



New England Common Assessment Program

An Emerging Vision



Cabot School, Vermont, Web Project Artwork

Alignment Study—Reading and Mathematics (Grades 3 – 8)

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Table of Contents

I Executive Summary

- Purpose
- Process
- Alignment Study
- Alignment Summary Tables
- Findings
- Conclusion

II Purpose

- Introduction
- NCLB Requirements

III Item Alignment and Test Form Alignment

- Introduction
- Item Alignment
- Test Form Alignment
- Distribution of Emphasis
- Content Coverage
- Depth of Knowledge

IV Alignment Study

- Introduction
- Alignment Reviews

V Findings

- Item Alignment Review
- Test Form Review
- Alignment Summary Tables—Based on Webb’s Four Alignment Criteria

VI Conclusions and Recommendations

- Conclusion
- Recommendations Regarding Test Items
- Recommendations Regarding Test Forms
- Recommendations Regarding Alignment
- Recommendations Regarding Depth of Knowledge
- Recommendations Regarding Content Coverage

VII References

VIII Appendices

SPECIAL NOTE

In this report, several terms are used in reference to aspects of the term, “academic content standards,” as prescribed under the No Child Left Behind Act. These terms are grade level expectations, reporting categories, stems, reading clusters, and mathematics strands. Specific applications of these terms are described at appropriate points in the report.

I. Executive Summary

Purpose

This study was undertaken for two primary reasons. The first was to determine whether the reading and mathematics assessments administered in grades 3 through 8 under the New England Common Assessment Program (NECAP)¹ meet recognized national standards for proper alignment with academic content standards defined and adopted by the three partner States (New Hampshire, Rhode Island, and Vermont). The second purpose of this study was to meet certain requirements of the No Child Left Behind Act of 2001. Additional information regarding the study's purpose is provided in Chapter II.

Process

The States commissioned the National Center for the Improvement of Educational Assessment, Inc., (the Center for Assessment) to prepare materials to be evaluated in this alignment study. The Center for Assessment produced the rating forms used by the external review panels; processed and aggregated data from all individual rating forms collected from review panelists; and gathered and aggregated all relevant information for the test form review phase of the study (e.g., test specifications, distribution of items by content, and Depth of Knowledge).

The States then commissioned an external consultant to review, evaluate, and assemble the alignment evidence from both phases of the study and to prepare this report. Findings and conclusions from that review are presented throughout the report.

An external, independent alignment analysis was conducted in December 2006 by panels of educators and designed to determine the content validity of the assessments by examining the relationship of assessment items to the States' standards. As noted above, findings of the alignment panels were submitted to the Center for Assessment for summation and reporting. The analysis examined (see Chapter III for detailed information):

1. Alignment of items with the grade level expectations (GLEs)—more commonly referred to as content standards—they are intended to measure.
2. Test (form) alignment—the extent to which the set of GLEs that constitute a NECAP test match the target distribution of emphasis across those GLEs and reflect the intended distribution across depth of knowledge levels.
3. The validity of the alignment assurance procedures built into the developmental process followed for the NECAP assessments.

Alignment Study

Ensuring alignment of the grades 3-8 NECAP reading and mathematics tests with the GLEs is an on-going, continuous process involving the State Departments of Education, Measured Progress (the testing contractor) and scores of local educators across the partner States (see Chapter IV for detailed information). The continual involvement of a wide range of local educators is a critical component of ensuring on-going alignment of the NECAP tests and is supported through the work of the Item Review Committees and Bias/Sensitivity Review Committees. These committees of local educators and specialists (e.g., special education, English language learners) independently reviewed, and continue to review, each item and reading passage developed for field-testing on the NECAP tests. Each academic content and grade-span specific Item Review Committee includes 12 members who review each item along four dimensions:

¹ NECAP represents a unique collaboration by the Departments of Education in three States—New Hampshire, Rhode Island, and Vermont—to develop a common set of academic content standards in reading and mathematics and a common assessment to measure students' mastery of those standards.

1. Alignment with the GLE.
2. Depth of knowledge.
3. Content correctness and significance.
4. Access through adherence to principles of Universal Design.

The committees are able to suggest edits to improve item alignment in any of these areas. The committees meet two to three times during each test development cycle. The Bias/Sensitivity Committee includes 18 members who meet two to three times per development cycle to review items and passages for appropriateness on large-scale assessments for particular subgroups of students (e.g., gender, racial/ethnic, students with disabilities, English language learners). In addition to improving the alignment of the NECAP tests with the GLEs, the involvement of numerous local educators through the Item Review Committees also provides benefits such as advancing broad-based assessment literacy and promoting understanding and use of the GLEs in instruction across the State.

As noted above, a study regarding item and test (form) alignment for the NECAP reading and mathematics assessments in grades 3-8 was conducted in December 2006. Panelists of local educators across the partner States were selected and trained to conduct the alignment study (see Chapter V in this report for details regarding the alignment study reports). Materials related to the training and alignment findings are included in the appendices at the end of this report. The item alignment phase consisted of a review of the accuracy of classifications of the GLEs and Depth of Knowledge (DOK) for test items. The test (form) phase focused on balance of representation and range of knowledge on the tests in terms of distribution of items across the GLEs and the distribution of items across levels of DOKs.

