. The following criteria are used to select passages:

- the passage must develop one main idea or contain one complete piece of information;
- understanding of the passage is independent of the information that comes before or after the passage in the source text; and
- understanding of the passage is independent of prior knowledge not contained in the passage.

With the aid of a computer program, item writers examine blocks of text (minimum of three sentences) that are calibrated to be within 100L of the source text. From these blocks of text item writers are asked to select four to five that could be developed as items. If it is necessary to shorten or lengthen the passage in order to meet the criteria for passage selection, the item writer can immediately recalibrate the text to ensure that it is still targeted within 100L of the complete text (source targeting).

*Item Format.* The native Lexile item format is embedded completion. The embedded completion format is similar to the fill-in-the-blank format. When properly written, this format directly assesses the reader's ability to draw inferences and establish logical connections between the ideas in the passage (Haladyna, 1994). The reader is presented with a passage of approximately 30 to 150 words in length. The passages are shorter for beginning readers and longer for more advanced readers. The passage is then response illustrated (a statement is added at the end of the passage with a missing word or phrase followed by four options). From the four presented options, the reader is asked to select the "best" option that completes the statement. With this format, all options are semantically and syntactically appropriate completions of the sentence, but one option is unambiguously the "best" option when considered in the context of the passage.

The statement portion of the embedded completion item can assess a variety of skills related to reading comprehension: paraphrase information in the passage, draw a logical conclusion based on the information in the passage, make an inference, identify a supporting detail, or make a generalization based on the information in the passage. The statement is written to ensure that by reading and comprehending the passage the reader is able to select the correct option. When the embedded completion statement is read by itself, each of the four options is plausible.

*Item Writer Training.* Item writers are classroom teachers and other educators who have had experience with the everyday reading ability of students at various levels. The use of individuals with these types of experiences helps to ensure that the items are valid measures of reading comprehension. Item writers are provided with training materials concerning the embedded completion item format and guidelines for selecting passages, developing statements, and selecting options. The item writing materials also

contain incorrect items that illustrate the criteria used to evaluate items and corrections based on those criteria. The final phase of item writer training is a short practice session with three items.

Item writers are provided vocabulary lists to use during statement and option development. The vocabulary lists were compiled from spelling books one grade level below the level the item would typically be used with. The rationale was that these words should be part of a reader's "working" vocabulary since they had been learned the previous year.

Item writers are also given extensive training related to "sensitivity" issues. Part of the item writing materials address these issues and identify areas to avoid when selecting passages and developing items. The following areas are covered: violence and crime, depressing situations/death, offensive language, drugs/alcohol/tobacco, sex/attraction, race/ethnicity, class, gender, religion, supernatural/magic, parent/family, politics, animals/environment, and brand names/junk food. These materials were developed based on material published by McGraw-Hill (*Guidelines for Bias-Free Publishing*). This publication discusses the equal treatment of the sexes, fair representation of minority groups, and the fair representation of disabled individuals.

*Item Review.* All items are subjected to a two-stage review process. First, items are reviewed and edited by an editor according to the 19 criteria identified in the item writing materials and for sensitivity issues. Approximately 25% of the items developed are deleted for various reasons. Where possible items were edited and maintained in the item bank.

Items are then reviewed and edited by a group of specialists that represent various perspectives – test developers, editors, and curriculum specialists. These individuals examine each item for sensitivity issues and for the quality of the response options. During the second stage of the item review process, items are either "approved as presented," "approved with edits," or "deleted." Approximately 10% of the items written are "approved with edits" or "deleted" at this stage. When necessary, item writers receive additional on-going feedback and training.

*Item Analyses.* As part of the linking studies and research studies conducted by MetaMetrics, items in the Lexile Item Bank are evaluated in terms of difficulty (relationship between logit [observed Lexile measure] and theoretical Lexile measure), internal consistency (point-biserial correlation), and bias (ethnicity and gender where possible). Where necessary, items are deleted from the item bank or revised and recalibrated.

During the spring of 1999, 8 levels of a Lexile assessment were administered in a large urban school district to students in grades 1 through 12. The 8 test levels were

administered in grades 1, 2, 3, 4, 5, 6, 7-8, and 9-12 and ranged from 40 to 70 items depending on the grade level. A total of 427 items were administered across the 8 test levels. Each item was answered by at least 9,000 students (the number of students per level ranged from 9,286 in grade 2 to 19,056 in grades 9-12). The item responses were submitted to a Winsteps IRT analysis. The resulting item difficulties (in logits) were assigned Lexile measures by multiplying by 180 and anchoring each set of items to the mean theoretical difficulty of the items on the form.

# AIMSweb - Lexile Framework Linking Process

## Description of the Assessments

*AIMSweb.* AIMSweb® is an assessment, data organization, and reporting system that provides the framework and data necessary for response to intervention (RTI) and multitiered instruction. Designed specifically to benchmark and monitor progress, AIMSweb uses Curriculum-Based Measurement (CBM) practices: brief, reliable, and valid measures of basic reading skills, language arts, and mathematics (Howe & Shinn, 2002). These standardized tests are based on general outcome measurement principles so they can be efficiently and accurately used to evaluate student progress relative to a year-end target, regardless of curriculum or intervention. Two such standardized tests are Reading Curriculum-Based Measurement and Reading Maze.

**Reading Curriculum-Based Measurement (R-CBM).** Reading Curriculum-Based Measurement is based on listening to students read graded passages aloud for 1 minute and calculating the number of words read correctly per minute (Shinn & Shinn, 2002). This measure of oral reading fluency provides a highly reliable and valid measure of general reading achievement, including comprehension, for most students. Passages that represent the general curriculum were field tested to determine their grade-level appropriateness. Based on this research, selected passages were used for R-CBM.

**Reading Maze (MAZE).** Reading Maze is a multiple-choice cloze task that students complete while reading silently (Shinn & Shinn, 2002). The first sentence of a 150-400 word passage is left intact. Thereafter, every 7th word is replaced with three words inside parenthesis. One of the words is the exact one from the original passage. The two others are distractors. These distractors are not random. One of the distractors is a *near distractor*, a word of the same “type” (e.g., noun, verb, adverb), that does not make sense or preserve meaning. The other distractor is a *far distractor*, a word not of the same type but a word that is selected randomly from the story that does not make sense. Science-based research has shown that this provides a reliable and valid measure of reading comprehension.

*The Lexile Framework for Reading.* The Lexile Framework is a tool that can help teachers, parents, and students locate challenging reading materials. Text complexity and reader ability are measured in the same unit – the Lexile. Text complexity is determined by examining such characteristics as word frequency and sentence length. Items and text are calibrated using the Rasch model. The typical range of the Lexile Scale is from 200 to 1700 Lexiles, although actual Lexile measures can range from below zero (BR) to above 2000 Lexiles (see the discussion on pages 5-6 for more information).

Using multiple-choice items, the Lexile Framework measures reading comprehension by focusing on skills readers use when studying written materials sampled from various content areas. Each test item consists of a passage that is response-illustrated (a statement is added at the end of the passage with a missing word or phrase followed by four options, or distractors). The skills measured by these items include referring to details in the passage, drawing conclusions, and making comparisons and generalizations. Lexile items do not require prior knowledge of ideas outside of the passage, vocabulary taken out of context, or formal logic.

Linking tests for the AIMSweb in reading were developed for administration to students in Grades 1 through 8. Each test contained 35 four-choice multiple-choice items that had been previously field-tested and had known statistics. For grade 1, the first 10 items were single sentence items with one word missing. The students selected the answer that best completed the sentence from a list of four word choices. The remaining items contained a short passage with a question stem at the end. This latter item type also comprised grades 2 through 8 tests.

The items for the Lexile Linking Test were chosen to optimize the match to the target test passage difficulty, with an adjustment made to bring the Lexile Linking Test difficulty mean and range of items in alignment with Lexile Linking Tests previously administered in grades 1 through 8. Based on an analysis of passage difficulties of the target tests, normative grade-level means for each grade, and the item difficulties for previously fielded Lexile Linking tests, the following mean targets were set: Grade 1, 230L, Grade 2, 525L, Grade 3, 667L; Grade 4, 780L; Grade 5, 890L; Grade 6, 970L; Grade 7, 1050L; Grade 8, 1090L.

*Evaluation of Lexile Linking Test.* After administration, the Lexile Linking Test items were reviewed. Based on this examination, one Lexile Linking Test item in Grade 5 was removed from the linking analyses. This decision was based on the distractor analysis. The descriptive statistics for the Lexile Linking Test raw scores are presented in *Table 5*.

Table 5. Descriptive statistics from the development of the Lexile Linking Test raw scores.

Grade	N*	Raw Score Mean (SD)	Minimum Score		Maximum Score	
			Observed	Possible	Observed	Possible
1	745	20.15 (7.7)	1	0	35	35
2	786	19.86 (7.6)	3	0	35	35
3	711	20.32( 7.9)	0	0	35	35
4	718	23.37 (7.6)	2	0	35	35
5	727	23.16 (7.5)	2	0	34	34
6	845	24.31 (8.0)	0	0	35	35
7	783	21.79 (8.1)	0	0	35	35
8	563	23.51 (7.7)	0	0	35	35
<b>Total</b>	5,878					

\* N reflects the number of students with test scores.

Selected item statistics for the Lexile Linking Test are presented in Table 6. The mean percent correct for each test is within the expected range.

Table 6. Item statistics from the development of the Lexile Linking Test.

Grade	N* (Persons)	N* (Items)	Percent Correct Mean (Range)	Point-Biserial Range	Coefficient Alpha
1	745	35	58 (16 - 92)	0.20 - 0.68	0.90
2	786	35	57 (19 - 85)	0.10 - 0.60	0.90
3	711	35	58 (25 - 83)	0.18 - 0.58	0.90
4	718	35	68 (31 - 91)	0.25 - 0.56	0.91
5	727	34	68 (43 - 88)	0.21 - 0.55	0.91
6	845	35	69 (37 - 92)	0.29 - 0.65	0.92
7	783	35	62 (26 - 91)	0.25 - 0.62	0.92
8	563	35	67 (32 - 88)	0.23 - 0.61	0.91
<b>Total</b>	5,878				

\* N (items) reflects the removal of 1 item in Grade 5.

The Coefficient Alpha correlations for the eight Lexile Linking Tests, one for each grade, ranged from 0.90 to 0.92. This indicates strong internal consistency reliability and high consistency.

## **Study Design**

A single-group/common person design was chosen for this study (Kolen and Brennan, 2004). This design is most useful “when (1) administering two forms to examinees is operationally possible, (2) differential order effects are not expected to occur, and (3) it is difficult to obtain participation of a sufficient number of examinees in an equating study that uses the random groups design” (pp. 16–17). The Lexile Linking Test, R-CBM and MAZE were administered from May 2 through May 20, 2011.

## **Description of the Sample**

Each student in this study took three assessments: R-CBM, MAZE, and the Lexile Linking Test. For purposes of analysis, the Lexile Linking Test scores were matched separately to the R-CBM scores and to the MAZE scores yielding two separate linking analyses. The sample of students for the study was recruited by Pearson. The schools that volunteered were located across the country. A total of 25 schools in 12 districts from 8 states participated in the linking study.

*Tables 7 and 8* present the number of students tested in each linking study and the percentage of students with complete data and a Lexile Linking Test Lexile measure. For R-CBM, a total of 5,444 students (Grades 1 through 8), or 92.6%, had both test scores. For MAZE, a total of 5,316 students (Grades 1 through 8), or 90.4%, had both test scores.



Table 7. Number of students sampled and number of students in the complete matched sample for R-CBM.

Grade	R-CBM <i>N</i>	Lexile Linking Test <i>N</i>	Matched <i>N</i>	Matched Percent
1	1,604	745	724	97.2
2	1,621	786	760	96.7
3	1,590	711	659	92.7
4	1,021	718	699	97.4
5	1,312	727	712	97.9
6	866	845	804	95.1
7	828	783	608	77.7
8	852	563	478	84.9
<b>Total</b>	9,694	5,878	5,444	92.6

Table 8. Number of students sampled and number of students in the complete matched sample for MAZE.

Grade	MAZE <i>N</i>	Lexile Linking Test <i>N</i>	Matched <i>N</i>	Matched Percent
1	1,133	745	693	93.0
2	1,373	786	751	95.5
3	1,487	711	693	97.5
4	1,042	718	693	96.5
5	1,288	727	687	94.5
6	890	845	827	97.9
7	730	783	512	65.4
8	836	563	460	81.7
<b>Total</b>	8,779	5,878	5,316	90.4

All students and items were submitted to a Winsteps analysis using a logit convergence criterion of 0.0001 and a residual convergence criterion of 0.003 (Linacre, 2010). Where necessary, students were removed from further analyses.

Table 9 presents the demographic characteristics of the R-CBM and MAZE samples of students included in this study.

Table 9. Percentage of students in the Spring 2011 R-CBM and MAZE final samples for selected demographic characteristics.

Student Characteristic	Category	R-CBM (N = 5,444)	MAZE (N = 5,316)
Grade	1	13.3	13.0
	2	14.0	14.1
	3	12.1	13.0
	4	12.8	13.0
	5	13.1	12.9
	6	14.8	15.6
	7	11.2	9.6
	8	8.8	8.7
Gender	Female	40.9	40.6
	Male	42.5	42.0
	Unknown	16.6	17.4
Ethnicity	African American	37.6	38.6
	American Indian/AK Native	0.7	0.7
	Asian	1.3	1.3
	Hispanic/Latino	13.6	14.0
	Multiracial	1.7	1.7
	Pacific Islander	0.1	0.1
	White	26.0	26.0
	Unknown/Missing	19.2	17.6

Table 10 presents the descriptive statistics for the R-CBM final sample raw scores and the R-CBM normative mean raw scores. The R-CBM final sample is less able than the normative mean raw scores.

Table 10. Descriptive statistics for the R-CBM final sample raw scores and the R-CBM normative raw scores.

Grade	<i>N</i>	R-CBM Final Sample Raw Score Mean (SD)	R-CBM Normative Mean Raw Score Mean (SD)
1	724	64.86 (39.6)	71 (40)
2	760	98.52 (43.1)	106 (38)
3	659	108.74 (41.6)	125 (42)
4	699	132.80 (41.6)	140 (42)
5	712	142.93 (43.7)	152 (42)
6	804	159.88 (41.5)	166 (41)
7	608	152.95 (38.7)	166 (38)
8	478	150.00 (37.3)	162 (35)
<b>Total</b>	5,444		

Table 11 presents the descriptive statistics for the MAZE final sample raw scores and the MAZE normative mean raw scores. The MAZE final sample is slightly less able than the normative mean raw scores except for Grades 1 and 2 where the sample is slightly more able. The Grade 3 sample as compared to the norms shows that the Grade 3 sample is similarly able.

Table 11. Descriptive statistics for the MAZE final sample raw scores and the MAZE normative raw scores.

Grade	<i>N</i>	MAZE Final Sample Raw Score Mean (SD)	MAZE Normative Mean Raw Score Mean (SD)
1	693	11.30 (8.3)	9 (6)
2	751	19.12 (10.4)	15 (7)
3	693	17.44 (9.2)	17 (8)
4	693	20.31 (8.9)	21 (9)
5	687	22.47 (8.2)	26 (9)
6	827	26.37 (10.1)	29 (10)
7	512	26.55 (9.9)	31 (10)
8	460	23.72 (8.6)	29 (10)
<b>Total</b>	5,316		

Figures 2 through 9 show the relationship between R-CBM raw scores and the Lexile Linking Test Lexile measures for the final sample for each grade.

Figure 2. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 1 final sample (*N* = 724).

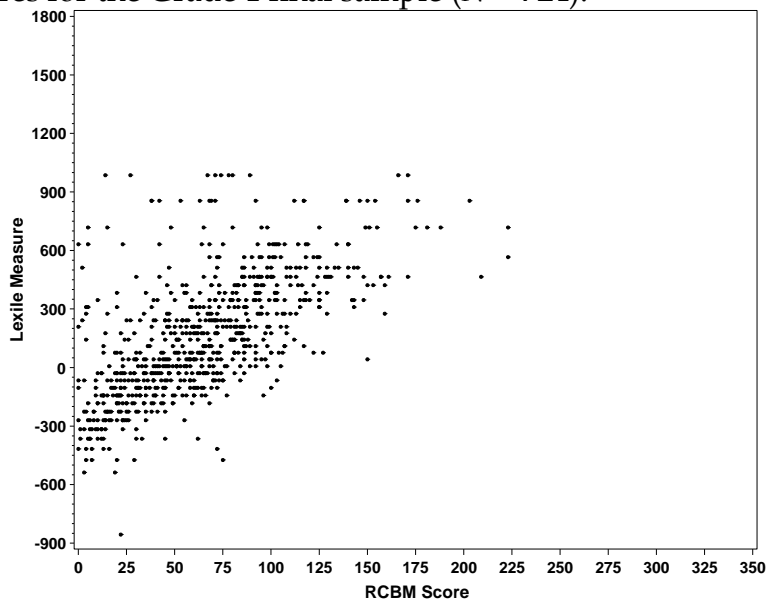


Figure 3. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 2 final sample (N = 760).

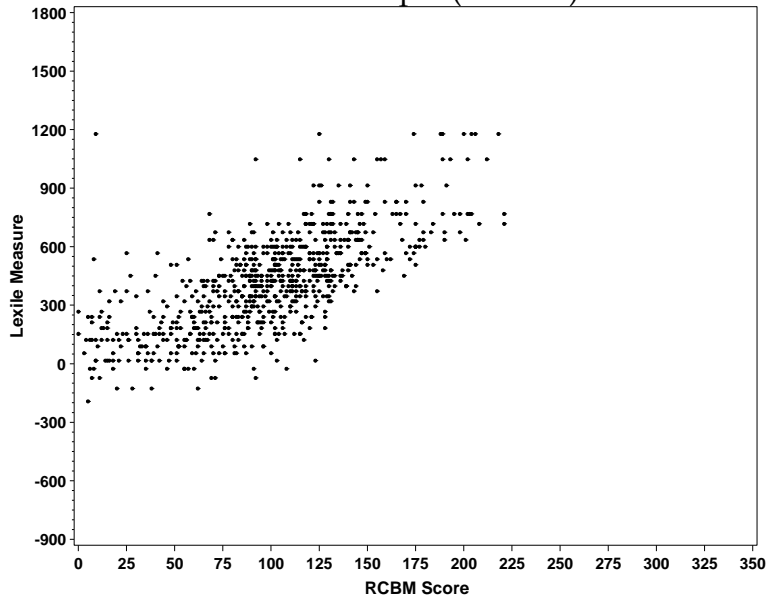


Figure 4. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 3 final sample (N = 659).