Alignment Summary Tables

Presented in the tables below is a summary of the alignment study results. The format is adopted from that commonly associated with alignment studies based on the model developed by Norman Webb.

Reading

Grade 3: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	NO
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	WEAK	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 6: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	WEAK	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 8: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	NO	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 3: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	WEAK
Type of Text: Informational	YES	YES	WEAK	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	NO	YES	WEAK
Comprehension: Analysis & Interpretation	YES	YES	WEAK	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	NO	YES	NO
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	NO	YES	YES
Type of Text: Literary	YES	WEAK	YES	WEAK
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 6: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	WEAK	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	WEAK
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 8: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	WEAK
Comprehension: Analysis & Interpretation	YES	WEAK	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Mathematics

Grade 3: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	NO	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
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Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

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Geometry and Measurement	YES	YES	YES	YES
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Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
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Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	NO	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

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Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
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Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	NO	YES	YES
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Grade 8: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	WEAK	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Findings

Overall, the alignment study panelists found a high degree of alignment between test items and measurement of the intended GLE as well as coverage of the GLEs. The median rating for the vast majority of test items and GLE alignment was 3.0 or higher—indicating alignment with the intended GLE on each test (see Appendices A and B). All mathematics and most reading GLEs had been covered across the first two NECAP administrations.

A review of the alignment summary tables reveals a small number of specific issues that the States intend to address in the development of future NECAP tests. On the reading tests, in general, areas with weak alignment or lack of alignment are consistent with an issue discussed later in the report of the tendency for informational passages to yield initial understanding items and literary passages to

yield analysis/interpretation items. On the mathematics tests, the lone area of any concern appears to be Depth of Knowledge consistency. In particular, there are fewer DOK level 3 items in some areas (e.g., Data, Statistics, and Probability) than prescribed in the DOK ceiling tables. Again, the partner States have indicated that those areas will be addressed in future test forms.

Conclusion

Based on results of this alignment study, the NECAP assessments in reading and mathematics at grades 3-8 do not appear to require restructuring or significant changes. The comprehensive, systematic approach used, and the on-going involvement of hundreds of local educators, by the NECAP partners in developing the assessments were instrumental to ensuring that the final product would meet recognized standards for content validity and proper alignment.

The findings of the alignment study affirmed that the overall distribution of emphasis targets for the assessments were satisfactorily met, that the degree of alignment between the test items and the intended GLE (content standard) was highly satisfactory for all assessments, and that only a minor gap in coverage of the reading GLEs exists. The States report that they will address that gap in future test forms.

II. Purpose

Introduction

The purpose of this report is to present the findings of standards and assessments alignment studies for the grades 3 through 8 New England Common Assessment Program (NECAP). The studies were conducted by panels of elementary and secondary school educators selected by the NECAP partners (New Hampshire, Rhode Island, and Vermont departments of education)². The panels, independent of and external to the respective departments of education, were charged with determining the degree of alignment between the NECAP assessments in reading and mathematics and related academic content standards adopted by the three States. Alignment studies for science and high school level assessments will be conducted later and reported separately.

NECAP is an outgrowth of The New England Compact (www.necompact.org/) and was instituted in 2002 by the Commissioners of Education of Maine, New Hampshire, Rhode Island, and Vermont. The Compact provides a forum for the States to explore ideas, build a collective knowledge base, and establish cross-State activities that benefit each participant. Since 2002, the latter three States have built a set of common grade level expectations (GLE) and assessments in reading, mathematics, science, and writing for grades 3 through 8 to meet the requirements of the No Child Left Behind Act of 2001 (NCLB). A common high school level test is nearing completion. The States decided to work together on these assessments for three important reasons: This collaboration:

- Brings together a team of assessment and content specialists with experience and expertise greater than any individual State;
- Ensures the capacity necessary for to develop quality, customized assessments consistent with the overall goal of improving education; and,
- Permits sharing costs in the development of a customized assessment program of a quality not otherwise feasible for any individual State.

A significant product of the New England Compact, separate from the assessment program, was the development in 2002-2003 of sets of common grade level expectations (GLE), or content standards, in reading, mathematics, and writing. The GLE, developed after the passage of NCLB and after considerable attention had been devoted toward the content and structure of content standards reflect significant advances that directly impact the usefulness of the GLE for both instruction and for the development of NECAP tests:

1. From the beginning, the vertical articulation of content standards across grade levels was a critical component of the development of the GLE. Each GLE consists of a “stem” that describes a big idea or concept within the content area and “indicators” that describe the grade-specific content and skills related to that concept. As appropriate, stems continue across grade levels, with new grade-specific content and skills highlighted in the GLE.
2. The GLE committees were able to explicitly indicate the Depth of Knowledge level (DOK) for each GLE. This eliminated the problematic step of convening separate committees, after the fact, for the purpose of attempting to divine the DOK level implicit in the language of the GLE.