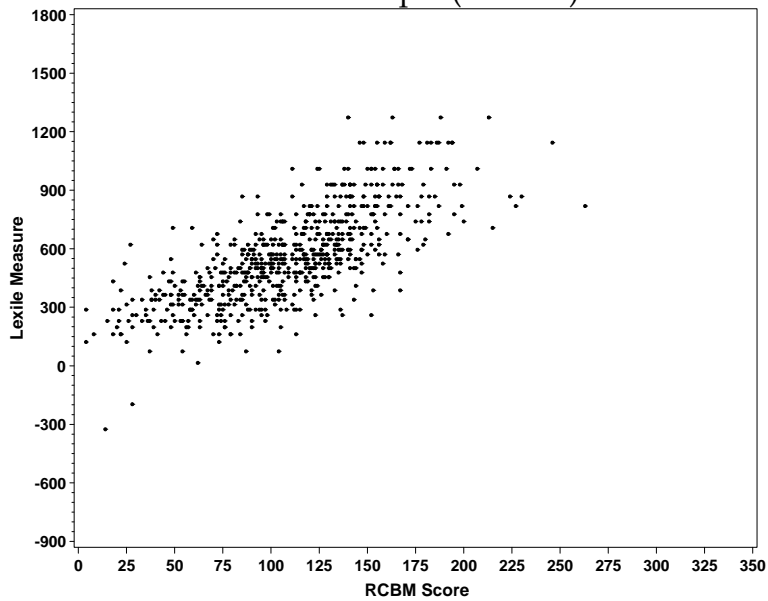


Figure 5. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 4 final sample (N = 699).

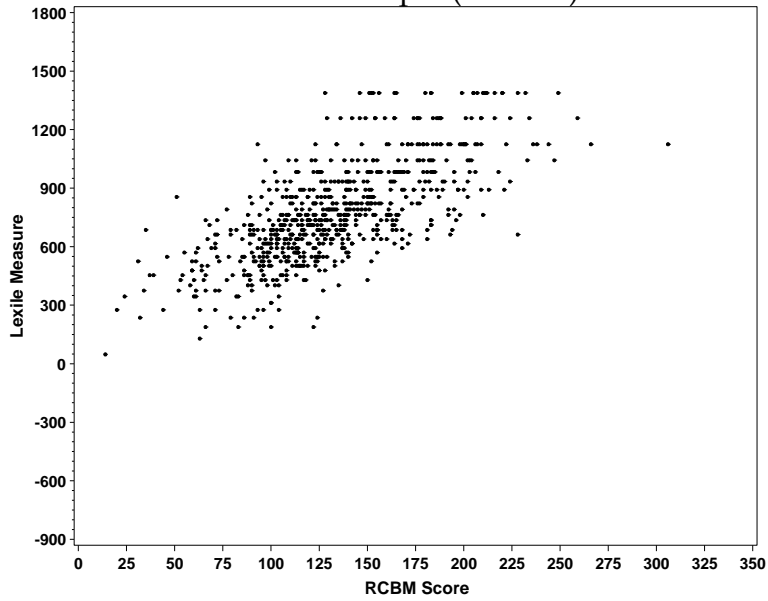


Figure 6. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 5 final sample (N = 712).

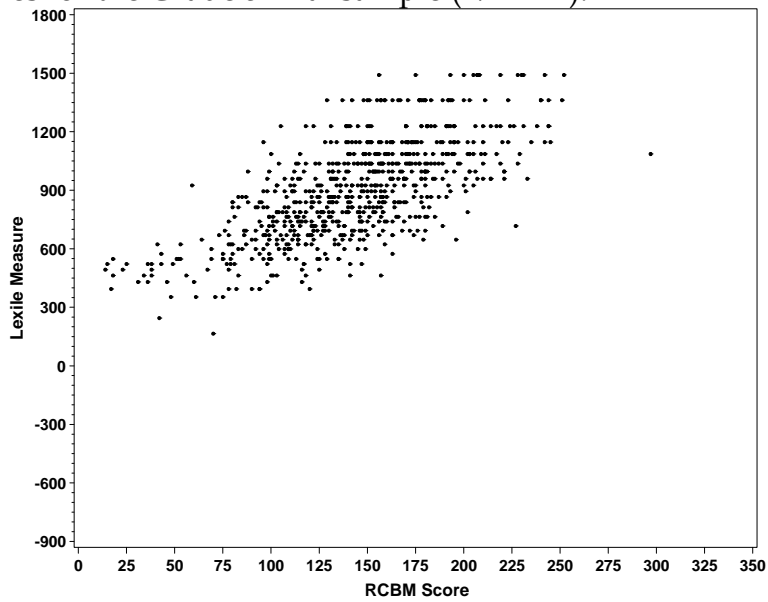


Figure 7. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 6 final sample ( $N = 804$ ).

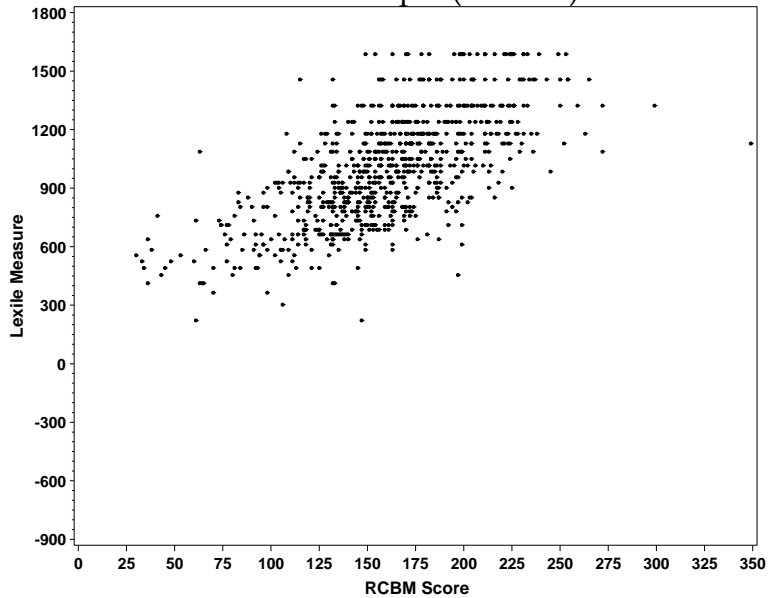


Figure 8. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 7 final sample ( $N = 608$ ).

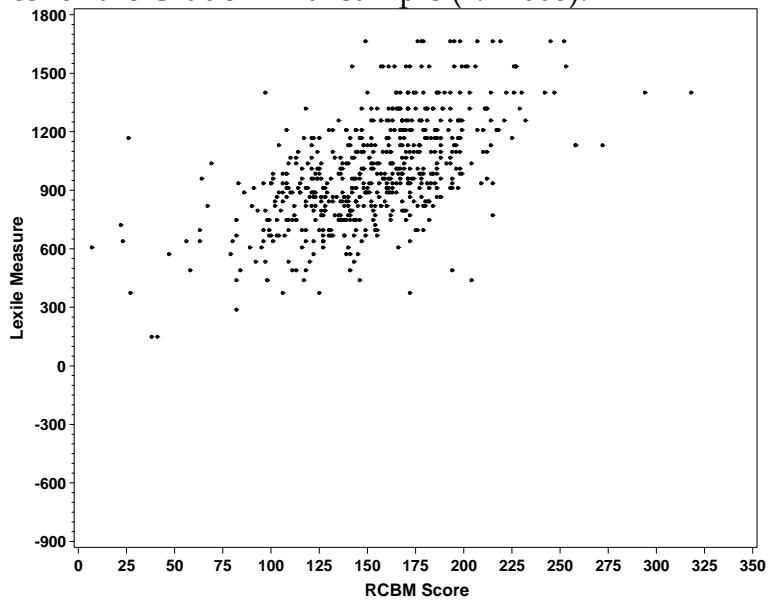
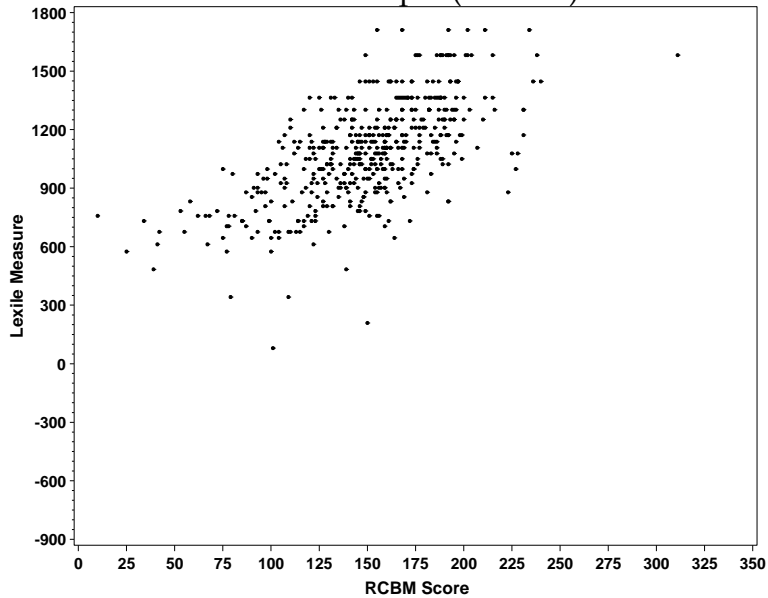


Figure 9. Scatter plot of the R-CBM raw scores and the Lexile Linking Test Lexile measures for the Grade 8 final sample (N = 478).



Figures 10 through 17 show the relationship between MAZE raw scores and the Lexile Linking Test Lexile measures for the final sample for each grade.

Figure 10. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 1 final sample (N = 693).

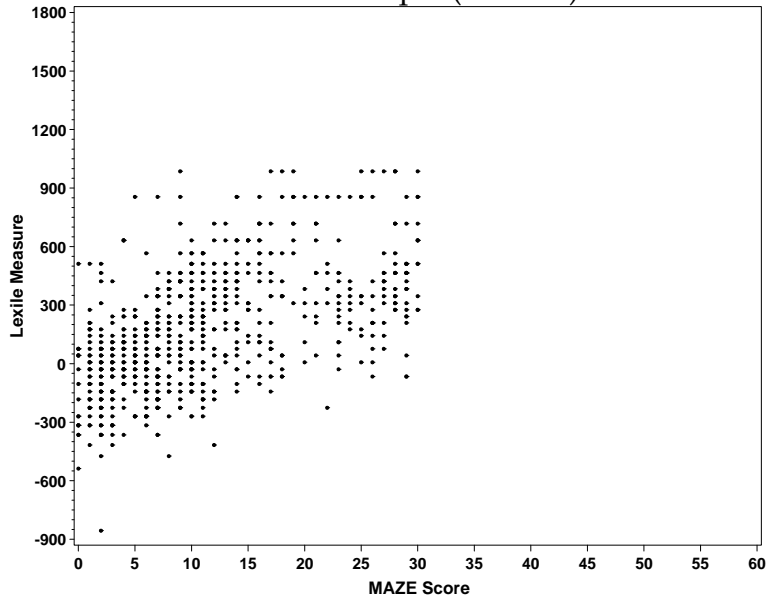




Figure 11. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 2 final sample (N = 751).

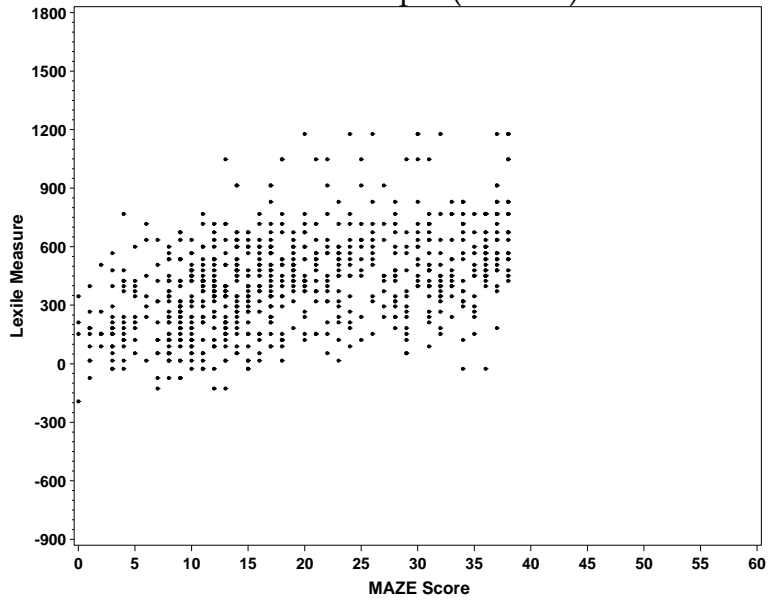


Figure 12. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 3 final sample (N = 693).

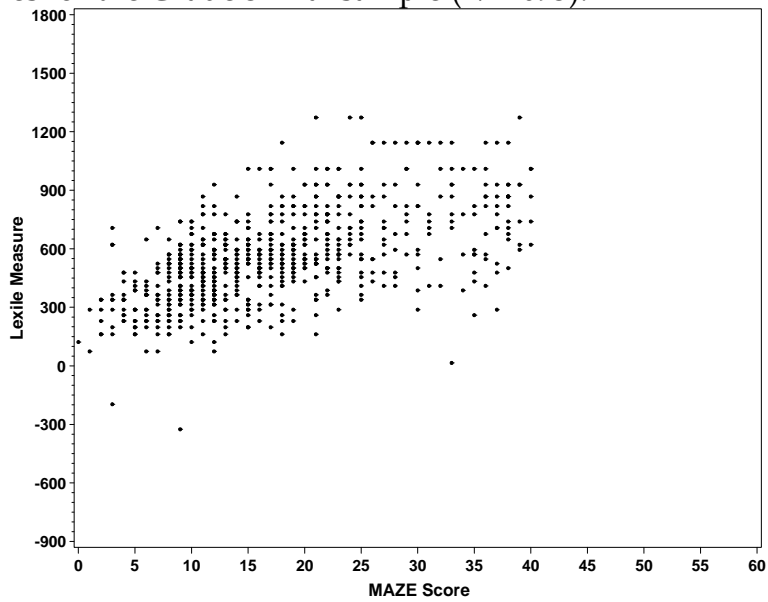


Figure 13. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 4 final sample (N = 693).

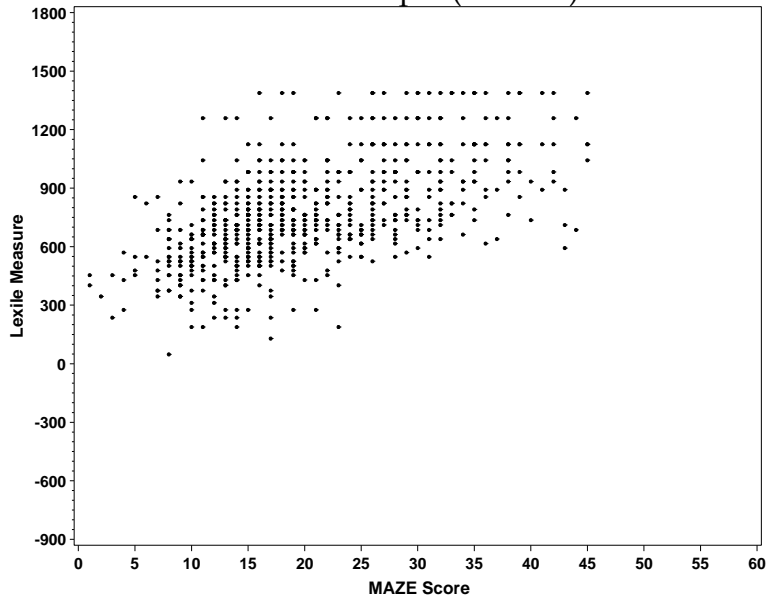


Figure 14. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 5 final sample (N = 687).

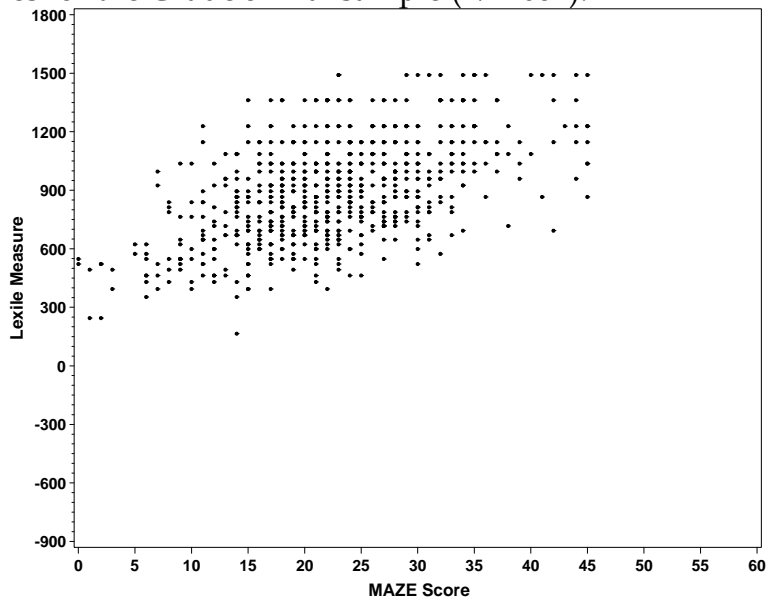


Figure 15. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 6 final sample ( $N = 827$ ).