² While States are expected to confirm final alignment of their assessments and standards following full implementation, they have some flexibility in how this is done. Some States engage external consultants; others employ external subject-matter experts; and, others convene and provide training for panels of local educators.

The NECAP tests have been administered to students in grades 3 through 8 in Fall 2005 and Fall 2006. The tests are designed to measure the content standards contained in the common grade level expectations developed through the New England Compact and adopted by each of the partner States. Because NECAP has been designed as a fall testing program, the GLE and assessments are designed on the basis of what students should know and be able to do at the beginning of one grade based on instruction through the end of the previous grade. For the purposes of accountability and determining AYP, assessment results are attributed to the school in which the student received instruction.

An additional benefit of the collaborative effort has been the opportunity to draw on the expertise of hundreds of educators across the three States throughout the test development process. As described later in this report, the extensive involvement of local educators is a critical component to development of the NECAP assessments serving to ensure the alignment of items with the GLEs and to ensure that the NECAP tests are accessible to as many students as possible.

NCLB Requirements

Under the federal No Child Left Behind Act of 2001 (NCLB), States are required to administer annual measures of students' academic achievement in their public schools in grades 3 through 8 and once in grades 10-12 in at least reading or language arts, mathematics, and, beginning in 2007-08, science. The measures must be aligned with academic content standards and describe what it is that students are expected to know and be able to do in each subject area at the end of each grade. In approaching the determination of this alignment for the NECAP assessments, careful attention was given to determining the extent of agreement, overlap, or intersection among standards (commonly referred to by the NECAP partners as "Grade Level Expectations" or GLEs), instruction, and assessments. Clearly, accurate inferences about student achievement and growth over time can only be made when there is alignment between the content standards (GLEs) and assessments.

According to guidance issued by the U. S. Department of Education (April 28, 2004, pp. 41-42),

Alignment encompasses several dimensions; demonstrating that an assessment system is aligned with a State's standards requires more than simply determining whether all the items on the assessment can be matched to one or more standards or whether each of the academic content standards can be matched to one or more items in the assessments. *Alignment is more than this two-way process.* To ensure that its standards and assessments are aligned, a State needs to consider whether the assessments:

- Cover the full range of content specified in the State's academic content standards, meaning that all of the standards are represented legitimately in the assessments;
- Measure both the content (what students know) and the process (what students can do) aspects of the academic content standards;
- Reflect the same degree and pattern of emphasis apparent in the academic content standards (e.g., if the academic content standards place a lot of emphasis on operations then so should the assessments);
- Reflect the full range of cognitive complexity and level of difficulty of the concepts and processes described, and depth represented, in the State's academic content standards, meaning that the assessments are as demanding as the standards; and,
- Yield results that represent all achievement levels specified in the State's academic achievement standards."

These are the central questions explored and answered in the NECAP alignment study report (although not in a mutually exclusive manner) chapters that follow.

III. Item Alignment and Test Form Alignment

Introduction

Throughout the process of developing the NECAP tests, the partner States were concerned with two distinct aspects of alignment—item alignment and test, or form, alignment. Item alignment refers to the extent to which individual items are aligned to the GLE that they are designed to measure. Test (form) alignment refers to the extent to which the set of items that constitute a particular NECAP test match the target distribution of emphasis across the GLE and reflect the intended distribution across Depth of Knowledge levels.

Provided in this chapter is background information on the process and procedures used to build item and test (form) alignment into the development of each NECAP test. The first section, Item Alignment, describes the developmental process for the NECAP tests. The second section, Test form Alignment, provides information on the Distribution of Emphasis across GLEs and Depth of Knowledge levels. The Distribution of Emphasis and Depth of Knowledge information provided in this chapter formed the basis for evaluating the test form alignment of the NECAP tests.

Item Alignment

Ensuring alignment of the grades 3-8 NECAP reading and mathematics tests with the grade level expectations is an on-going, continuous process that involves the State Departments of Education, Measured Progress (the testing contractor), and scores of local educators across the three States. The process began long before the development of the first NECAP test item and continues through the development and review of each subsequent test item and test form.

The alignment process began with the development of detailed test specifications by committees of local educators and State content specialists who developed the reading and mathematics GLEs (*Tri-State New England Reading and Mathematics Test Specifications, 2004*). The test specifications, completed prior to initial NECAP item development in the winter/spring of 2004, provide extensive detail and supporting discussion on the relationship between the GLEs and the NECAP tests in terms of concepts such as Distribution of Emphasis (Balance of Representation), Categorical Concurrence, Depth of Knowledge, and Range of Knowledge.

Test Form Alignment

The process of ensuring alignment of the NECAP tests with the GLEs continues throughout the developmental process with close interaction of the State's content specialists, program specialists, and the contractor's test development teams. Prior to the beginning of actual item development, these teams met extensively to discuss interpretation and implementation of the GLEs through a review of the GLE documents, supporting materials, and sample test items. The teams also received NECAP-specific training in the interpretation and implementation of the concept of Depth of Knowledge from Norman Webb³ in the spring of 2005. On an ongoing basis, the State and contractor teams worked closely together throughout the two-year development cycle to review and approve each item selected first for field-testing and, ultimately, for inclusion on an operational NECAP test.