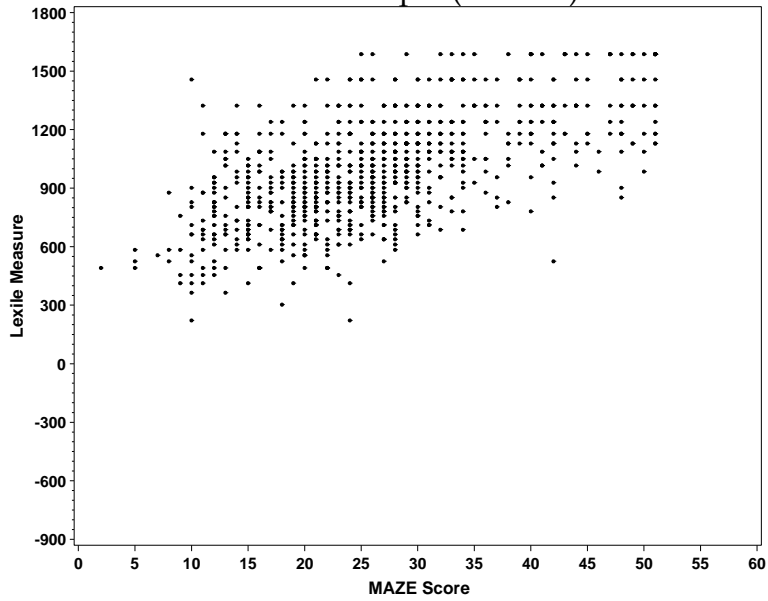


Figure 16. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 7 final sample ( $N = 512$ ).

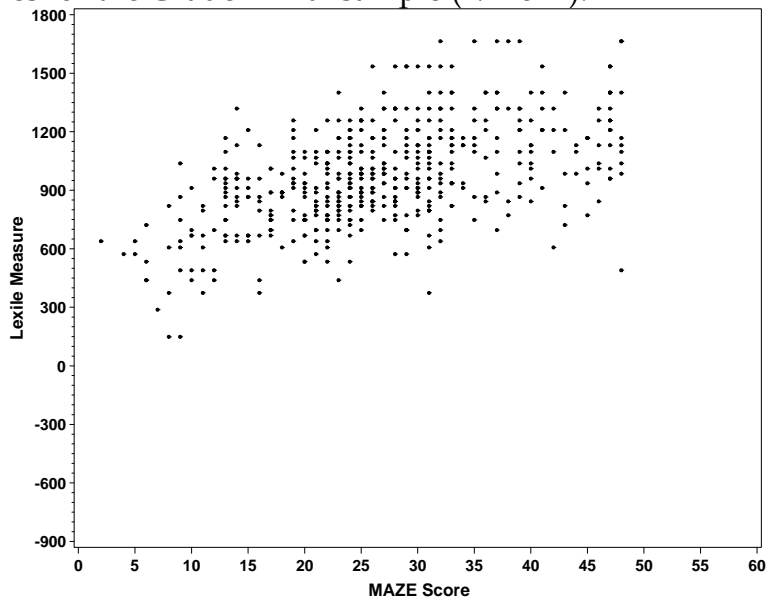
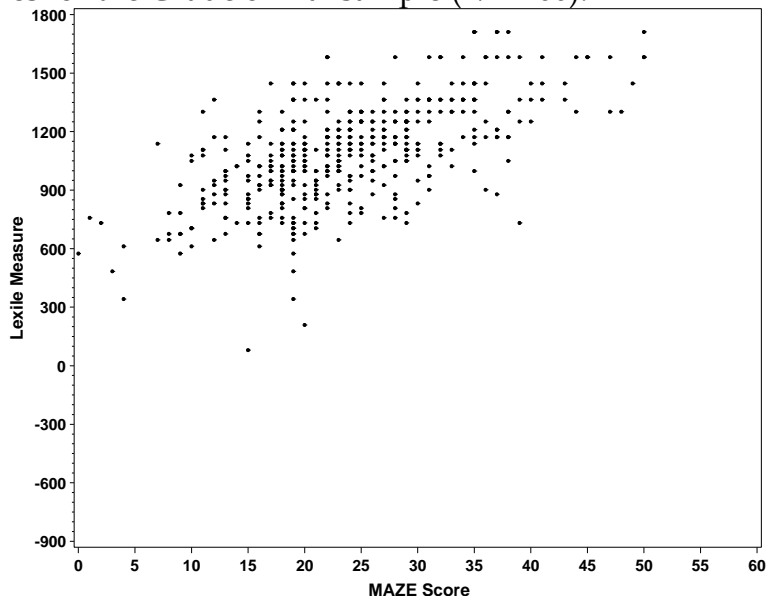


Figure 17. Scatter plot of the MAZE raw scores and the Lexile Linking Test Lexile measures for the Grade 8 final sample (N = 460).



### Linking R-CBM and MAZE with the Lexile Scale

Linking in general means “putting the scores from two or more tests on the same scale” (National Research Council, 1999, p. 15). MetaMetrics, Inc. and Pearson conducted this linking study for the purpose of targeting students to books and texts – to predict the books and texts a student should be targeted with for successful reading experiences, given their performance on R-CBM and MAZE.

*Linking Analyses.* When the distributions of scores from two assessments are not the same, two scales can be linked by using an equipercentile linking method. In this procedure, a curve is used to describe scale-to-scale differences and is appropriate for linking scales when test forms have different distributions of item difficulties (Kolen and Brennan, 2004). This method has several advantages over the linear method: “(1) the equipercentile equivalents are within the range of possible scale scores, (2) the relationship between tests is not assumed to be linear, (3) the cumulative distribution function of transformed scores is approximated by the cumulative distribution function of  $Y$ , and (4) the moments for transformed scores are approximately the same as those for  $Y$ ” (pp. 440-441). Post smoothing is often employed to “obtain equivalents that have a more regular (i.e., less jagged) shape” (p. 441).

In equipercentile equating, differences in difficulty between tests are described by a non-linear transformation (Kolen and Brennan, 2004). Given scores  $x$  and  $y$  on tests  $X$  and  $Y$ , the non-linear relationship is

$$e_Y(x) = G^{-1}[F(x)] \quad (\text{Equation 2})$$

where  $F$  is the cumulative distribution function of  $X$ ,  $G$  is the cumulative distribution function of  $Y$ , and  $G^{-1}$  is the inverse of the cumulative distribution function of  $Y$ . Using percentile rank functions  $P$  and  $Q$  (for  $X$  and  $Y$ , respectively), the equipercentile equivalent of score  $x$  on the  $Y$  scale for the population is

$$\begin{aligned} e_Y(x) &= Q^{-1}[P(x)], & 0 \leq P(x) < 100, \\ &= Y_j + 0.5, & P(x) = 100 \end{aligned} \quad (\text{Equation 3})$$

where  $Q^{-1}$  is the inverse of the percentile rank function for  $Y$ , and  $Y_j$  represents the highest score for  $Y$ .

To conduct an equipercentile linking of R-CBM and MAZE with the Lexile Linking Test results, the LEGS (*Linking with Equivalent Groups or Single Group Design*) program (version 2.0.1) by Brennan (2004) was employed. This program generates both unsmoothed and postsmoothed linking functions and uses the cubic spline method to conduct postsmoothing. In addition, the program preserves the symmetry of the equating conversion by averaging target-to-reference and reference-to-target conversions. Thus, R-CBM and MAZE raw scores can be converted to Lexile measures and, symmetrically, scores on the Lexile scale can be converted to R-CBM and MAZE raw scores using the same correspondence table or linking function.

Using the final sample data described in *Tables 10* and *11*, the equipercentile linking function relating R-CBM and MAZE raw scores with Lexile measures for all students in the sample was developed. Based on an examination of the postsmoothed conversions, a smoothing parameter of 10 was closest to the unsmoothed  $Y$  distribution.

Conversion tables were developed for all grade levels in order to express R-CBM and MAZE raw scores in the Lexile metric and were delivered to Pearson in electronic format. These tables are located in Appendices A and B. It should be noted that a raw score of "0" is set to a Lexile measure of BR for each grade and test.

*Table 12* contains the capped Lexile measures by grade. The measures that are reported for an individual student should reflect the purpose for which they will be used. If the purpose is accountability (at the student, school, or district level), then actual measures should be reported at all score points. If the purpose is instructional, then the scores should be capped at the upper bound of measurement error (e.g., at the 95<sup>th</sup> percentile point). In an instructional environment, where the purpose of the Lexile measure is to

appropriately target readers with books, no student should receive a negative Lexile measure. Measures of 0L or below are reported as “BR” for “Beginning Reader.”

*Table 12.* Capped values of the Lexile measure by grade.

Grade	Capped Lexile Measure
1	635L
2	870L
3	965L
4	1060L
5	1155L
6	1220L
7	1270L
8	1330L

### **Validity of R-CBM and MAZE -Lexile Link**

*Table 13* presents the descriptive statistics for the R-CBM results in the Lexile metric as well as the Lexile Linking Test for the final sample. Included in this table are the correlations between the R-CBM Lexile measures and the Lexile Linking Test Lexile measures.

Table 13. Descriptive statistics for the R-CBM final sample Lexile measures and the final sample Lexile Linking Test Lexile measures.

Grade	<i>N</i>	R-CBM Final Sample Lexile Measure Mean (SD)	Linking Test Final Sample Lexile Measure Mean (SD)	<i>r</i>
1	724	80.73 (225.3)	160.14 (309.0)	0.636
2	760	423.54 (240.4)	416.52 (248.0)	0.717
3	659	535.71 (215.3)	558.21 (238.0)	0.732
4	699	665.98 (209.4)	770.56 (254.3)	0.707
5	712	774.34 (222.7)	894.67 (251.7)	0.681
6	804	987.09 (229.2)	997.65 (272.5)	0.653
7	608	1010.06 (223.7)	996.59 (265.5)	0.591
8	478	1083.59 (231.7)	1085.29 (253.8)	0.646
<b>Total</b>	5,444			

The difference between the R-CBM final sample Lexile measures and the Lexile Linking Test Lexile measures are larger for Grades 1, 4, and 5 than the other grades. This is due to smoothing which had a stronger impact at these grades.

Based upon the correlations between the Lexile measure on the R-CBM and the Lexile measures from the Lexile Linking Test presented in *Table 13*, it can be concluded that the two tests yield a moderate relationship. The correlations between the final sample Lexile measures and the Lexile Linking Test Lexile measures range from 0.591 to 0.732.

*Table 14* presents the descriptive statistics for the MAZE results in the Lexile metric as well as the Lexile Linking Test for the final sample. Included in this table are the correlations between the MAZE Lexile measures and the Lexile Linking Test Lexile measures.

Table 14. Descriptive statistics for the MAZE final sample Lexile measures and the Lexile Linking Test final sample Lexile measures.

Grade	<i>N</i>	MAZE Final Sample Lexile Measure Mean (SD)	Linking Test Final Sample Lexile Measure Mean (SD)	<i>r</i>
1	693	131.60 (244.3)	175.04 (304.6)	0.567
2	751	409.17 (250.5)	418.71 (246.9)	0.467
3	693	558.23 (241.8)	558.47 (236.0)	0.579
4	693	765.94 (252.1)	771.42 (254.6)	0.584
5	687	873.23 (234.3)	894.87 (253.0)	0.536
6	827	986.57 (266.3)	993.78 (272.1)	0.618
7	512	1061.21 (280.0)	970.98 (255.9)	0.546
8	460	1087.35 (253.2)	1088.92 (255.6)	0.628
<b>Total</b>	5,316			

The comparisons between the MAZE final sample Lexile measures and the Lexile Linking Test Lexile measures show the MAZE final sample Lexile measures to be higher for Grade 7 and lower for Grade 1. This is due to smoothing which had a larger impact for these two grades.

Based upon the correlations between the Lexile measure on the MAZE and the Lexile measures from the Lexile Linking Test presented in *Table 14*, it can be concluded that the two tests yield a moderate relationship. The correlations between the final sample Lexile measures and the Lexile Linking Test Lexile measures range from 0.467 to 0.628.

*Table 15* contains the percentile ranks of the Lexile measures based on the final samples and the Lexile Linking Test Lexile measures. This same information for MAZE is located in *Table 16*.

*Tables 15* and *16* allow for the comparisons of the Lexile measures based on the final samples and the Lexile Linking Test Lexile measures. The criterion of a half standard deviation (100L) on the Lexile scale was used to determine the size of the difference.

For all grades on the R-CBM, there were some minor differences in the tails of the distributions. Since few students receive extreme scores, this does not cause reason for concern. However, for grades 4 and 5 there were some differences greater than 100L. In



these cases the Lexile Linking Test produced higher Lexile measures. However, these differences do not cause concern for the overall validity of the Lexile measures.

In reviewing the MAZE percentile ranks, some differences were observed at the tails of the distribution. These differences are not significant since there are few students that score at the low or high end of the distribution.

*Table 15.* Comparison of the Lexile measures for selected percentile ranks for the R-CBM final sample and the Lexile Linking test.

Grade 1			Grade 2		
Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure	Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure
1	-369	-474	1	- 79	- 73
5	-286	-316	5	11	16
10	-229	-226	10	106	89
25	- 73	- 66	25	258	240
50	87	143	50	426	425
75	217	346	75	575	567
90	362	566	90	695	717
95	477	718	95	841	830
99	652	986	99	1077	1178

Table 15 (continued). Comparison of the Lexile measures for selected percentile ranks for the R-CBM final sample and the Lexile Linking test.

Grade 3		
Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure
1	54	74
5	174	230
10	256	260
25	401	387
50	536	547
75	671	707
90	786	868
95	896	1010
99	1112	1144

Grade 4		
Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure
1	185	236
5	331	402
10	431	478
25	531	593
50	641	736
75	796	934
90	946	1125
95	1031	1259
99	1220	1388

Grade 5		
Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure
1	232	394
5	422	493
10	507	548
25	627	717
50	782	866
75	912	1086
90	1037	1362
95	1139	1491
99	1335	1491

Grade 6		
Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure
1	340	413
5	610	556
10	731	663
25	856	804
50	981	985
75	1108	1179
90	1287	1457
95	1386	1587
99	1530	1587

Table 15 (continued). Comparison of the Lexile measures for selected percentile ranks for the R-CBM final sample and the Lexile Linking test.

Grade 7			Grade 8		
Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure	Percentile Rank	R-CBM Sample Lexile Measure	Linking Test Lexile Measure
1	347	374	1	392	484
5	677	573	5	688	676
10	737	668	10	775	758
25	863	820	25	937	926
50	1015	985	50	1105	1107
75	1153	1168	75	1246	1302
90	1277	1319	90	1354	1582
95	1367	1535	95	1406	1711
99	1544	1664	99	1538	1711

Table 16. Comparison of the Lexile measures for selected percentile ranks for the MAZE final sample and the Lexile Linking test.

Grade 1			Grade 2		
Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure	Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure
1	- 290	- 474	1	- 66	- 73
5	- 250	- 316	5	6	16
10	- 200	- 226	10	98	89
25	- 50	- 66	25	223	240
50	140	143	50	385	425
75	320	346	75	583	567
90	505	566	90	766	717
95	535	718	95	885	830
99	580	986	99	980	1178

Table 16 (continued). Comparison of the Lexile measures for selected percentile ranks for the MAZE final sample and the Lexile Linking test.

Grade 3		
Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure
1	130	74
5	210	230
10	267	260
25	361	387
50	533	547
75	707	707
90	910	868
95	1033	1010
99	1143	1144

Grade 4		
Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure
1	248	236
5	384	402
10	466	478
25	597	593
50	745	736
75	916	934
90	1138	1125
95	1220	1259
99	1380	1388

Grade 5		
Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure
1	260	394
5	480	493
10	563	548
25	712	717
50	870	866
75	1050	1086
90	1160	1362
95	1220	1491
99	1470	1491

Grade 6		
Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure
1	480	413
5	584	556
10	651	663
25	807	804
50	996	985
75	1162	1179
90	1380	1457
95	1480	1587
99	1560	1587

Table 16 (continued). Comparison of the Lexile measures for selected percentile ranks for the MAZE final sample and the Lexile Linking test.

Grade 7			Grade 8		
Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure	Percentile Rank	MAZE Sample Lexile Measure	Linking Test Lexile Measure
1	450	374	1	455	484
5	570	573	5	704	676
10	660	668	10	760	758
25	870	820	25	910	926
50	1070	985	50	1086	1107
75	1240	1168	75	1250	1302
90	1450	1319	90	1410	1582
95	1560	1535	95	1520	1711
99	1600	1664	99	1700	1711

The next two graphs (*Figures 18 and 19*) show the Lexile measures for the R-CBM and MAZE final sample Lexile measures. These percentile ranks for the Lexile measures were created from the R-CBM and MAZE final samples. These values were plotted against the norms that have been developed for use with The Lexile Framework for Reading. These norms were created based on linking studies conducted with the Lexile Framework.

As can be seen in *Figures 18 and 19*, R-CBM and MAZE Lexile measures show progression from grade to grade relative to the Lexile norms. In *Figure 18*, the sample that was administered R-CBM in grades 6 through 8 in this study show a more able group than the Lexile norms. Grades 1 through 5 are below the Lexile norms showing that the R-CBM sample is less able group than the Lexile norms. Grade 6 demonstrates a spike in the Lexile measure relative to the Lexile norms.

For *Figure 19* the MAZE grades 1 through 3 are close to the Lexile norms while grades 4 through 8 specify higher scores than the Lexile norms. This indicates that the final sample in this study is more able than the Lexile norms.

Figure 18. Selected Percentiles (25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup>) plotted for the R-CBM Lexile measure for the Final Sample (N = 5,444) against the Lexile measure norms.