³ On March 22-23, 2005, Webb conducted a two-day training session on Depth of Knowledge in Portsmouth, New Hampshire, for the NECAP State content teams and Measured Progress' item development staff. The first day featured an in-depth review of the levels of Depth of Knowledge with sample items drawn across content areas. The second day included half-day individual content area meetings with Webb to review specific Depth of Knowledge questions based on items from the 2004 NECAP Pilot Test. Webb was provided copies of sample NECAP Pilot Test forms prior to the meeting. Information regarding Webb's DOK criteria for language arts and mathematics is provided in Appendix E(b).

Ongoing involvement of a wide range of local educators is a critical component of ensuring alignment of the NECAP tests and is supported through the work of the Item Review Committees and Bias/Sensitivity Review Committees. These committees of local educators and specialists (e.g., special education, English language learners) independently reviewed, and continue to review, each item and reading passage developed for field-testing on the NECAP tests. Each academic content and grade-span specific Item Review Committee includes 12 members who review each item along four dimensions:

1. Alignment with the GLE.
2. Depth of Knowledge.
3. Content correctness and significance.
4. Access through adherence to principles of Universal Design.

The committees are able to suggest edits to improve item alignment in any of these areas. The committees meet two to three times during each test development cycle. The Bias/Sensitivity Committee includes 18 members who meet two to three times per development cycle to review items and passages for appropriateness on large-scale assessments for particular subgroups of students (e.g., gender, racial/ethnic, students with disabilities, English language learners). In addition to improving the alignment of the NECAP tests with the GLEs, the involvement of numerous local educators through the Item Review Committees also provides benefits such as advancing broad-based assessment literacy and promoting understanding and use of the GLEs in instruction across the States. The result is a stronger link between the GLE, instruction, and assessment.

Distribution of Emphasis

Reading Targets

Shown in Table 1 is the target distribution of emphasis across reporting categories for the grades 3-8 NECAP reading tests as indicated in the test specifications produced in connection with the NECAP Grade Level Expectations (GLEs).

Table 1

NECAP Grade 3-8 Reading Tests Distribution of Emphasis						
Reporting Category	Target Percentage of Points (\pm 5 percentage points)					
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Word Identification	20%	15%	-	-	-	-
Vocabulary	20%	20%	20%	20%	20%	20%
Initial Understanding – Literary	20%	20%	20%	20%	15%	15%
Initial Understanding – Informational	20%	20%	20%	20%	20%	20%
Analysis and Interpretation – Literary	20%	15%	20%	20%	25%	25%
Analysis and Interpretation – Informational	20%	10%	20%	20%	20%	20%
Totals	100%	100%	100%	100%	100%	100%

In developing and reporting results from the NECAP tests, the three partner States made the following adjustments to the implementation of the Distribution of Emphasis table:

1. At grades 3 and 4, Word Identification and Vocabulary were combined into a single reporting category (content standard). With the vast majority of items passage-based, a greater emphasis was placed on vocabulary than word identification. In general, the inclusion of word identification items was limited to the four non-passage-based item slots on each of the grade 3 and 4 tests.
2. With the exception of the Word Identification and Vocabulary items, all other items on the test were classified by Level of Comprehension (Initial Understanding or Analysis and Interpretation) and Type of Text (Literary or Informational).
3. In selecting passage-based items for the test, the fully crossed categorization of Level of Comprehension and Type of Text presented in the distribution of emphasis was determined to be too restrictive. Therefore, the two Level of Comprehension categories were collapsed across Type of Text. Similarly, the two Type of Text categories were collapsed across Level of Comprehension. The goal was to meet the target percentages within each of the major categories: Level of Comprehension and Type of Text.

The adjusted distribution of emphasis targets are reflected in Tables 10-11, Chapter V, related to the distribution of emphasis for the 2005-2006 and 2006-2007 reading tests.

Mathematics Targets

Shown in Table 2 is the target distribution of emphasis across reporting categories for the grade 3-8 NECAP mathematics tests as indicated in the test specifications produced in connection with the NECAP Grade Level Expectations (GLE).

Table 2

NECAP Grade 3-8 Mathematics Tests Distribution of Emphasis						
	Target Percentage of Points (\pm 5 percentage points)					
Reporting Category	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Number and Operations	55%	50%	50%	45%	30%	20%
Geometry and Measurement	15%	20%	20%	25%	25%	25%
Algebra and Functions	15%	15%	15%	15%	30%	40%
Data, Statistics, and Probability	15%	15%	15%	15%	15%	15%
Totals	100%	100%	100%	100%	100%	100%

Content Coverage

As described above, the distribution of emphasis for the NECAP tests is defined at the reporting category level rather than at the level of content standards. The partner States and the GLE committees determined that it would be too restrictive on test development and, ultimately, damaging to the quality of the assessment to specify the particular number of test items and/or points on each test allocated to individual standards. Within the bounds imposed by the Distribution of Emphasis, flexibility was necessary to select quality items that fulfilled all of the requirements for test form development (e.g., distribution across DOK levels, number of selected-response and constructed-response items, and the primary use of passage-based items on the reading test).

The States and committees did believe, however, that it was necessary to provide specifications to ensure that all content standards are represented in the NECAP tests. The original intent was that each content standard within a reporting category would be assessed by at least one item on each

NECAP test. This policy is in place for the mathematics tests, but was not originally feasible for the reading tests for reasons that follow.

As the design of the reading test was finalized, it became apparent that, for several reasons, it was not practicable to assess each individual content standard on every NECAP test every year. Key requirements for the use of items based on authentic reading passages (both literary and informational) and for the inclusion of at least one constructed-response item for every reading passage limited the total number of passages and items that could be assessed within realistic testing time. Also, as cited previously, the reading content standards are fully crossed by level of comprehension (i.e., initial understanding v. analysis/interpretation) and type of text (i.e., literary v. informational). This design creates a level of overlap in the content standards that could result in an unnecessary redundancy in the assessments if, for example, all five analysis/interpretation literary standards and all five analysis/interpretation informational standards were to be assessed on each test.

Therefore, the States established a design protocol for the reading tests that each of the eight major GLE stems would be assessed each year and that the 14 to 19 GLE indicators that they comprise would be sampled each year and assessed over a 3 to 4 year cycle. The eight reading GLE stems are identified in Table 3 in the following section.

Depth of Knowledge

Since the initial development of the NECAP GLEs and, subsequently in 2003 and 2004, the NECAP test specifications, considerable attention has been devoted to the concept of Depth of Knowledge—particularly as defined by the work of Norman Webb. As noted earlier, Webb’s work was instrumental to the NECAP partners in the development of the design and language of the GLE within a grade level and across grade levels within a content area. When development of the NECAP assessment began in early spring of 2005, Webb was asked to provide a two-day seminar on Depth of Knowledge (DOK) with the partner States’ academic content teams and the contractor’s item development team. At that time, Webb worked directly with each of the teams reviewing sample items and clarifying the concept of Depth of Knowledge as applied to large-scale assessment items.

The three States and GLE committees determined that it would be essential for the assessments to include items not only at the DOK implicit in the GLE (i.e., the DOK ceiling for a particular GLE), but also at lower DOK levels. The rationale for this decision is provided in the NECAP⁴ reading and mathematics test specification documents (*Tri-State New England Reading and Mathematics Test Specifications, 2004*). The explanations provided for the two academic content areas are very similar. An excerpt from the Reading Test Specifications (pages 13-14) is provided here:

An important aspect of the test’s grade level assessment design is to use the highest Depth of Knowledge demand implicit in a GLE as the “ceiling” for assessment, not the “target.” Why is the distinction between “ceiling” and “target” important? If one assessed only at the “target,” all GLEs with a level 3 as their highest demand would only be assessed at level three. This would potentially have two negative impacts on the assessment: (1) The assessment as a whole would be too difficult; and (2) important information about student learning along the achievement continuum would be lost.

Thus, using Webb’s descriptions of Depth of Knowledge, a decision was made that items on the NECAP reading and mathematics tests would be classified at DOK Levels 1, 2, or 3. By design, the tests do not include items at DOK level 4. By definition, DOK Level 4 requires complex reasoning, planning, and thinking over **extended periods of time** (emphasis added), with the extended period of time being a defining characteristic of the level. After consultation with Webb and careful consideration, the partner States decided that it would be disingenuous, at best, to claim that any items, including constructed-response items, included

⁴ The NECAP was initially called the Tri-State New England Tests or TSNE.

on a large-scale, on-demand reading and mathematics assessments required reasoning, planning, or thinking over an extended period of time. The individual States do emphasize that instruction and assessment at the local level should include activities at DOK level 4.

Incorporating the work of Webb into the development of the GLEs from the beginning of the process, the partner States were able to ask the committees that produced the GLEs to explicitly indicate the level of Depth of Knowledge implicit in each GLE. This step enhances the process of aligning standards and assessments by eliminating a common and major challenge facing most assessment developers: the need to infer solely from the often broad language of the content standards the intent of the writers regarding Depth of Knowledge. Supplementing the NECAP GLE are sets of DOK ceilings for each GLE that are used to guide development and could also be used to inform this alignment study.

Provided in Tables 3 and 4 are “ceilings”—the highest DOK level at which a GLE should be assessed for reading and mathematics. When considering the highest DOK level as the ceiling, not the target, the GLE has the potential to be assessed at DOK levels at the ceiling and/or up to the ceiling depending on the demand of the GLE.

Implicit in the development of the GLE, however, is the expectation that students at each grade level will be able to demonstrate performance on the GLE as written. That is, that the cognitive demand or Depth of Knowledge implicit in the GLE, the ceiling, was the focus in the process of drafting content area achievement level descriptors and setting achievement level standards.

Table 3

Note that the codes R1-R8 refer to the “stem” of the grade-specific GLE. Each “stem” is the same or similar across grade levels for a given GLE, and is meant to communicate the connectedness of the main curriculum and instructional focus across the grades. Building off of the stem, the remainder of the grade-specific GLE details how the concept is applied at a particular grade level and how it differs from the application at the previous grade(s).