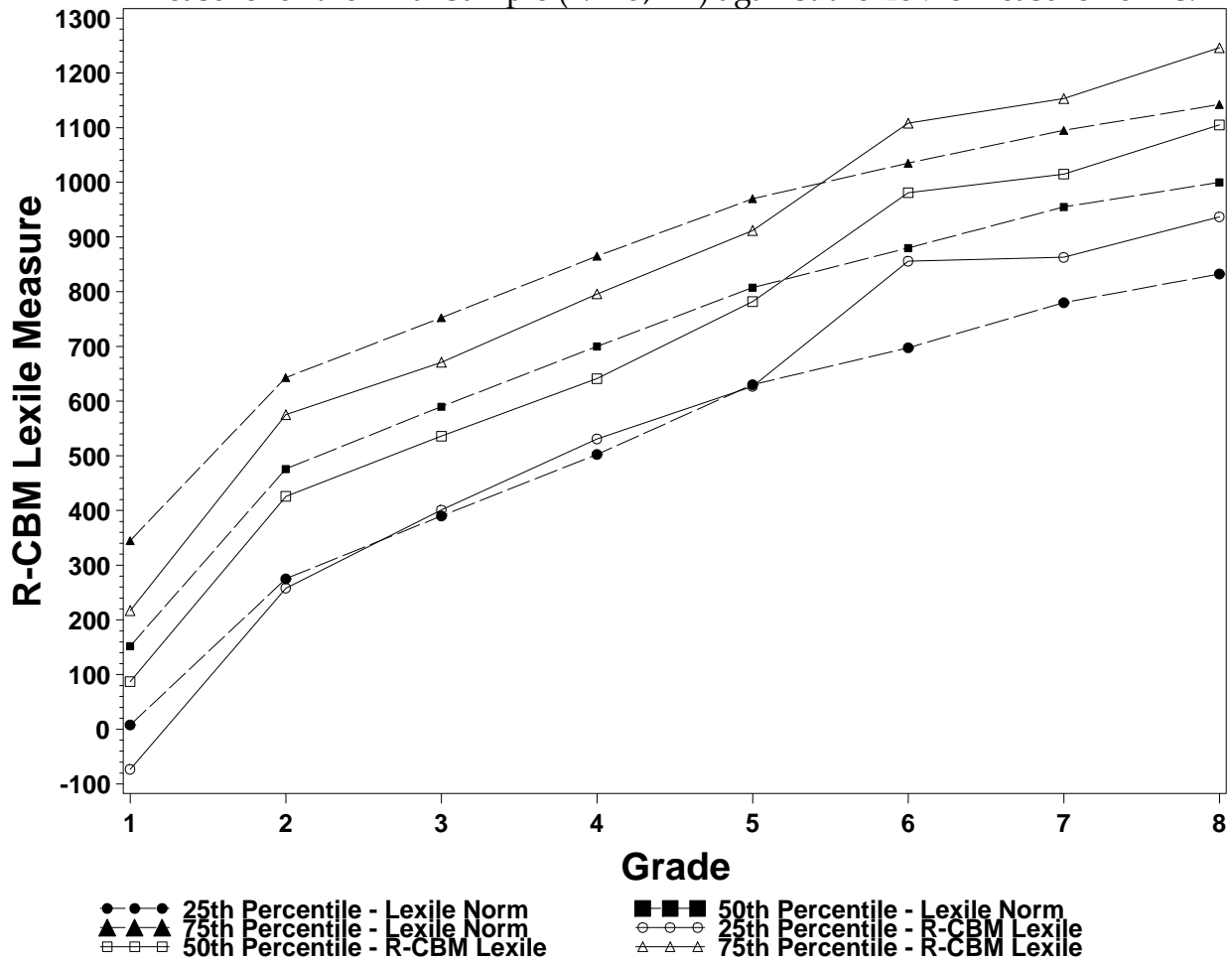
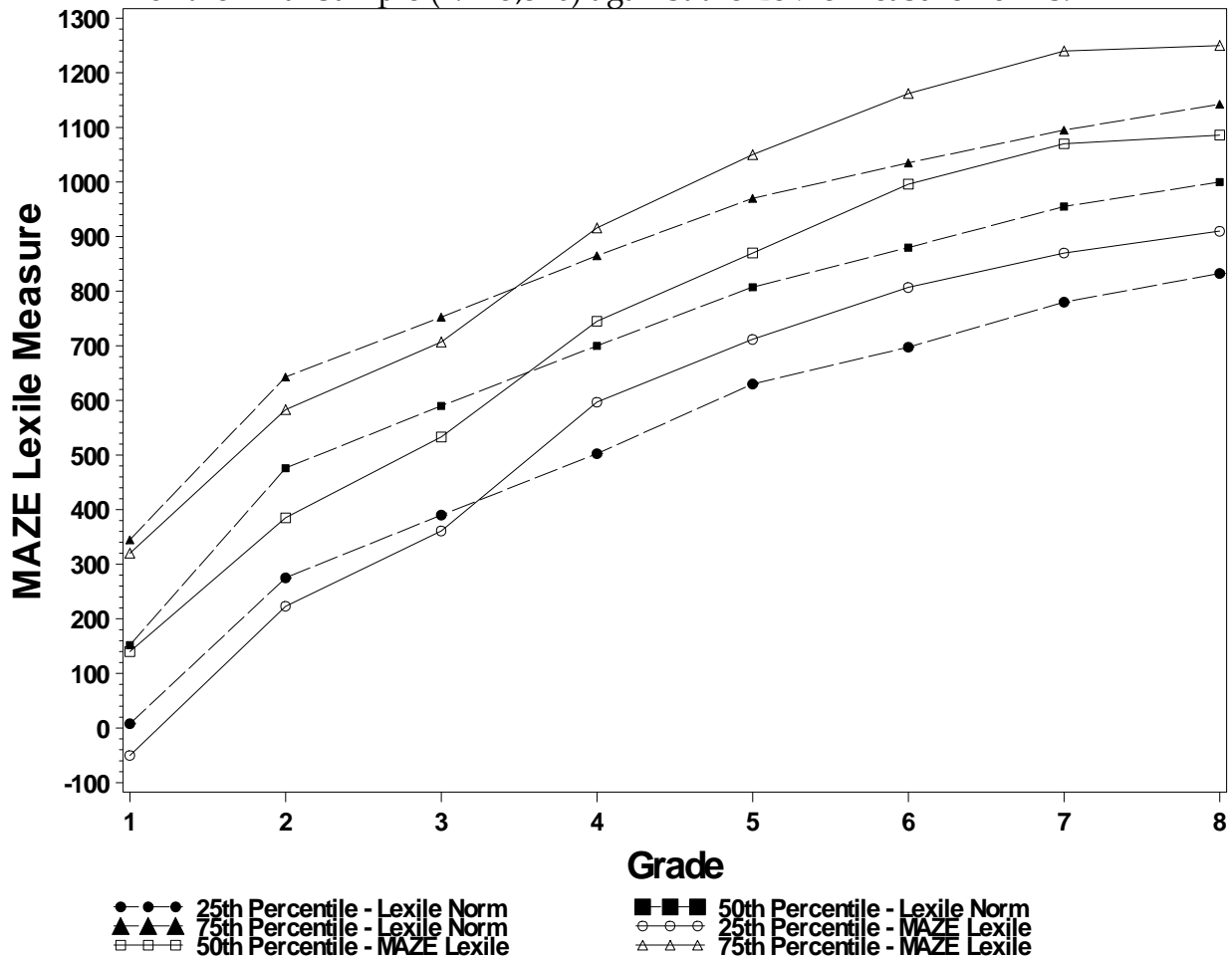


Figure 19. Selected Percentiles (25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup>) plotted for the MAZE Lexile measure for the Final Sample (N = 5,316) against the Lexile measure norms.



The following box and whisker plots (Figures 20 through 25) show the progression of scores (the *y*-axis) from grade to grade (the *x*-axis). For each grade, the box refers to the interquartile range. The line within the box indicates the median and the + represents the mean. The end of each whisker represents the minimum and maximum values of the *y*-axis Lexile Linking Test measures and the R-CBM and MAZE Lexile measures for each grade. Looking at Figures 20 through 22 across grades for R-CBM, the Lexile measures progress as the grades increase. However, grade 6 shows a higher Lexile measure relative to grade 7 for the sample in this study. Looking at Figures 23 through 25 for MAZE across grades, the Lexile Linking Test again showed a decrease at grade 7 relative to grade 6 for the sample in this study. The Lexile measures for MAZE show a monotonically increasing progression from grade to grade.

Figure 20. Box and whisker plot of the Lexile Linking Test Lexile measures by grade, final sample ( $N = 5,444$ ).

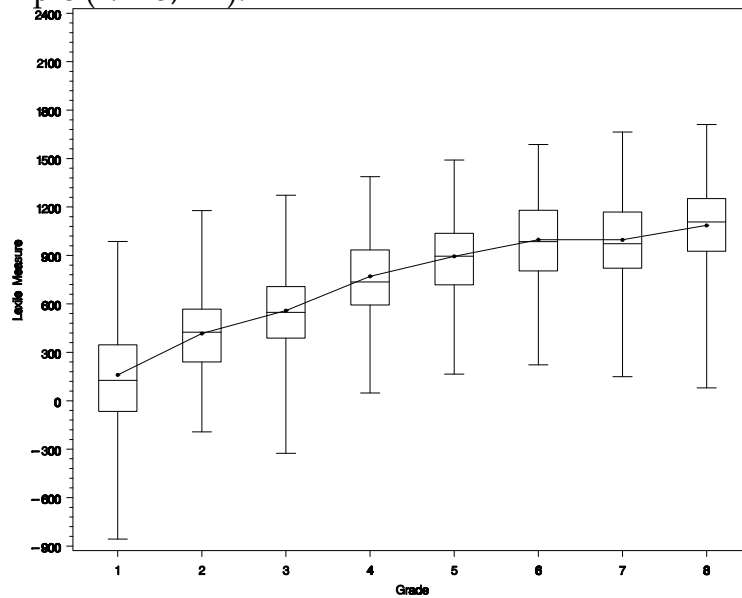


Figure 21. Box and whisker plot of the R-CBM Lexile measures by grade, final sample ( $N = 5,444$ ).

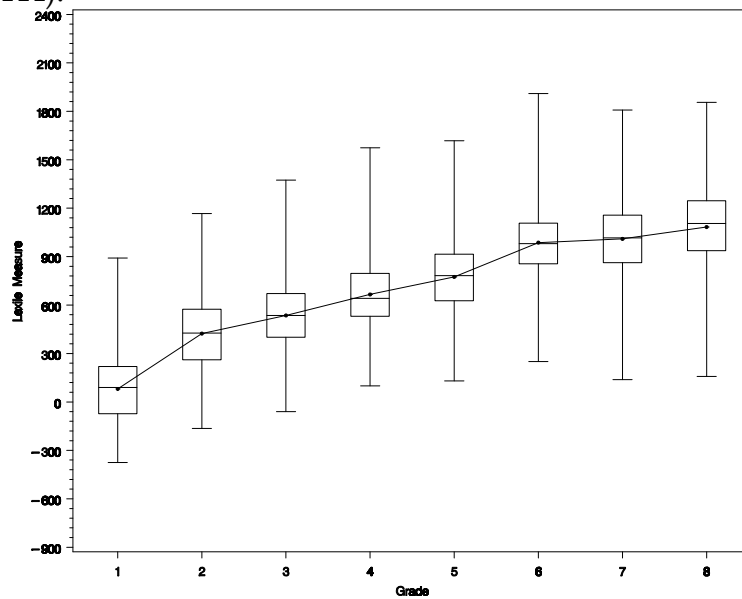




Figure 22. Box and whisker plot of the R-CBM Lexile measures by grade, Spring 2011 population ( $N = 9,694$ ).

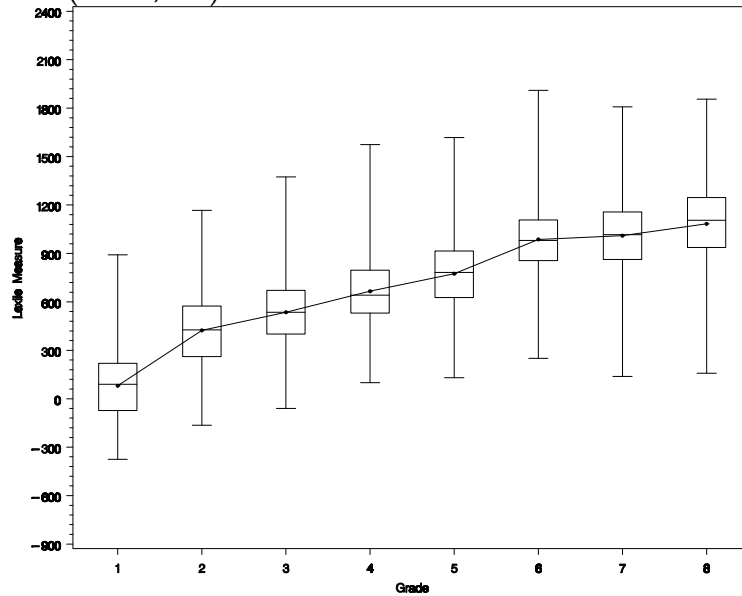


Figure 23. Box and whisker plot of the Lexile Linking Test Lexile measures by grade, final sample ( $N = 5,316$ ).

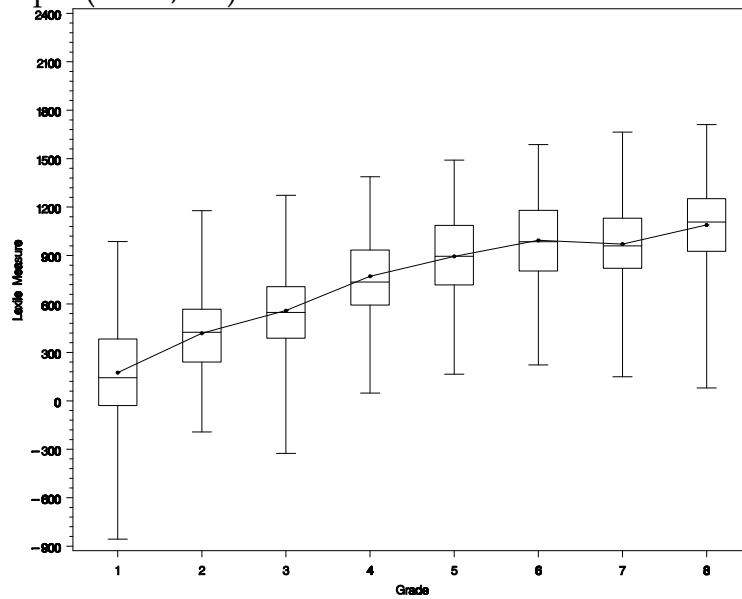


Figure 24. Box and whisker plot of the MAZE Lexile measures by grade, final sample ( $N = 5,316$ ).

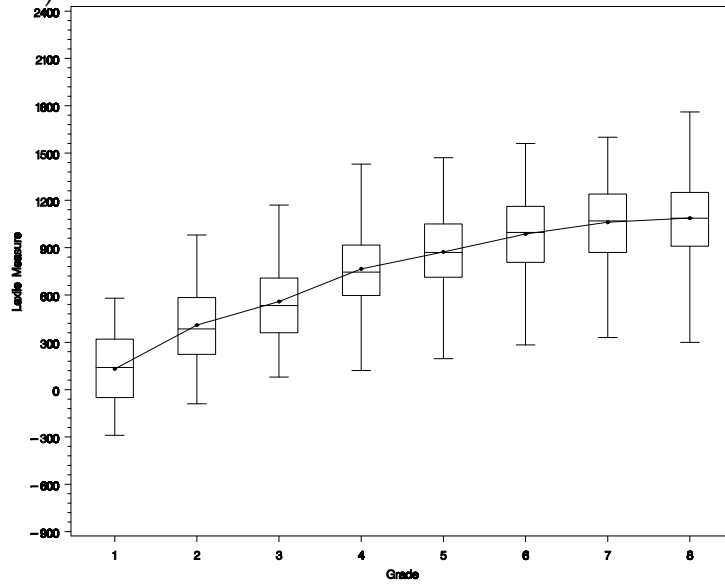
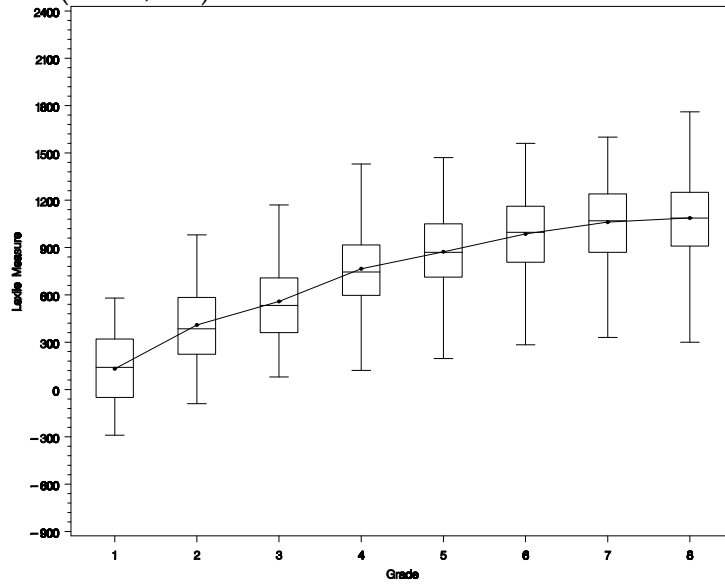


Figure 25. Box and whisker plot of the MAZE Lexile measures by grade, Spring 2011 population ( $N = 8,779$ ).



## The Lexile Framework and Forecasted Comprehension Rates

A reader with a measure of 600L who is given a text measured at 600L is expected to have a 75% comprehension rate. This 75% comprehension rate is the basis for selecting text that is targeted to a reader's reading ability, but what exactly does it mean? And what would the comprehension rate be if this same reader were given a text measured at 350L or one at 850L?

The 75% comprehension rate for a reader-text pairing can be given an operational meaning by imagining the text is carved into item-sized slices of approximately 125-140 words with a question embedded in each slice. A reader who answers three-fourths of the questions correctly has a 75% comprehension rate.