Depth of Knowledge Ceilings for Reading GLEs						
Reading GLE (organized by Reporting Categories)	Grade Level					
	3	4	5	6	7	8
Skills and Strategies: Word Identification and Vocabulary Skills						
Word Identification Skills and Strategies (R1)	1	1				
Vocabulary Strategies (R2)	2	2	2	2	2	2
Breadth of Vocabulary (R3)	2	2	2	2	2	2
Comprehension: Initial Understanding of Literary and Informational Texts						
Initial Understanding of Literary Text – Elements of literary texts (R4)	1	2	2	2	2	2
Initial Understanding of Informational Text (R7)	1	2	2	2	2	2
Comprehension: Analysis and Interpretation of Literary and Informational Texts						
Analysis and Interpretation of Literary Text – Elements of literary texts (R5)	2	2	3	3	3	3
Analysis and Interpretation of Literary Text – Author’s craft (R6)	-	-	-	3	3	3
Analysis and Interpretation of Informational Text (R8)	3	3	3	3	3	3

Table 4

In the notation M(DSP)-X-1, 'DSP' indicates the reporting category (i.e., Data, Statistics, and Probability), 'X' denotes the grade level, and '1' refers to the "stem" of the grade-specific GLE. Each "stem" is the same or similar across grade levels for a given GLE, and is meant to communicate the connectedness of the main curriculum and instructional focus across the grades. Building off of the stem, the remainder of the grade-specific GLE details how the concept is applied at a particular grade level and how it differs from the application at the previous grade(s).

Depth of Knowledge Ceilings for Mathematics GLEs						
Mathematics GLE (organized by Reporting Categories)	Grade Level					
	3	4	5	6	7	8
Data, Statistics, and Probability						
M(DSP)-X-1	3	3	3	3	3	3
M(DSP)-X-2	3	3	3	3	3	3
M(DSP)-X-3	-	2	-	2	-	3
M(DSP)-X-4	2	-	3	-	3	-
M(SDP)-X-5	-	2	2	2	3	3
Functions and Algebra						
M(F&A)-X-1	2	2	2	2	3	3
M(F&A)-X-2	-	-	-	-	2	3
M(F&A)-X-3	-	-	1	1	2	2
M(F&A)-X-4	1	2	2	2	2	2
Geometry and Measurement						
M(G&M)-X-1	3	2	2	2	2	-
M(G&M)-X-2	-	-	-	-	-	2
M(G&M)-X-3	-	-	2	2	2	-
M(G&M)-X-4	-	-	-	2	-	2
M(G&M)-X-5	-	-	2	-	2	2
M(G&M)-X-6	2	2	2	2	3	3
M(G&M)-X-7	2	2	2	2	2	-
Numbers and Operations						
M(N&O)-X-1	2	2	2	2	2	2
M(N&O)-X-2	1	2	2	2	2	2
M(N&O)-X-3	2	2	2	3	3	-
M(N&O)-X-4	-	3	3	3	3	3
M(N&O)-X-5	2	-	-	-	-	-

IV. Alignment Study

Introduction

Presented in this chapter is information related to the external, independent alignment study conducted to determine and validate the alignment assurance procedures built into the developmental process for the NECAP tests. Additionally, the information documents how particular U. S. Department of Education (ED) requirements have been met for approval of State assessment systems under the No Child Left Behind Act of 2001. Based on consultation with the NECAP Technical Advisory Committee (TAC)⁵, the States designed an alignment study with two distinct phases—item alignment and test form alignment. This chapter addresses specifically the external review panels convened to address the first phase—item alignment.

The item alignment phase focused on the alignment of individual test items to the GLEs in terms of two key alignment concepts: Categorical Concurrence and Depth of Knowledge. It consisted of a review of the accuracy of classifications of the grade level expectations (GLEs)⁶ and Depth of Knowledge (DOK) for NECAP test items. External panels of educators convened by the States were asked to perform two tasks for each test item: Indicate:

1. The degree of alignment of the item with the assigned GLE.
2. The Depth of Knowledge measured by the item.

The second phase of the study, test form alignment, focused on alignment of the NECAP test forms in terms of the four alignment criteria defined by Webb: Categorical Concurrence, Depth of Knowledge consistency, Range of Knowledge, and Balance of Representation. Additionally, in this phase of the study, the Distribution of Emphasis of items across GLEs on the NECAP test forms was compared against test specifications established for the assessment program.

The States commissioned the National Center for the Improvement of Educational Assessment, Inc. (the Center for Assessment) to prepare materials to be evaluated in this alignment study. The Center for Assessment produced the rating forms used by the external review panels; processed and aggregated data from all individual rating forms collected from individual review panelists; and gathered and aggregated all relevant information for the test form review phase of the study (e.g., test specifications, distribution of items by content and Depth of Knowledge).

The States then commissioned an external consultant to review and evaluate the alignment evidence from both phases of the study and to prepare this report. Findings and conclusions from that review are presented throughout the report.

Alignment Reviews

As part of the process of conducting an external review of the alignment of the NECAP reading and mathematics tests, the NECAP partner States identified and contracted for trained panels of educators to evaluate each test item for:

1. The degree of alignment to the assigned Grade Level Expectation or GLE (NECAP States use the term, GLE in place of “content standard” as used in NCLB—see Appendix C for additional information regarding GLEs) and,

⁵ Each State has its own TAC. However, joint meetings of the three TACs are held twice yearly as the NECAP TAC with the National Center for the Improvement of Educational Assessment serving as the meeting host and facilitator. See Appendix H for a list of TAC members.

⁶ GLEs have the same meaning as “academic content standards” under NCLB. Although the reading and mathematics GLEs are not included in this report, a brief description what the GLEs are, how they are applied, and how they are sequenced across grades is provided in Appendix C.

2. The Depth of Knowledge measured by the items.

Separate panel meetings were convened by each State's Department of Education with on-site training provided by the State assessment director prior to beginning the alignment review using common training materials. Sample training materials are provided in Appendices D, E, and F. All panelists followed a uniform protocol to make their alignment determinations. Results were aggregated across States and are reported in Appendices A and B. As reflected in this report and the supporting appendices, every effort was made to ensure consistency in the alignment review processes.

At each meeting, panelists reviewed test items from the 2005-2006 and 2006-2007 NECAP reading and mathematics tests at grades 3-8. Independent teams reviewed materials for a particular grade and content area. As noted elsewhere in this report, a separate alignment study for high school level assessments used by each State will be conducted later in 2007. Each meeting was conducted over the course of a single day:

Review Meeting Sites and Dates

- Rhode Island: Tuesday, December 5, 2006
- New Hampshire: Thursday, December 14, 2006
- Vermont: Tuesday, December 19, 2006

Agenda

- I. Welcome, introductions, and overview
- II. Training conducted by the State assessment director (see PowerPoint slides in Appendix D)
 - a. Confidentiality agreement (see Appendix Ea)
 - b. Depth of Knowledge overview (see Appendix Eb)
- III. Ratings of 2005-2006 items (see sample forms in Appendix F)
 - a. Individual ratings
 - b. Group discussion (grade/content teams)
 - c. Final ratings
- IV. Lunch
- V. Ratings of 2006-2007 items
 - a. Individual ratings
 - b. Group discussion (grade/content teams)
 - c. Final ratings

Protocol and Procedures

The alignment reviews began with a one hour training session for all panelists conducted by the State assessment director with support from other State Department staff. (see PowerPoint slides in Appendix D). The training included discussion of the purpose of the alignment reviews, a description of alignment criteria, a review of Webb's Depth of Knowledge descriptions (Appendix Eb) for reading and mathematics, and a detailed description of the tasks to be completed by the panelists. After a period of questions from panelists, the training concluded with a review of all of the meeting materials including copies of the GLEs and DOK descriptions.

Following training, panelists assembled in grade level/content panels. Procedures for handling of secure item sets were explained. Prior to receiving a secure item set, each panelist completed a confidentiality agreement. State Department personnel were responsible for delivering and collecting secure item sets from each alignment review panel.

Review panels worked independently on a single NECAP reading or mathematics test. Department personnel were available to answer procedural questions and provide logistic support. Panelists reviewed each item and made independent ratings of the level of alignment and Depth of Knowledge

for each of the items on the test (e.g., 34 items in Reading, 48 to 55 items in mathematics). Following the independent ratings, panelists engaged in group discussion of items on which there was a disagreement in ratings among panelists. As suggested by the summary of panelists' ratings (Appendices A and B), much of the discussion centered on DOK rather than level of alignment.

In conducting this alignment study, it was recognized (and reflected in training of the evaluation panels) that the nature of DOK classification decisions is often complex and context-dependent and there are not always sharp distinctions between levels. Consequently, to obtain more precise information from the alignment study, panelists were asked to classify items into one of five DOK categories: Level 1, borderline Level 1/Level 2, Level 2, borderline Level 2/Level 3, and Level 3. (See Appendices A and B for directions to the panels and results of the DOK evaluations.)

In general, the alignment panels completed review of the 2005-2006 tests prior to lunch and began review of the 2006-2007 tests following lunch. Panelists were dismissed when their panel completed their review of the assigned 2006-2007 test. All panels completed the review of both tests within the time scheduled for the alignment evaluation.

Panelists

The alignment study design called for 12 to 15 members for each of 12 content area/grade level panels (6 grades tested in each subject in 2005-06 and 6 more in 2006-07). Each State recruited 4 to 6 members to comprise the alignment panel for each of the 12 NECAP reading and mathematics tests across grades 3-8. Across the three NECAP States, the number of panelists per test ranged from 13 to 14 in reading and 15 to 17 in mathematics.