Suppose instead that the text and reader measures are not the same. It is the difference in Lexile measures between reader and text that governs comprehension. If the text measure is less than the reader measure, the comprehension rate will exceed 75%. If not, it will be less. The question is "By how much?" What is the expected comprehension rate when a 600L reader reads a 350L text?

If all the item-sized slices in the 350L text had the same calibration, the 250L difference between the 600L reader and the 350L text could be determined using the Rasch model equation. This equation describes the relationship between the measure of a student's level of reading comprehension and the calibration of the items. Unfortunately, comprehension rates calculated by this procedure would be biased because the calibrations of the slices in ordinary prose are not all the same. The average difficulty level of the slices *and* their variability both affect the comprehension rate.

Although the exact relationship between comprehension rate and the pattern of slice calibrations is complicated, Equation 6 is an unbiased approximation:

$$\text{Rate} = \frac{e^{\text{ELD}+1.1}}{1 + e^{\text{ELD}+1.1}} \quad (\text{Equation 4})$$

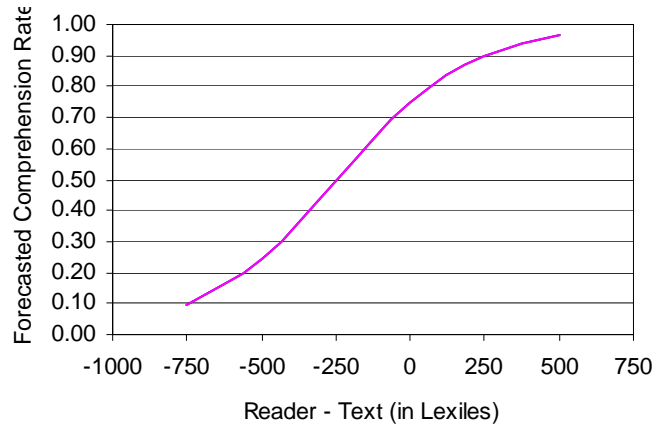
where ELD is the "effective logit difference" given by

$$\text{ELD} = (\text{Reader Lexile measure} - \text{Text Lexile measure}) \div 225. \quad (\text{Equation 5})$$

Figure 26 that follows shows the general relationship between reader-text discrepancy and forecasted comprehension rate. When the reader measure and the text calibration are the same (difference of 0L) then the forecasted comprehension rate is 75%. In the example in the preceding paragraph, the difference between the reader measure of 600L and the text calibration of 350L is 250L. Referring to Figure 13 and using +250L (reader

minus text), the forecasted comprehension rate for this reader-text combination would be 90%.

Figure 26. Relationship between reader-text discrepancy and forecasted comprehension rate.



Tables 17 and 18 show comprehension rates calculated for various combinations of reader measures and text calibrations.

Table 17. Comprehension rates for the same individual with materials of varying comprehension difficulty.

Person Measure	Text Calibration	Sample Titles	Forecast Comprehension
1000	500	<i>Tornado</i> (Byars)	96%
1000	750	<i>The Martian Chronicles</i> (Bradbury)	90%
1000	1000	<i>Reader's Digest</i>	75%
1000	1250	<i>The Call of the Wild</i> (London)	50%
1000	1500	<i>On the Equality Among Mankind</i> (Rousseau)	25%

Table 18. Comprehension rates of different person abilities with the same material.

Person Measure	Calibration for a Grade 10 Biology Textbook	Forecast Comprehension Rate
500	1000	25%
750	1000	50%
1000	1000	75%
1250	1000	90%
1500	1000	96%

The subjective experience of 50%, 75%, and 90% comprehension as reported by readers varies greatly. A 1000L reader reading 1000L text (75% comprehension) reports confidence and competence. Teachers listening to such a reader report that the reader can sustain the meaning thread of the text and can read with motivation and appropriate emotion and emphasis. In short, such readers appear to comprehend what they are reading. A 1000L reader reading 1250L text (50% comprehension) encounters so much unfamiliar vocabulary and difficult syntactic structures that the meaning thread is frequently lost. Such readers report frustration and seldom choose to read independently at this level of comprehension. Finally, a 1000L reader reading 750L text (90% comprehension) reports total control of the text, reads with speed, and experiences automaticity during the reading process.

The primary utility of the Lexile Framework is its ability to forecast what happens when readers confront text. With every application by teacher, student, librarian, or parent there is a test of the Framework's accuracy. The Framework makes a point prediction every time a text is chosen for a reader. Anecdotal evidence suggests that the Lexile Framework predicts as intended. That is not to say that there is an absence of error in forecasted comprehension. There is error in text measures, reader measures, and their difference modeled as forecasted comprehension. However, the error is sufficiently small that the judgments about readers, texts, and comprehension rates are useful.

*Relationship between Linking Error and Forecasted Comprehension Rate.* Using Equation 4 with different combinations of reader measure and text complexity, the effect of linking error on forecasted comprehension rate can be examined. Table 19 shows the changes in the forecasted comprehension rate for different combinations of reader and text interactions. When the linking error is small, 5–10L, then the effect on forecasted comprehension rate is a minimal difference (1 to 2%) increase or decrease in comprehension.

Table 19. Effect of reader-text discrepancy on forecasted comprehension rate.

Reader Lexile Measure	Text Lexile Measure	Difference	Forecasted Comprehension Rate
1000L	970L	30L	77.4%
1000L	975L	25L	77.0%
1000L	980L	20L	76.7%
1000L	985L	15L	76.3%
1000L	990L	10L	75.8%
1000L	995L	5L	75.4%
1000L	1000L	0L	75.0%
1000L	1005L	-5L	74.6%
1000L	1010L	-10L	74.2%
1000L	1015L	-15L	73.8%
1000L	1020L	-20L	73.3%
1000L	1025L	-25L	72.9%
1000L	1030L	-30L	72.4%

## Conclusions, Caveats, and Recommendations

Forging a link between scales is a way to add value to one scale without having to administer an additional test. Value can be in the form of any or all of the following:

- increased *interpretability* (e.g., “Based on this test score, what can my child actually read?”),
- increased *diagnostic capability* (e.g., “Based on this test score, what are the student’s weaknesses?”), or
- increased *instructional use* (e.g., “Based on these test scores, I need to modify my instruction to include these skills.”).

The link that has been established between the R-CBM and MAZE raw scores and Lexile measures permits readers to be targeted with books and texts that provide an appropriate level of challenge while avoiding frustration. The result of this purposeful “match” may be that students will read more, and, thereby read better. The real power of the Lexile Framework is in examining the growth of readers—wherever the reader may be in the development of his or her reading skills. Readers can be targeted with texts that they are forecasted to read with 75% comprehension. As a reader grows, he or she can be targeted with more demanding texts. And, as the texts become more demanding, then the reader grows.

The development of the link between the R-CBM and MAZE raw scores and the Lexile measure has been described and evaluated in this study. There are many factors that can affect the linking process. In this study a few of these factors include:

- sample characteristics (e.g., ethnicity), and
- relationship of sample distribution characteristics to the distribution characteristics of the Spring 2011 population.

*Recommendations about reporting Lexile measures for readers.* Lexile measures are reported as a number followed by a capital “L” for “Lexile.” All Lexile measures should be rounded to the nearest 5L to avoid over interpretation of the measures. As with any test score, uncertainty in the form of measurement error is present.

Lexile measures that are reported for an individual student should reflect the purpose for which they will be used. If the purpose is research (e.g., to measure growth at the student, grade, school, district, or state level), then actual measures should be used at all score points, rounded to the nearest integer. A computed Lexile measure of 772.51 would be reflected as 773L. If the purpose is instructional, then the Lexile measures should be capped at the upper bound of measurement error (e.g., at the 95<sup>th</sup> percentile) to ensure developmental appropriateness of the material. MetaMetrics expresses these as “Reported Lexile Measures” and recommends that these measures be reflected on

individual score reports. In instructional environments where the purpose of the Lexile measure is to appropriately match readers with books, all scores at or below 0L should be reported as “BR” (Beginning Reader); no student should receive a negative Lexile measure.

Some assessments report a Lexile range for each student, which is 50L above and 100L below the student’s actual Lexile measure. This range represents the boundaries between the easiest kind of reading material for the student and the level at which the student will be more challenged, yet can still read successfully.

Within the *instructional area*, suggested book lists can be developed for ranges of readers. Care must be taken to ensure that the books on the lists are also developmentally appropriate for the readers. The Lexile measure is one factor related to comprehension and is a good starting point in the selection process of a book for a specific reader. Other factors such as student developmental level, motivation, and interest; amount of background knowledge possessed by the reader; and characteristics of the text such as illustrations and formatting also need to be considered when matching a book with a reader.

In this era of student-level accountability and high-stakes assessment, differentiated instruction – the attempt “on the part of classroom teachers to meet students where they are in the learning process and move them along as quickly and as far as possible in the context of a mixed-ability classroom” (Tomlinson, 1999) – is a means for all educators to help students succeed. Differentiated instruction promotes high-level and powerful curriculum for all students, but varies the level of teacher support, task complexity, pacing, and avenues to learning based on student readiness, interest, and learning profile. One strategy for managing a differentiated classroom suggested by Tomlinson is the use of multiple texts and supplementary materials. These texts and materials can be targeted for specific students or groups of students based on their reading ability as described by their Lexile measure.

The Lexile Framework is an objective tool that can be used to determine a student’s readiness for a reading experience; the Lexile Framework “targets” text (books, newspapers, periodicals) for readers at a 75% comprehension level – a level that is challenging, but not frustrating (Schnick and Knickelbine, 2000).

Within the *communication area*, Lexile measures can be used to communicate with students, parents, teachers, educators, and the community by providing a common language to use to talk about reading growth and development. By aligning all areas of the educational system, parents can be included in the instructional process. With a variety of data related to a student’s reading level, a more complete picture can be



formed and more informed decisions can be made concerning reading-group placement, amount of extra instruction needed, and promotion/retention decisions.

It is much easier to understand what a national percentile rank of 50 means when it is tied to the reading demands of book titles that are familiar to adults. Parents are encouraged to help their children achieve high standards by expecting their children to succeed at school, communicating with their children's teachers and the school, and helping their children keep pace and do homework.

Through the customized reading lists and electronic database of titles, parents can assist their children in the selection of reading materials that are at the appropriate level of challenge and monitor the reading process at home. A link can be provided to the "Find a Book with Lexiles" website. This site provides a quick, free resource to battle "summer slide" - the learning losses that students often experience during the summer months when they are not in school (Smith and Brewer, 2008). Lexiles make it easy to help students read and learn all summer long and during the school year. This website can help build a reading list of books at a young person's reading level that are about subjects that interest him or her. This website can be viewed at <http://www.lexile.com/fab/>.

## References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- Bormuth, J.R. (1966). Readability: New approach. *Reading Research Quarterly*, 7, 79-132.
- Carroll, J.B., Davies, P., & Richman, B. (1971). *Word frequency book*. Boston: Houghton Mifflin.
- Carver, R.P. (1974). Measuring the primary effect of reading: Reading storage technique, understanding judgments and cloze. *Journal of Reading Behavior*, 6, 249-274.
- Chall, J.S. (1988). "The beginning years." In B.L. Zakaluk and S.J. Samuels (Eds.), *Readability: Its past, present, and future*. Newark, DE: International Reading Association.
- Crain, S. & Shankweiler, D. (1988). "Syntactic complexity and reading acquisition." In A. Davidson and G.M. Green (Eds.), *Linguistic complexity and text comprehension: Readability issues reconsidered*. Hillsdale, NJ: Erlbaum Associates.
- Davidson, A. & Kantor, R.N. (1982). On the failure of readability formulas to define readable text: A case study from adaptations. *Reading Research Quarterly*, 17, 187-209.
- Dunn, L.M. & Dunn, L.M. (1981). *Manual for Forms L and M of the Peabody Picture Vocabulary Test – Revised*. Circle Pines, MN: American Guidance Service.
- Dunn, L.M. & Markwardt, F.C. (1970). *Peabody Individual Achievement Test*. Circle Pines, MN: American Guidance Service.
- Efron, B. (1981). Nonparametric estimates of the standard error: The Jackknife, the Bootstrap, and other resampling techniques. *Biometrika*. 68, 589-599.
- Grolier, Inc. (1986). *The electronic encyclopedia*. Danbury, CT: Author.
- Howe, K.B. & Shinn, M.M. (2002, August). *Standard reading assessment passages (RAPs) for use in general outcome measurement: A manual describing development and technical features*. Eden Prairie, MN: edformation.
- Klare, G.R. (1963). *The measurement of readability*. Ames, IA: Iowa State University Press.

- Kolen, M.J. & Brennan, R.L. (2004). *Test equating, scaling, and linking: Methods and practices*. (2<sup>nd</sup> ed.) New York: Springer Science + Business Media, LLC.
- Liberman, I.Y., Mann, V.A., Shankweiler, D., & Westelman, M. (1982). Children's memory for recurring linguistic and non-linguistic material in relation to reading ability. *Cortex*, 18, 367-375.
- Linacre, J.M. (2010). WINSTEPS (Version 3.70) [Computer Program]. Chicago: Author.
- McGraw-Hill Book Company. (1983). *Guidelines for bias-free publishing*. Monterey, CA: Author.
- Miller, G.A. & Gildea, P.M. (1987). How children learn words. *Scientific American*, 257, 94-99.
- National Research Council. (1999). *Uncommon measures: Equivalence and linkage among educational tests*. Washington, D.C.: National Academy Press.
- Petersen, N.S., Kolen, M.J., & Hoover, H.D. (1989). "Scaling, Norming, and Equating." In R.L. Linn (Ed.), *Educational Measurement* (3<sup>rd</sup> ed.) (pp. 221-262). New York: American Council on Education and Macmillan Publishing Company.
- Poznanski, J.B. (1990). A meta-analytic approach to the estimation of item difficulties. Unpublished doctoral dissertation, Duke University, Durham, NC.
- Schnick, T. & Knickelbine, M. (2000). *The Lexile Framework: An introduction for educators*. Durham, NC: MetaMetrics, Inc.
- Shankweiler, D. & Crain, S. (1986). Language mechanisms and reading disorder: A modular approach. *Cognition*, 14, 139-168.
- Shinn, M.M. & Shinn, M.R. (2002). *Administration and scoring of Reading Curriculum-Based Measurement (R-CBM) for use in general outcome measurement*. NCS Pearson, Inc.
- Shinn, M.R. & Shinn, M.M. (2002). *Administration and scoring of Reading Maze for use in general outcome measurement*. NCS Pearson, Inc.
- Sitter, R.R. (1992). Comparing three bootstrap methods for survey data. *The Canadian Journal of Statistics*, 20(2), 135-154.
- Smith, M. & Brewer, D. (2008). *Stop summer academic loss*. A White Paper from MetaMetrics. Durham, NC: MetaMetrics, Inc.

- Stenner, A.J. (1990). Objectivity: Specific and general. *Rasch Measurement Transactions*, 4, 111.
- Stenner, A.J., Smith, M., & Burdick, D.S. (1983). Toward a theory of construct definition. *Journal of Educational Measurement*, 20(4), 305-315.
- Stenner, A.J., Smith, D.R., Horabin, I., & Smith, M. (1987a). Fit of the Lexile Theory to item difficulties on fourteen standardized reading comprehension tests. Durham, NC: MetaMetrics, Inc.
- Stenner, A.J., Smith, D.R., Horabin, I., & Smith, M. (1987b). Fit of the Lexile Theory to sequenced units from eleven basal series. Durham, NC: MetaMetrics, Inc.
- Tomlinson, C.A. (1999). *The differentiated classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Wright, B.D. & Linacre, J.M. (1994, August). *The Rasch model as a foundation for the Lexile Framework*. Unpublished manuscript.
- Wright, B.D. & Stone, M.H. (1979). *Best Test Design*. Chicago: MESA Press.

## Appendix A

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 1 .....	A-2
Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 2 .....	A-4
Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 3 .....	A-6
Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 4 .....	A-8
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## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 1

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	- 375	BR	60	77	75L	120	377	375L
1	- 369	BR	61	82	80L	121	382	380L
2	- 364	BR	62	87	85L	122	387	385L
3	- 354	BR	63	92	90L	123	392	390L
4	- 343	BR	64	97	95L	124	397	395L
5	- 331	BR	65	102	100L	125	402	400L
6	- 320	BR	66	107	105L	126	407	405L
7	- 309	BR	67	112	110L	127	412	410L
8	- 298	BR	68	117	115L	128	417	415L
9	- 286	BR	69	122	120L	129	422	420L
10	- 275	BR	70	127	125L	130	427	425L
11	- 264	BR	71	132	130L	131	432	430L
12	- 253	BR	72	137	135L	132	437	435L
13	- 245	BR	73	142	140L	133	442	440L
14	- 237	BR	74	147	145L	134	447	445L
15	- 229	BR	75	152	150L	135	452	450L
16	- 221	BR	76	157	155L	136	457	455L
17	- 214	BR	77	162	160L	137	462	460L
18	- 206	BR	78	167	165L	138	467	465L
19	- 198	BR	79	172	170L	139	472	470L
20	- 190	BR	80	177	175L	140	477	475L
21	- 182	BR	81	182	180L	141	482	480L
22	- 175	BR	82	187	185L	142	487	485L
23	- 167	BR	83	192	190L	143	492	490L
24	- 159	BR	84	197	195L	144	497	495L
25	- 151	BR	85	202	200L	145	502	500L
26	- 143	BR	86	207	205L	146	507	505L
27	- 136	BR	87	212	210L	147	512	510L
28	- 128	BR	88	217	215L	148	517	515L
29	- 120	BR	89	222	220L	149	522	520L
30	- 112	BR	90	227	225L	150	527	525L
31	- 104	BR	91	232	230L	151	532	530L
32	- 97	BR	92	237	235L	152	537	535L
33	- 89	BR	93	242	240L	153	542	540L
34	- 81	BR	94	247	245L	154	547	545L
35	- 73	BR	95	252	250L	155	552	550L
36	- 65	BR	96	257	255L	156	557	555L
37	- 57	BR	97	262	260L	157	562	560L
38	- 50	BR	98	267	265L	158	567	565L
39	- 43	BR	99	272	270L	159	572	570L
40	- 36	BR	100	277	275L	160	577	575L
41	- 30	BR	101	282	280L	161	582	580L
42	- 23	BR	102	287	285L	162	587	585L
43	- 16	BR	103	292	290L	163	592	590L
44	- 10	BR	104	297	295L	164	597	595L
45	- 3	BR	105	302	300L	165	602	600L
46	5	5L	106	307	305L	166	607	605L
47	10	10L	107	312	310L	167	612	610L
48	20	20L	108	317	315L	168	617	615L
49	25	25L	109	322	320L	169	622	620L
50	30	30L	110	327	325L	170	627	625L
51	35	35L	111	332	330L	171	632	630L
52	40	40L	112	337	335L	172	637	635L
53	45	45L	113	342	340L	173	642	635L
54	48	50L	114	347	345L	174	647	635L
55	51	50L	115	352	350L	175	652	635L
56	54	55L	116	357	355L	176	657	635L
57	57	55L	117	362	360L	177	662	635L
58	67	65L	118	367	365L	178	667	635L
59	72	70L	119	372	370L	179	672	635L

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 1 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	677	635L
181	682	635L
182	687	635L
183	692	635L
184	697	635L
185	702	635L
186	707	635L
187	712	635L
188	717	635L
189	722	635L
190	727	635L
191	732	635L
192	737	635L
193	742	635L
194	747	635L
195	752	635L
196	757	635L
197	762	635L
198	767	635L
199	772	635L
200	777	635L
201	782	635L
202	787	635L
203	792	635L
204	797	635L
205	802	635L
206	807	635L
207	812	635L
208	817	635L
209	822	635L

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
210	827	635L
211	832	635L
212	837	635L
213	842	635L
214	847	635L
215	852	635L
216	857	635L
217	862	635L
218	867	635L
219	872	635L
220	877	635L
221	882	635L
222	887	635L
223	892	635L
224	897	635L
225	902	635L
226	907	635L
227	912	635L
228	917	635L
229	922	635L
230	927	635L
231	932	635L
232	937	635L
233	942	635L
234	947	635L
235	952	635L
236	957	635L
237	962	635L
238	967	635L
239	972	635L

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
240	977	635L
241	982	635L
242	987	635L
243	992	635L
244	997	635L
245	1002	635L
246	1007	635L
247	1012	635L
248	1017	635L
249	1022	635L
250	1027	635L

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 2

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	- 164	BR	60	195	195L	120	550	550L
1	- 150	BR	61	200	200L	121	555	555L
2	- 135	BR	62	206	205L	122	560	560L
3	- 120	BR	63	212	210L	123	565	565L
4	- 106	BR	64	218	220L	124	570	570L
5	- 92	BR	65	223	225L	125	575	575L
6	- 79	BR	66	229	230L	126	580	580L
7	- 67	BR	67	235	235L	127	585	585L
8	- 55	BR	68	241	240L	128	590	590L
9	- 45	BR	69	246	245L	129	595	595L
10	- 35	BR	70	252	250L	130	600	600L
11	- 27	BR	71	258	260L	131	605	605L
12	- 20	BR	72	264	265L	132	610	610L
13	- 13	BR	73	270	270L	133	615	615L
14	- 7	BR	74	275	275L	134	620	620L
15	- 2	BR	75	281	280L	135	625	625L
16	3	5L	76	287	285L	136	630	630L
17	7	5L	77	293	295L	137	635	635L
18	11	10L	78	298	300L	138	640	640L
19	15	15L	79	304	305L	139	645	645L
20	19	20L	80	310	310L	140	650	650L
21	24	25L	81	316	315L	141	655	655L
22	28	30L	82	321	320L	142	660	660L
23	32	30L	83	327	325L	143	665	665L
24	37	35L	84	333	335L	144	670	670L
25	41	40L	85	339	340L	145	675	675L
26	46	45L	86	344	345L	146	680	680L
27	51	50L	87	350	350L	147	685	685L
28	55	55L	88	356	355L	148	690	690L
29	60	60L	89	362	360L	149	695	695L
30	65	65L	90	367	365L	150	700	700L
31	70	70L	91	373	375L	151	705	705L
32	75	75L	92	379	380L	152	710	710L
33	79	80L	93	385	385L	153	715	715L
34	84	85L	94	390	390L	154	720	720L
35	88	90L	95	396	395L	155	725	725L
36	93	95L	96	402	400L	156	730	730L
37	97	95L	97	408	410L	157	735	735L
38	101	100L	98	414	415L	158	740	740L
39	106	105L	99	420	420L	159	745	745L
40	110	110L	100	426	425L	160	751	750L
41	114	115L	101	432	430L	161	757	755L
42	118	120L	102	438	440L	162	763	765L
43	122	120L	103	445	445L	163	769	770L
44	126	125L	104	451	450L	164	775	775L
45	130	130L	105	457	455L	165	781	780L
46	133	135L	106	464	465L	166	787	785L
47	137	135L	107	470	470L	167	793	795L
48	141	140L	108	476	475L	168	799	800L
49	145	145L	109	482	480L	169	805	805L
50	149	150L	110	489	490L	170	811	810L
51	153	155L	111	495	495L	171	817	815L
52	157	155L	112	501	500L	172	823	825L
53	160	160L	113	508	510L	173	829	830L
54	164	165L	114	514	515L	174	835	835L
55	168	170L	115	520	520L	175	841	840L
56	172	170L	116	531	530L	176	847	845L
57	177	175L	117	536	535L	177	855	855L
58	183	185L	118	541	540L	178	863	865L
59	189	190L	119	546	545L	179	871	870L



Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 2 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	879	870L
181	887	870L
182	895	870L
183	903	870L
184	911	870L
185	919	870L
186	927	870L
187	935	870L
188	943	870L
189	951	870L
190	959	870L
191	967	870L
192	975	870L
193	983	870L
194	991	870L
195	999	870L
196	1009	870L
197	1019	870L
198	1029	870L
199	1039	870L

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
200	1049	870L
201	1059	870L
202	1065	870L
203	1071	870L
204	1077	870L
205	1083	870L
206	1089	870L
207	1095	870L
208	1101	870L
209	1107	870L
210	1113	870L
211	1119	870L
212	1125	870L
213	1131	870L
214	1137	870L
215	1143	870L
216	1147	870L
217	1151	870L
218	1155	870L
219	1159	870L

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
220	1163	870L
221	1167	870L
222	1171	870L
223	1175	870L
224	1179	870L
225	1183	870L
226	1187	870L
227	1191	870L
228	1195	870L
229	1199	870L

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 3

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	- 100	BR	60	291	290L	120	591	590L
1	- 90	BR	61	296	295L	121	596	595L
2	- 80	BR	62	301	300L	122	601	600L
3	- 70	BR	63	306	305L	123	606	605L
4	- 60	BR	64	311	310L	124	611	610L
5	- 50	BR	65	316	315L	125	616	615L
6	- 40	BR	66	321	320L	126	621	620L
7	- 30	BR	67	326	325L	127	626	625L
8	- 20	BR	68	331	330L	128	631	630L
9	- 10	BR	69	336	335L	129	636	635L
10	0	BR	70	341	340L	130	641	640L
11	10	10L	71	346	345L	131	646	645L
12	20	20L	72	351	350L	132	651	650L
13	26	25L	73	356	355L	133	656	655L
14	32	30L	74	361	360L	134	661	660L
15	38	40L	75	366	365L	135	666	665L
16	42	40L	76	371	370L	136	671	670L
17	48	50L	77	376	375L	137	676	675L
18	54	55L	78	381	380L	138	681	680L
19	60	60L	79	386	385L	139	686	685L
20	66	65L	80	391	390L	140	691	690L
21	72	70L	81	396	395L	141	696	695L
22	78	80L	82	401	400L	142	701	700L
23	84	85L	83	406	405L	143	706	705L
24	90	90L	84	411	410L	144	711	710L
25	96	95L	85	416	415L	145	716	715L
26	102	100L	86	421	420L	146	721	720L
27	108	110L	87	426	425L	147	726	725L
28	114	115L	88	431	430L	148	731	730L
29	120	120L	89	436	435L	149	736	735L
30	126	125L	90	441	440L	150	741	740L
31	132	130L	91	446	445L	151	746	745L
32	138	140L	92	451	450L	152	751	750L
33	144	145L	93	456	455L	153	756	755L
34	150	150L	94	461	460L	154	761	760L
35	156	155L	95	466	465L	155	766	765L
36	162	160L	96	471	470L	156	771	770L
37	168	170L	97	476	475L	157	776	775L
38	174	175L	98	481	480L	158	781	780L
39	180	180L	99	486	485L	159	786	785L
40	186	185L	100	491	425L	160	791	790L
41	192	190L	101	496	430L	161	796	795L
42	198	200L	102	501	440L	162	802	800L
43	204	205L	103	506	445L	163	808	810L
44	210	210L	104	511	450L	164	814	815L
45	216	215L	105	516	455L	165	820	820L
46	222	220L	106	521	465L	166	826	825L
47	228	230L	107	526	470L	167	832	830L
48	234	235L	108	531	475L	168	838	840L
49	240	240L	109	536	480L	169	842	840L
50	244	245L	110	541	540L	170	848	850L
51	248	250L	111	546	545L	171	854	855L
52	252	250L	112	551	550L	172	860	860L
53	256	255L	113	556	555L	173	866	865L
54	261	260L	114	561	560L	174	872	870L
55	266	265L	115	566	565L	175	878	880L
56	271	270L	116	571	570L	176	884	885L
57	276	275L	117	576	575L	177	890	890L
58	281	280L	118	581	580L	178	896	895L
59	286	285L	119	586	585L	179	902	900L

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 3 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	908	910L	220	1154	965L	260	1360	965L
181	914	915L	221	1160	965L	261	1366	965L
182	920	920L	222	1166	965L	262	1370	965L
183	926	925L	223	1172	965L	263	1374	965L
184	932	930L	224	1178	965L	264	1378	965L
185	938	940L	225	1184	965L	265	1382	965L
186	946	945L	226	1190	965L	266	1386	965L
187	954	955L	227	1196	965L	267	1390	965L
188	962	960L	228	1202	965L	268	1394	965L
189	968	965L	229	1208	965L	269	1398	965L
190	974	965L	230	1214	965L	270	1402	965L
191	980	965L	231	1220	965L	271	1407	965L
192	986	965L	232	1226	965L	272	1413	965L
193	992	965L	233	1232	965L	273	1418	965L
194	998	965L	234	1238	965L	274	1424	965L
195	1004	965L	235	1244	965L	275	1429	965L
196	1010	965L	236	1250	965L	276	1435	965L
197	1016	965L	237	1256	965L	277	1440	965L
198	1022	965L	238	1262	965L	278	1446	965L
199	1028	965L	239	1268	965L	279	1451	965L
200	1034	965L	240	1274	965L	280	1457	965L
201	1040	965L	241	1280	965L	281	1464	965L
202	1046	965L	242	1284	965L	282	1471	965L
203	1052	965L	243	1288	965L	283	1478	965L
204	1058	965L	244	1292	965L	284	1485	965L
205	1064	965L	245	1296	965L	285	1492	965L
206	1070	965L	246	1300	965L	286	1499	965L
207	1076	965L	247	1304	965L	287	1506	965L
208	1082	965L	248	1308	965L	288	1513	965L
209	1088	965L	249	1312	965L	289	1520	965L
210	1094	965L	250	1316	965L	290	1527	965L
211	1100	965L	251	1322	965L	291	1535	965L
212	1106	965L	252	1326	965L			
213	1112	965L	253	1330	965L			
214	1118	965L	254	1334	965L			
215	1124	965L	255	1338	965L			
216	1130	965L	256	1342	965L			
217	1136	965L	257	1346	965L			
218	1142	965L	258	1350	965L			
219	1148	965L	259	1354	965L			

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 4

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	30	BR	60	301	300L	120	601	600L
1	35	35L	61	306	305L	121	606	605L
2	40	40L	62	311	310L	122	611	610L
3	45	45L	63	316	315L	123	616	615L
4	50	50L	64	321	320L	124	621	620L
5	55	55L	65	326	325L	125	626	625L
6	60	60L	66	331	330L	126	631	630L
7	65	65L	67	336	335L	127	636	635L
8	70	70L	68	341	340L	128	641	640L
9	75	75L	69	346	345L	129	646	645L
10	80	80L	70	351	350L	130	651	650L
11	85	85L	71	356	355L	131	656	655L
12	90	90L	72	361	360L	132	661	660L
13	95	95L	73	366	365L	133	666	665L
14	100	100L	74	371	370L	134	671	670L
15	105	105L	75	376	375L	135	676	675L
16	110	110L	76	381	380L	136	681	680L
17	115	115L	77	386	385L	137	686	685L
18	120	120L	78	391	390L	138	691	690L
19	125	125L	79	396	395L	139	696	695L
20	130	130L	80	401	400L	140	701	700L
21	135	135L	81	406	405L	141	706	705L
22	140	140L	82	411	410L	142	711	710L
23	145	145L	83	416	415L	143	716	715L
24	150	150L	84	421	420L	144	721	720L
25	155	155L	85	426	425L	145	726	725L
26	158	160L	86	431	430L	146	731	730L
27	161	160L	87	436	435L	147	736	735L
28	164	165L	88	441	440L	148	741	740L
29	167	165L	89	446	445L	149	746	745L
30	170	170L	90	451	450L	150	751	750L
31	173	175L	91	456	455L	151	756	755L
32	176	175L	92	461	460L	152	761	760L
33	179	180L	93	466	465L	153	766	765L
34	182	180L	94	471	470L	154	771	770L
35	185	185L	95	476	475L	155	776	775L
36	188	190L	96	481	480L	156	781	780L
37	192	190L	97	486	485L	157	786	785L
38	196	195L	98	491	490L	158	791	790L
39	200	200L	99	496	495L	159	796	795L
40	204	205L	100	501	425L	160	801	800L
41	208	210L	101	506	430L	161	806	805L
42	212	210L	102	511	440L	162	811	810L
43	216	215L	103	516	445L	163	816	815L
44	221	220L	104	521	450L	164	821	820L
45	226	225L	105	526	455L	165	826	825L
46	231	230L	106	531	465L	166	831	830L
47	236	235L	107	536	470L	167	836	835L
48	241	240L	108	541	475L	168	841	840L
49	246	245L	109	546	480L	169	846	845L
50	251	250L	110	551	550L	170	851	850L
51	256	255L	111	556	555L	171	856	855L
52	261	260L	112	561	560L	172	861	860L
53	266	265L	113	566	565L	173	866	865L
54	271	270L	114	571	570L	174	871	870L
55	276	275L	115	576	575L	175	876	875L
56	281	280L	116	581	580L	176	881	880L
57	286	285L	117	586	585L	177	886	885L
58	291	290L	118	591	590L	178	891	890L
59	296	295L	119	596	595L	179	896	895L

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 4 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	901	900L	240	1232	1060L	300	1550	1060L
181	906	905L	241	1238	1060L	301	1554	1060L
182	911	910L	242	1244	1060L	302	1558	1060L
183	916	915L	243	1250	1060L	303	1562	1060L
184	921	920L	244	1256	1060L	304	1566	1060L
185	926	925L	245	1262	1060L	305	1570	1060L
186	931	930L	246	1268	1060L	306	1574	1060L
187	936	935L	247	1274	1060L	307	1578	1060L
188	941	940L	248	1280	1060L	308	1582	1060L
189	946	945L	249	1286	1060L	309	1586	1060L
190	951	950L	250	1292	1060L	310	1590	1060L
191	956	955L	251	1298	1060L	311	1594	1060L
192	961	960L	252	1304	1060L	312	1598	1060L
193	966	965L	253	1310	1060L	313	1602	1060L
194	971	970L	254	1316	1060L	314	1606	1060L
195	976	975L	255	1322	1060L	315	1610	1060L
196	981	980L	256	1328	1060L	316	1614	1060L
197	986	985L	257	1334	1060L	317	1618	1060L
198	991	990L	258	1340	1060L	318	1622	1060L
199	996	995L	259	1346	1060L	319	1626	1060L
200	1001	1000L	260	1352	1060L	320	1630	1060L
201	1006	1005L	261	1358	1060L	321	1634	1060L
202	1011	1010L	262	1364	1060L	322	1638	1060L
203	1016	1015L	263	1370	1060L	323	1642	1060L
204	1021	1020L	264	1376	1060L	324	1646	1060L
205	1026	1025L	265	1382	1060L	325	1650	1060L
206	1031	1030L	266	1388	1060L	326	1654	1060L
207	1036	1035L	267	1394	1060L	327	1658	1060L
208	1041	1040L	268	1400	1060L	328	1662	1060L
209	1046	1045L	269	1406	1060L	329	1666	1060L
210	1052	1050L	270	1412	1060L	330	1670	1060L
211	1058	1060L	271	1418	1060L	331	1674	1060L
212	1064	1060L	272	1424	1060L	332	1678	1060L
213	1070	1060L	273	1430	1060L	333	1682	1060L
214	1076	1060L	274	1436	1060L	334	1686	1060L
215	1082	1060L	275	1442	1060L	335	1690	1060L
216	1088	1060L	276	1448	1060L	336	1694	1060L
217	1094	1060L	277	1454	1060L	337	1698	1060L
218	1100	1060L	278	1460	1060L	338	1702	1060L
219	1106	1060L	279	1466	1060L	339	1706	1060L
220	1112	1060L	280	1470	1060L	340	1710	1060L
221	1118	1060L	281	1474	1060L	341	1714	1060L
222	1124	1060L	282	1478	1060L	342	1718	1060L
223	1130	1060L	283	1482	1060L	343	1722	1060L
224	1136	1060L	284	1486	1060L	344	1726	1060L
225	1142	1060L	285	1490	1060L	345	1730	1060L
226	1148	1060L	286	1494	1060L	346	1734	1060L
227	1154	1060L	287	1498	1060L	347	1738	1060L
228	1160	1060L	288	1502	1060L	348	1742	1060L
229	1166	1060L	289	1506	1060L	349	1746	1060L
230	1172	1060L	290	1510	1060L	350	1750	1060L
231	1178	1060L	291	1514	1060L	351	1754	1060L
232	1184	1060L	292	1518	1060L	352	1758	1060L
233	1190	1060L	293	1522	1060L	353	1762	1060L
234	1196	1060L	294	1526	1060L	354	1766	1060L
235	1202	1060L	295	1530	1060L	355	1770	1060L
236	1208	1060L	296	1534	1060L	356	1774	1060L
237	1214	1060L	297	1538	1060L	357	1778	1060L
238	1220	1060L	298	1542	1060L			
239	1226	1060L	299	1546	1060L			

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 5

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	50	BR	60	357	355L	120	657	655L
1	54	55L	61	362	360L	121	662	660L
2	58	60L	62	367	365L	122	667	665L
3	64	65L	63	372	370L	123	672	670L
4	70	70L	64	377	375L	124	677	675L
5	76	75L	65	382	380L	125	682	680L
6	82	80L	66	387	385L	126	687	685L
7	88	90L	67	392	390L	127	692	690L
8	94	95L	68	397	395L	128	697	695L
9	100	100L	69	402	400L	129	702	700L
10	106	105L	70	407	405L	130	707	705L
11	112	110L	71	412	410L	131	712	710L
12	118	120L	72	417	415L	132	717	715L
13	124	125L	73	422	420L	133	722	720L
14	130	130L	74	427	425L	134	727	725L
15	136	135L	75	432	430L	135	732	730L
16	142	140L	76	437	435L	136	737	735L
17	148	150L	77	442	440L	137	742	740L
18	154	155L	78	447	445L	138	747	745L
19	160	160L	79	452	450L	139	752	750L
20	166	165L	80	457	455L	140	757	755L
21	172	170L	81	462	460L	141	762	760L
22	178	180L	82	467	465L	142	767	765L
23	184	185L	83	472	470L	143	772	770L
24	190	190L	84	477	475L	144	777	775L
25	196	195L	85	482	480L	145	782	780L
26	202	200L	86	487	485L	146	787	785L
27	208	210L	87	492	490L	147	792	790L
28	214	215L	88	497	495L	148	797	795L
29	220	220L	89	502	500L	149	802	800L
30	226	225L	90	507	505L	150	807	805L
31	232	230L	91	512	510L	151	812	810L
32	238	240L	92	517	515L	152	817	815L
33	244	245L	93	522	520L	153	822	820L
34	248	250L	94	527	525L	154	827	825L
35	252	250L	95	532	530L	155	832	830L
36	256	255L	96	537	535L	156	837	835L
37	260	260L	97	542	540L	157	842	840L
38	264	265L	98	547	545L	158	847	845L
39	268	270L	99	552	550L	159	852	850L
40	272	270L	100	557	425L	160	857	855L
41	276	275L	101	562	430L	161	862	860L
42	280	280L	102	567	440L	162	867	865L
43	284	285L	103	572	445L	163	872	870L
44	288	290L	104	577	450L	164	877	875L
45	292	290L	105	582	455L	165	882	880L
46	296	295L	106	587	465L	166	887	885L
47	300	300L	107	592	470L	167	892	890L
48	304	305L	108	597	475L	168	897	895L
49	308	310L	109	602	480L	169	902	900L
50	312	310L	110	607	605L	170	907	905L
51	316	315L	111	612	610L	171	912	910L
52	320	320L	112	617	615L	172	917	915L
53	324	325L	113	622	620L	173	922	920L
54	328	330L	114	627	625L	174	927	925L
55	332	330L	115	632	630L	175	932	930L
56	337	335L	116	637	635L	176	937	935L
57	342	340L	117	642	640L	177	942	940L
58	347	345L	118	647	645L	178	947	945L
59	352	350L	119	652	650L	179	952	950L

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 5 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	957	955L	240	1321	1155L	300	1630	1155L
181	962	960L	241	1328	1155L	301	1634	1155L
182	967	965L	242	1335	1155L	302	1638	1155L
183	972	970L	243	1342	1155L	303	1642	1155L
184	977	975L	244	1349	1155L	304	1646	1155L
185	982	980L	245	1356	1155L	305	1650	1155L
186	987	985L	246	1363	1155L	306	1654	1155L
187	992	990L	247	1370	1155L	307	1658	1155L
188	997	995L	248	1377	1155L	308	1662	1155L
189	1002	1000L	249	1384	1155L	309	1666	1155L
190	1007	1005L	250	1391	1155L	310	1670	1155L
191	1012	1010L	251	1398	1155L	311	1674	1155L
192	1017	1015L	252	1405	1155L	312	1678	1155L
193	1022	1020L	253	1410	1155L	313	1682	1155L
194	1027	1025L	254	1415	1155L	314	1686	1155L
195	1032	1030L	255	1420	1155L	315	1690	1155L
196	1037	1035L	256	1425	1155L	316	1694	1155L
197	1042	1040L	257	1430	1155L	317	1698	1155L
198	1047	1045L	258	1435	1155L	318	1702	1155L
199	1052	1050L	259	1440	1155L	319	1706	1155L
200	1057	1055L	260	1445	1155L	320	1710	1155L
201	1062	1060L	261	1450	1155L	321	1714	1155L
202	1067	1065L	262	1455	1155L	322	1718	1155L
203	1072	1070L	263	1460	1155L	323	1722	1155L
204	1077	1075L	264	1465	1155L	324	1726	1155L
205	1082	1080L	265	1470	1155L	325	1730	1155L
206	1087	1085L	266	1475	1155L	326	1734	1155L
207	1092	1090L	267	1480	1155L	327	1738	1155L
208	1097	1095L	268	1485	1155L	328	1742	1155L
209	1104	1105L	269	1490	1155L	329	1746	1155L
210	1111	1110L	270	1495	1155L	330	1750	1155L
211	1118	1120L	271	1500	1155L	331	1754	1155L
212	1125	1125L	272	1505	1155L	332	1758	1155L
213	1132	1130L	273	1510	1155L	333	1762	1155L
214	1139	1140L	274	1515	1155L	334	1766	1155L
215	1146	1145L	275	1520	1155L	335	1770	1155L
216	1153	1155L	276	1525	1155L	336	1774	1155L
217	1160	1155L	277	1530	1155L	337	1778	1155L
218	1167	1155L	278	1535	1155L	338	1782	1155L
219	1174	1155L	279	1540	1155L	339	1786	1155L
220	1181	1155L	280	1545	1155L	340	1790	1155L
221	1188	1155L	281	1550	1155L	341	1794	1155L
222	1195	1155L	282	1555	1155L	342	1798	1155L
223	1202	1155L	283	1560	1155L	343	1802	1155L
224	1209	1155L	284	1565	1155L	344	1806	1155L
225	1216	1155L	285	1570	1155L	345	1810	1155L
226	1223	1155L	286	1574	1155L	346	1814	1155L
227	1230	1155L	287	1578	1155L	347	1818	1155L
228	1237	1155L	288	1582	1155L	348	1822	1155L
229	1244	1155L	289	1586	1155L	349	1826	1155L
230	1251	1155L	290	1590	1155L	350	1830	1155L
231	1258	1155L	291	1594	1155L	351	1834	1155L
232	1265	1155L	292	1598	1155L	352	1838	1155L
233	1272	1155L	293	1602	1155L	353	1842	1155L
234	1279	1155L	294	1606	1155L	354	1846	1155L
235	1286	1155L	295	1610	1155L	355	1850	1155L
236	1293	1155L	296	1614	1155L	356	1854	1155L
237	1300	1155L	297	1618	1155L	357	1858	1155L
238	1307	1155L	298	1622	1155L	358	1862	1155L
239	1314	1155L	299	1626	1155L	359	1866	1155L

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 6

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	70	BR	60	430	430L	120	780	780L
1	76	75L	61	436	435L	121	786	785L
2	82	80L	62	442	440L	122	791	790L
3	88	90L	63	448	450L	123	796	795L
4	94	95L	64	454	455L	124	801	800L
5	100	100L	65	460	460L	125	806	805L
6	106	105L	66	466	465L	126	811	810L
7	112	110L	67	472	470L	127	816	815L
8	118	120L	68	478	480L	128	821	820L
9	124	125L	69	484	485L	129	826	825L
10	130	130L	70	490	490L	130	831	830L
11	136	135L	71	496	495L	131	836	835L
12	142	140L	72	502	500L	132	841	840L
13	148	150L	73	508	510L	133	846	845L
14	154	155L	74	514	515L	134	851	850L
15	160	160L	75	520	520L	135	856	855L
16	166	165L	76	526	525L	136	861	860L
17	172	170L	77	532	530L	137	866	865L
18	178	180L	78	538	540L	138	871	870L
19	184	185L	79	544	545L	139	876	875L
20	190	190L	80	550	550L	140	881	880L
21	196	195L	81	556	555L	141	886	885L
22	202	200L	82	562	560L	142	891	890L
23	208	210L	83	568	570L	143	896	895L
24	214	215L	84	574	575L	144	901	900L
25	220	220L	85	580	580L	145	906	905L
26	226	225L	86	586	585L	146	911	910L
27	232	230L	87	592	590L	147	916	915L
28	238	240L	88	598	600L	148	921	920L
29	244	245L	89	604	605L	149	926	925L
30	250	250L	90	610	610L	150	931	930L
31	256	255L	91	616	615L	151	936	935L
32	262	260L	92	622	620L	152	941	940L
33	268	270L	93	628	630L	153	946	945L
34	274	275L	94	634	635L	154	951	950L
35	280	280L	95	640	640L	155	956	955L
36	286	285L	96	646	645L	156	961	960L
37	292	290L	97	652	650L	157	966	965L
38	298	300L	98	658	660L	158	971	970L
39	304	305L	99	664	665L	159	976	975L
40	310	310L	100	670	425L	160	981	980L
41	316	315L	101	676	430L	161	986	985L
42	322	320L	102	681	440L	162	991	990L
43	328	330L	103	687	445L	163	996	995L
44	334	335L	104	692	450L	164	1001	1000L
45	340	340L	105	698	455L	165	1006	1005L
46	346	345L	106	703	465L	166	1011	1010L
47	352	350L	107	709	470L	167	1016	1015L
48	358	360L	108	714	475L	168	1021	1020L
49	364	365L	109	720	480L	169	1026	1025L
50	370	370L	110	725	725L	170	1031	1030L
51	376	375L	111	731	730L	171	1036	1035L
52	382	380L	112	736	735L	172	1041	1040L
53	388	390L	113	742	740L	173	1046	1045L
54	394	395L	114	747	745L	174	1051	1050L
55	400	400L	115	753	755L	175	1056	1055L
56	406	405L	116	758	760L	176	1061	1060L
57	412	410L	117	764	765L	177	1066	1065L
58	418	420L	118	769	770L	178	1071	1070L
59	424	425L	119	775	775L	179	1076	1075L



Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 6 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	1081	1080L	240	1474	1220L	300	1714	1220L
181	1086	1085L	241	1478	1220L	301	1718	1220L
182	1091	1090L	242	1482	1220L	302	1722	1220L
183	1096	1095L	243	1486	1220L	303	1726	1220L
184	1102	1100L	244	1490	1220L	304	1730	1220L
185	1108	1110L	245	1494	1220L	305	1734	1220L
186	1114	1115L	246	1498	1220L	306	1738	1220L
187	1120	1120L	247	1502	1220L	307	1742	1220L
188	1126	1125L	248	1506	1220L	308	1746	1220L
189	1132	1130L	249	1510	1220L	309	1750	1220L
190	1138	1140L	250	1514	1220L	310	1754	1220L
191	1144	1145L	251	1518	1220L	311	1758	1220L
192	1150	1150L	252	1522	1220L	312	1762	1220L
193	1157	1155L	253	1526	1220L	313	1766	1220L
194	1163	1165L	254	1530	1220L	314	1770	1220L
195	1170	1170L	255	1534	1220L	315	1774	1220L
196	1176	1175L	256	1538	1220L	316	1778	1220L
197	1183	1185L	257	1542	1220L	317	1782	1220L
198	1189	1190L	258	1546	1220L	318	1786	1220L
199	1196	1195L	259	1550	1220L	319	1790	1220L
200	1202	1200L	260	1554	1220L	320	1794	1220L
201	1209	1210L	261	1558	1220L	321	1798	1220L
202	1215	1215L	262	1562	1220L	322	1802	1220L
203	1222	1220L	263	1566	1220L	323	1806	1220L
204	1228	1220L	264	1570	1220L	324	1810	1220L
205	1235	1220L	265	1574	1220L	325	1814	1220L
206	1241	1220L	266	1578	1220L	326	1818	1220L
207	1248	1220L	267	1582	1220L	327	1822	1220L
208	1254	1220L	268	1586	1220L	328	1826	1220L
209	1261	1220L	269	1590	1220L	329	1830	1220L
210	1267	1220L	270	1594	1220L	330	1834	1220L
211	1274	1220L	271	1598	1220L	331	1838	1220L
212	1280	1220L	272	1602	1220L	332	1842	1220L
213	1287	1220L	273	1606	1220L	333	1846	1220L
214	1293	1220L	274	1610	1220L	334	1850	1220L
215	1300	1220L	275	1614	1220L	335	1854	1220L
216	1306	1220L	276	1618	1220L	336	1858	1220L
217	1314	1220L	277	1622	1220L	337	1862	1220L
218	1322	1220L	278	1626	1220L	338	1866	1220L
219	1330	1220L	279	1630	1220L	339	1870	1220L
220	1338	1220L	280	1634	1220L	340	1874	1220L
221	1346	1220L	281	1638	1220L	341	1878	1220L
222	1354	1220L	282	1642	1220L	342	1882	1220L
223	1362	1220L	283	1646	1220L	343	1886	1220L
224	1370	1220L	284	1650	1220L	344	1890	1220L
225	1378	1220L	285	1654	1220L	345	1894	1220L
226	1386	1220L	286	1658	1220L	346	1898	1220L
227	1394	1220L	287	1662	1220L	347	1902	1220L
228	1402	1220L	288	1666	1220L	348	1906	1220L
229	1410	1220L	289	1670	1220L	349	1910	1220L
230	1418	1220L	290	1674	1220L	350	1914	1220L
231	1426	1220L	291	1678	1220L			
232	1434	1220L	292	1682	1220L			
233	1442	1220L	293	1686	1220L			
234	1450	1220L	294	1690	1220L			
235	1454	1220L	295	1694	1220L			
236	1458	1220L	296	1698	1220L			
237	1462	1220L	297	1702	1220L			
238	1466	1220L	298	1706	1220L			
239	1470	1220L	299	1710	1220L			

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 7

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	80	BR	60	461	460L	120	821	820L
1	89	90L	61	467	465L	121	827	825L
2	98	100L	62	473	475L	122	833	835L
3	106	105L	63	479	480L	123	839	840L
4	114	115L	64	485	485L	124	845	845L
5	122	120L	65	491	490L	125	851	850L
6	130	130L	66	497	495L	126	857	855L
7	138	140L	67	503	505L	127	863	865L
8	146	145L	68	509	510L	128	869	870L
9	154	155L	69	515	515L	129	875	875L
10	162	160L	70	521	520L	130	881	880L
11	168	170L	71	527	525L	131	887	885L
12	174	175L	72	533	535L	132	895	895L
13	180	180L	73	539	540L	133	903	905L
14	186	185L	74	545	545L	134	911	910L
15	192	190L	75	551	550L	135	919	920L
16	198	200L	76	557	555L	136	927	925L
17	204	205L	77	563	565L	137	932	930L
18	210	210L	78	569	570L	138	937	935L
19	216	215L	79	575	575L	139	942	940L
20	222	220L	80	581	580L	140	947	945L
21	228	230L	81	587	585L	141	952	950L
22	234	235L	82	593	595L	142	957	955L
23	240	240L	83	599	600L	143	962	960L
24	246	245L	84	605	605L	144	967	965L
25	252	250L	85	611	610L	145	972	970L
26	257	255L	86	617	615L	146	977	975L
27	263	265L	87	623	625L	147	982	980L
28	269	270L	88	629	630L	148	987	985L
29	275	275L	89	635	635L	149	992	990L
30	281	280L	90	641	640L	150	997	995L
31	287	285L	91	647	645L	151	1002	1000L
32	293	295L	92	653	655L	152	1007	1005L
33	299	300L	93	659	660L	153	1012	1010L
34	305	305L	94	665	665L	154	1015	1015L
35	311	310L	95	671	670L	155	1018	1020L
36	317	315L	96	677	675L	156	1021	1020L
37	323	325L	97	683	685L	157	1024	1025L
38	329	330L	98	689	690L	158	1027	1025L
39	335	335L	99	695	695L	159	1030	1030L
40	341	340L	100	701	425L	160	1033	1035L
41	347	345L	101	707	430L	161	1036	1035L
42	353	355L	102	713	440L	162	1039	1040L
43	359	360L	103	719	445L	163	1042	1040L
44	365	365L	104	725	450L	164	1056	1055L
45	371	370L	105	731	455L	165	1063	1065L
46	377	375L	106	737	465L	166	1070	1070L
47	383	385L	107	743	470L	167	1077	1075L
48	389	390L	108	749	475L	168	1084	1085L
49	395	395L	109	755	480L	169	1091	1090L
50	401	400L	110	761	760L	170	1098	1100L
51	407	405L	111	767	765L	171	1105	1105L
52	413	415L	112	773	775L	172	1113	1115L
53	419	420L	113	779	780L	173	1121	1120L
54	425	425L	114	785	785L	174	1129	1130L
55	431	430L	115	791	790L	175	1137	1135L
56	437	435L	116	797	795L	176	1145	1145L
57	443	445L	117	803	805L	177	1153	1155L
58	449	450L	118	809	810L	178	1161	1160L
59	455	455L	119	815	815L	179	1169	1170L

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 7 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	1175	1175L	240	1505	1270L	300	1736	1270L
181	1181	1180L	241	1508	1270L	301	1740	1270L
182	1187	1185L	242	1511	1270L	302	1744	1270L
183	1193	1195L	243	1514	1270L	303	1748	1270L
184	1199	1200L	244	1517	1270L	304	1752	1270L
185	1205	1205L	245	1520	1270L	305	1756	1270L
186	1211	1210L	246	1523	1270L	306	1760	1270L
187	1217	1215L	247	1526	1270L	307	1764	1270L
188	1223	1225L	248	1529	1270L	308	1768	1270L
189	1229	1230L	249	1532	1270L	309	1772	1270L
190	1235	1235L	250	1536	1270L	310	1776	1270L
191	1241	1240L	251	1540	1270L	311	1780	1270L
192	1247	1245L	252	1544	1270L	312	1784	1270L
193	1253	1255L	253	1548	1270L	313	1788	1270L
194	1259	1260L	254	1552	1270L	314	1792	1270L
195	1265	1265L	255	1556	1270L	315	1796	1270L
196	1271	1270L	256	1560	1270L	316	1800	1270L
197	1277	1270L	257	1564	1270L	317	1804	1270L
198	1283	1270L	258	1568	1270L	318	1808	1270L
199	1289	1270L	259	1572	1270L	319	1812	1270L
200	1295	1270L	260	1576	1270L	320	1816	1270L
201	1301	1270L	261	1580	1270L	321	1820	1270L
202	1307	1270L	262	1584	1270L	322	1824	1270L
203	1313	1270L	263	1588	1270L	323	1828	1270L
204	1319	1270L	264	1592	1270L	324	1832	1270L
205	1325	1270L	265	1596	1270L	325	1836	1270L
206	1331	1270L	266	1600	1270L	326	1840	1270L
207	1337	1270L	267	1604	1270L	327	1844	1270L
208	1343	1270L	268	1608	1270L	328	1848	1270L
209	1349	1270L	269	1612	1270L	329	1853	1270L
210	1355	1270L	270	1616	1270L	330	1858	1270L
211	1361	1270L	271	1620	1270L	331	1863	1270L
212	1367	1270L	272	1624	1270L	332	1868	1270L
213	1373	1270L	273	1628	1270L	333	1873	1270L
214	1379	1270L	274	1632	1270L	334	1878	1270L
215	1385	1270L	275	1636	1270L	335	1883	1270L
216	1391	1270L	276	1640	1270L	336	1888	1270L
217	1397	1270L	277	1644	1270L	337	1893	1270L
218	1403	1270L	278	1648	1270L	338	1898	1270L
219	1408	1270L	279	1652	1270L	339	1903	1270L
220	1413	1270L	280	1656	1270L	340	1908	1270L
221	1418	1270L	281	1660	1270L	341	1913	1270L
222	1423	1270L	282	1664	1270L	342	1918	1270L
223	1428	1270L	283	1668	1270L	343	1923	1270L
224	1433	1270L	284	1672	1270L	344	1928	1270L
225	1438	1270L	285	1676	1270L	345	1933	1270L
226	1443	1270L	286	1680	1270L	346	1938	1270L
227	1448	1270L	287	1684	1270L	347	1943	1270L
228	1453	1270L	288	1688	1270L	348	1948	1270L
229	1458	1270L	289	1692	1270L	349	1953	1270L
230	1463	1270L	290	1696	1270L	350	1958	1270L
231	1468	1270L	291	1700	1270L	351	1963	1270L
232	1473	1270L	292	1704	1270L	352	1968	1270L
233	1478	1270L	293	1708	1270L	353	1973	1270L
234	1483	1270L	294	1712	1270L			
235	1488	1270L	295	1716	1270L			
236	1493	1270L	296	1720	1270L			
237	1496	1270L	297	1724	1270L			
238	1499	1270L	298	1728	1270L			
239	1502	1270L	299	1732	1270L			

## Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 8

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
0	85	BR	60	535	535L	120	889	890L
1	91	90L	61	542	540L	121	895	895L
2	98	100L	62	549	550L	122	901	900L
3	106	105L	63	556	555L	123	907	905L
4	113	115L	64	562	560L	124	913	915L
5	120	120L	65	568	570L	125	919	920L
6	128	130L	66	574	575L	126	925	925L
7	135	135L	67	580	580L	127	931	930L
8	143	145L	68	586	585L	128	937	935L
9	150	150L	69	592	590L	129	943	945L
10	158	160L	70	598	600L	130	949	950L
11	165	165L	71	604	605L	131	955	955L
12	173	175L	72	610	610L	132	961	960L
13	180	180L	73	616	615L	133	967	965L
14	187	185L	74	622	620L	134	973	975L
15	195	195L	75	628	630L	135	979	980L
16	202	200L	76	634	635L	136	986	985L
17	210	210L	77	640	640L	137	993	995L
18	217	215L	78	646	645L	138	1000	1000L
19	225	225L	79	652	650L	139	1007	1005L
20	232	230L	80	658	660L	140	1014	1015L
21	240	240L	81	664	665L	141	1021	1020L
22	247	245L	82	670	670L	142	1028	1030L
23	255	255L	83	676	675L	143	1035	1035L
24	262	260L	84	682	680L	144	1042	1040L
25	269	270L	85	688	690L	145	1049	1050L
26	277	275L	86	694	695L	146	1056	1055L
27	284	285L	87	700	700L	147	1063	1065L
28	292	290L	88	706	705L	148	1070	1070L
29	299	300L	89	712	710L	149	1077	1075L
30	307	305L	90	718	720L	150	1084	1085L
31	314	315L	91	723	725L	151	1091	1090L
32	322	320L	92	728	730L	152	1098	1100L
33	329	330L	93	733	735L	153	1105	1105L
34	336	335L	94	738	740L	154	1112	1110L
35	344	345L	95	743	745L	155	1119	1120L
36	352	350L	96	748	750L	156	1126	1125L
37	360	360L	97	753	755L	157	1133	1135L
38	368	370L	98	758	760L	158	1140	1140L
39	376	375L	99	763	765L	159	1147	1145L
40	384	385L	100	769	425L	160	1154	1155L
41	392	390L	101	775	430L	161	1161	1160L
42	400	400L	102	781	440L	162	1168	1170L
43	408	410L	103	787	445L	163	1175	1175L
44	416	415L	104	793	450L	164	1182	1180L
45	424	425L	105	799	455L	165	1189	1190L
46	432	430L	106	805	465L	166	1196	1195L
47	440	440L	107	811	470L	167	1203	1205L
48	448	450L	108	817	475L	168	1210	1210L
49	456	455L	109	823	480L	169	1216	1215L
50	464	465L	110	829	830L	170	1222	1220L
51	472	470L	111	835	835L	171	1228	1230L
52	479	480L	112	841	840L	172	1234	1235L
53	486	485L	113	847	845L	173	1240	1240L
54	493	495L	114	853	855L	174	1246	1245L
55	500	500L	115	859	860L	175	1252	1250L
56	507	505L	116	865	865L	176	1258	1260L
57	514	515L	117	871	870L	177	1264	1265L
58	521	520L	118	877	875L	178	1270	1270L
59	528	530L	119	883	885L	179	1276	1275L

Conversion Table for the R-CBM Raw Score to the Lexile Measure-Grade 8 (cont.)

R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure	R-CBM Raw Score	Research Lexile Measure	Reported Lexile Measure
180	1282	1280L	240	1562	1330L	300	1790	1330L
181	1288	1290L	241	1566	1330L	301	1794	1330L
182	1294	1295L	242	1570	1330L	302	1798	1330L
183	1300	1300L	243	1574	1330L	303	1802	1330L
184	1306	1305L	244	1578	1330L	304	1806	1330L
185	1312	1310L	245	1582	1330L	305	1810	1330L
186	1318	1320L	246	1586	1330L	306	1818	1330L
187	1324	1325L	247	1590	1330L	307	1826	1330L
188	1330	1330L	248	1593	1330L	308	1833	1330L
189	1336	1330L	249	1596	1330L	309	1841	1330L
190	1342	1330L	250	1599	1330L	310	1848	1330L
191	1348	1330L	251	1602	1330L	311	1856	1330L
192	1354	1330L	252	1605	1330L	312	1864	1330L
193	1360	1330L	253	1608	1330L	313	1871	1330L
194	1366	1330L	254	1611	1330L	314	1879	1330L
195	1372	1330L	255	1614	1330L	315	1886	1330L
196	1378	1330L	256	1617	1330L	316	1894	1330L
197	1384	1330L	257	1620	1330L	317	1902	1330L
198	1390	1330L	258	1623	1330L	318	1909	1330L
199	1396	1330L	259	1626	1330L	319	1917	1330L
200	1402	1330L	260	1629	1330L	320	1924	1330L
201	1406	1330L	261	1632	1330L	321	1932	1330L
202	1410	1330L	262	1635	1330L	322	1940	1330L
203	1414	1330L	263	1638	1330L	323	1947	1330L
204	1418	1330L	264	1641	1330L	324	1955	1330L
205	1422	1330L	265	1644	1330L	325	1962	1330L
206	1426	1330L	266	1647	1330L	326	1970	1330L
207	1430	1330L	267	1650	1330L	327	1978	1330L
208	1434	1330L	268	1653	1330L	328	1985	1330L
209	1438	1330L	269	1658	1330L	329	1993	1330L
210	1442	1330L	270	1663	1330L	330	2000	1330L
211	1446	1330L	271	1668	1330L	331	2009	1330L
212	1450	1330L	272	1673	1330L	332	2017	1330L
213	1454	1330L	273	1678	1330L	333	2026	1330L
214	1458	1330L	274	1683	1330L	334	2034	1330L
215	1462	1330L	275	1688	1330L	335	2043	1330L
216	1466	1330L	276	1693	1330L	336	2051	1330L
217	1470	1330L	277	1698	1330L	337	2060	1330L
218	1474	1330L	278	1702	1330L	338	2068	1330L
219	1478	1330L	279	1706	1330L	339	2077	1330L
220	1482	1330L	280	1710	1330L	340	2085	1330L
221	1486	1330L	281	1714	1330L	341	2094	1330L
222	1490	1330L	282	1718	1330L	342	2102	1330L
223	1494	1330L	283	1722	1330L	343	2111	1330L
224	1498	1330L	284	1726	1330L	344	2119	1330L
225	1502	1330L	285	1730	1330L	345	2129	1330L
226	1506	1330L	286	1734	1330L	346	2139	1330L
227	1510	1330L	287	1738	1330L	347	2149	1330L
228	1514	1330L	288	1742	1330L	348	2159	1330L
229	1518	1330L	289	1746	1330L	349	2169	1330L
230	1522	1330L	290	1750	1330L	350	2179	1330L
231	1526	1330L	291	1754	1330L	351	2189	1330L
232	1530	1330L	292	1758	1330L	352	2200	1330L
233	1534	1330L	293	1762	1330L			
234	1538	1330L	294	1766	1330L			
235	1542	1330L	295	1770	1330L			
236	1546	1330L	296	1774	1330L			
237	1550	1330L	297	1778	1330L			
238	1554	1330L	298	1782	1330L			
239	1558	1330L	299	1786	1330L			



## Appendix B

Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 1 .....	B-2
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 2 .....	B-3
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 3 .....	B-4
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 4 .....	B-5
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 5 .....	B-6
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 6 .....	B-7
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 7 .....	B-8
Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 8 .....	B-9

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 1

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	- 290	BR
1	- 250	BR
2	- 200	BR
3	- 142	BR
4	- 94	BR
5	- 50	BR
6	- 8	BR
7	32	30L
8	71	70L
9	110	110L
10	140	140L
11	170	170L
12	200	200L
13	230	230L
14	260	260L
15	290	290L
16	320	320L
17	345	345L
18	370	370L
19	395	395L
20	415	415L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
21	430	430L
22	445	445L
23	460	460L
24	475	475L
25	490	490L
26	505	505L
27	520	520L
28	535	535L
29	550	550L
30	580	580L



## Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 2

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	- 90	BR
1	- 66	BR
2	- 28	BR
3	6	5L
4	39	40L
5	70	70L
6	84	85L
7	98	100L
8	126	125L
9	155	155L
10	195	195L
11	223	225L
12	251	250L
13	286	285L
14	313	315L
15	337	335L
16	362	360L
17	385	385L
18	399	400L
19	421	420L
20	434	435L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
21	457	455L
22	470	470L
23	494	495L
24	519	520L
25	531	530L
26	544	545L
27	569	570L
28	583	585L
29	610	610L
30	625	625L
31	654	655L
32	671	670L
33	704	705L
34	725	725L
35	766	765L
36	816	815L
37	885	870L
38	980	870L

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 3

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	80	BR
1	98	100L
2	130	130L
3	164	165L
4	193	195L
5	210	210L
6	240	240L
7	267	265L
8	296	295L
9	333	335L
10	361	360L
11	397	395L
12	432	430L
13	458	460L
14	483	485L
15	508	510L
16	533	535L
17	558	560L
18	572	570L
19	597	595L
20	624	625L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
21	651	650L
22	678	680L
23	707	705L
24	738	740L
25	768	770L
26	784	785L
27	816	815L
28	831	830L
29	846	845L
30	882	880L
31	896	895L
32	910	910L
33	935	935L
34	967	965L
35	1000	965L
36	1033	965L
37	1057	965L
38	1100	965L
39	1143	965L
40	1170	965L

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 4

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	100	BR
1	121	120L
2	170	170L
3	210	210L
4	248	250L
5	275	275L
6	305	305L
7	340	340L
8	384	385L
9	429	430L
10	466	465L
11	496	495L
12	533	535L
13	561	560L
14	597	595L
15	625	625L
16	662	660L
17	690	690L
18	718	720L
19	745	745L
20	762	760L
21	790	790L
22	821	820L
23	851	850L
24	868	870L
25	900	900L
26	916	915L
27	952	950L
28	991	990L
29	1007	1005L
30	1050	1050L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
31	1068	1060L
32	1090	1060L
33	1138	1060L
34	1152	1060L
35	1180	1060L
36	1200	1060L
37	1220	1060L
38	1240	1060L
39	1260	1060L
40	1300	1060L
41	1330	1060L
42	1360	1060L
43	1380	1060L
44	1400	1060L
45	1430	1060L

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 5

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	196	BR
1	230	230L
2	260	260L
3	280	280L
4	310	310L
5	340	340L
6	370	370L
7	415	415L
8	440	440L
9	480	480L
10	517	515L
11	545	545L
12	563	565L
13	600	600L
14	630	630L
15	657	655L
16	684	685L
17	712	710L
18	740	740L
19	770	770L
20	810	810L
21	840	840L
22	870	870L
23	900	900L
24	930	930L
25	960	960L
26	990	990L
27	1020	1020L
28	1050	1050L
29	1080	1080L
30	1100	1100L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
31	1120	1120L
32	1140	1140L
33	1160	1155L
34	1180	1155L
35	1200	1155L
36	1220	1155L
37	1240	1155L
38	1260	1155L
39	1290	1155L
40	1330	1155L
41	1360	1155L
42	1390	1155L
43	1420	1155L
44	1450	1155L
45	1470	1155L

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 6

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	234	BR
1	258	260L
2	283	285L
3	308	310L
4	332	330L
5	357	355L
6	381	380L
7	406	405L
8	441	440L
9	480	480L
10	508	510L
11	543	545L
12	584	585L
13	624	625L
14	651	650L
15	677	675L
16	703	705L
17	729	730L
18	755	755L
19	780	780L
20	807	805L
21	843	845L
22	871	870L
23	896	895L
24	925	925L
25	965	965L
26	996	995L
27	1026	1025L
28	1060	1060L
29	1094	1095L
30	1109	1110L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
31	1147	1145L
32	1162	1160L
33	1176	1175L
34	1219	1220L
35	1234	1220L
36	1249	1220L
37	1290	1220L
38	1318	1220L
39	1331	1220L
40	1346	1220L
41	1360	1220L
42	1380	1220L
43	1400	1220L
44	1420	1220L
45	1440	1220L
46	1460	1220L
47	1480	1220L
48	1500	1220L
49	1520	1220L
50	1540	1220L
51	1560	1220L

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 7

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	260	BR
1	300	300L
2	330	330L
3	360	360L
4	390	390L
5	420	420L
6	450	450L
7	480	480L
8	510	510L
9	540	540L
10	570	570L
11	600	600L
12	630	630L
13	660	660L
14	690	690L
15	720	720L
16	750	750L
17	780	780L
18	810	810L
19	840	840L
20	870	870L
21	900	900L
22	930	930L
23	960	960L
24	1000	1000L
25	1020	1020L
26	1070	1070L
27	1100	1100L
28	1130	1130L
29	1160	1160L
30	1180	1180L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
31	1200	1200L
32	1240	1240L
33	1270	1270L
34	1305	1270L
35	1330	1270L
36	1355	1270L
37	1370	1270L
38	1390	1270L
39	1410	1270L
40	1430	1270L
41	1450	1270L
42	1470	1270L
43	1490	1270L
44	1510	1270L
45	1540	1270L
46	1560	1270L
47	1580	1270L
48	1600	1270L

### Conversion Table for the MAZE Raw Score to the Lexile Measure-Grade 8

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
0	300	BR
1	320	320L
2	375	375L
3	409	410L
4	455	455L
5	495	495L
6	525	525L
7	576	575L
8	613	615L
9	644	645L
10	675	675L
11	704	705L
12	733	735L
13	760	760L
14	777	775L
15	804	805L
16	843	845L
17	881	880L
18	910	910L
19	958	960L
20	999	1000L
21	1028	1030L
22	1056	1055L
23	1086	1085L
24	1116	1115L
25	1133	1135L
26	1163	1165L
27	1180	1180L
28	1213	1215L
29	1250	1250L
30	1288	1290L

MAZE Raw Score	Research Lexile Measure	Reported Lexile Measure
31	1305	1305L
32	1350	1330L
33	1365	1330L
34	1380	1330L
35	1410	1330L
36	1440	1330L
37	1467	1330L
38	1493	1330L
39	1520	1330L
40	1570	1330L
41	1595	1330L
42	1610	1330L
43	1625	1330L
44	1640	1330L
45	1642	1330L
46	1660	1330L
47	1678	1330L
48	1700	1330L
49	1720	1330L
50	1760	1330L