States recruited educators with knowledge of the GLEs as well as experience at the grade level being tested or the previous grade (consistent with fall testing). The goal was for each panel to contain a mix of educators from the grade being tested and the previous grade with a slight majority of educators in the tested grade. In addition to classroom teachers, the States sought administrators (e.g., coordinators, principals), content area specialists, and program specialists (e.g., Title 1, special education, ELL). While not always possible to recruit educators at a specific grade level (due primarily to restrictions on how many days educators may be away from their schools for professional development and professional services purposes), all panelists were familiar with or experienced at the grade level being reviewed. The majority of panelists in reading (64%) and mathematics (73%) were classroom teachers with teaching experience at the tested grade or adjacent lower grade.

In soliciting panelists for the alignment study, the primary focus of the States was on individuals with familiarity with the GLEs and teaching experience at the tested grade level or adjacent lower grade level. Additional information on the panelists is presented in Appendix G. As shown in the following tables, a total of 95 educators participated in the alignment panels. Reflecting the K-8 teaching population across the three States, the majority of the panelists in both reading (93%) and mathematics (88%) were female.

Table 5

NECAP Alignment Study – Mathematics Number of Panelists by State							
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Total
New Hampshire	5	3	4	4	4	3	23
Rhode Island	6	6	6	6	6	6	36
Vermont	5	6	7	6	6	6	36
Total	16	15	17	16	16	15	95

Table 6

NECAP Alignment Study – Reading Number of Panelists by State							
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Total
New Hampshire	4	4	4	3	3	4	22
Rhode Island	5	5	5	6	6	6	33
Vermont	5	5	5	5	4	4	28
Total	14	14	14	14	13	14	83

Table 7

NECAP Alignment Study – Mathematics Number of Panelists by Sex							
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Total
Female	16	14	16	15	12	11	84
Male	0	1	1	1	4	4	11
Total	16	15	17	16	16	15	95

Table 8

NECAP Alignment Study – Reading Number of Panelists by Sex							
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Total
Female	13	14	13	13	12	12	77
Male	1	0	1	1	1	2	6
Total	14	14	14	14	13	14	83

Table 9

Administrators and Specialists on Alignment Panels	
Mathematics	Reading
Mathematics Intervention Teacher	Reading Specialist (7)
Mathematics Coach (15)	Reading/Literacy Specialist (2)
Title 1 Enrichment Teacher	Reading/Writing Specialist
Special Education Teacher (2)	Reading or Literacy Coach (4)
Special Education/ ELL Specialist (2)	Title 1 Teacher (2)
Resource Room Teacher (Special Education)	Special Education Teacher (2)
District mathematics coordinator	K-5 ELL
K-8 mathematics coordinator	Special Education/ELL
LEA mathematics curriculum leader	Reading First Coach
Elementary mathematics director	Literacy Coordinator – University level
	Curriculum Coordinator (2)
	PK-8 Literacy Coordinator
	Principal, Assistant Principal
	Language Arts Coordinator, 5-6 and 6-8 (2)
	Speech/Language Pathologist

Materials

Test Items. Measured Progress (the testing contractor) produced a packet of test items for each of the NECAP tests used by the panelists. Each packet included the entire set of test items used to compute student- and school-level scores in the order that the items appeared in the test booklet⁷. Each item was presented on a single page (with additional pages for graphics and scoring guides, if needed). The top of each page contained header information describing the item (e.g., item number, GLE, etc.) See Appendix D – PowerPoint Presentation for Training Alignment Study Panels, slide 19, “Practice Item”.

Measured Progress provided a single set of test item packets to each State. In turn, the States produced sufficient copies of the test item packets for their panelists. Identical test item packets were used in each of the States.

Rating Forms. Custom rating forms (see Appendix F for samples) were developed for the panelists for each NECAP test. The rating forms contained the item numbers and item codes corresponding to the test item packets. The rating forms contained sections for panelists to rate the alignment of the

⁷ The NECAP tests employ a common-matrix design. Embedded field test items and equating items are matrix-sampled across several test forms and not included in the computation of student scores. These items were not included in the alignment review. Also, due to processing errors across the 12 NECAP tests reviewed in each content area, there were two reading tests and three mathematics tests in which a single item was inadvertently omitted from the packets used in the alignment study. The five missing items were included in analyses in the second phase of the project, after the GLE and DOK of the items were reviewed by consultants.

GLE, indicate the Depth of Knowledge level, and provide comments or list alternate GLEs for each item.

Meeting Materials. The States prepared meeting materials for the panelists. Included among the meeting materials were a copy of the training PowerPoint, content-specific descriptions of the levels of Depth of Knowledge developed by Norman Webb, copies of the appropriate GLEs, and confidentiality or non-disclosure agreements (to be signed by each panelist). Samples of these materials are included in the appendices as noted above.

V. Findings

The findings of the grades 3-8 NECAP reading and mathematics alignment studies are presented in this chapter. Included is an annotated summary of the evidence used in the alignment study as well as tables summarizing the alignment of each of the 2005-2006 and 2006-2007 NECAP reading and mathematics tests to the GLEs on the basis of Webb's four alignment criteria: Categorical Concurrence, Depth of Knowledge consistency, Range of Knowledge, and Balance of Representation.

The alignment study findings affirmed that the overall Distribution of Emphasis targets for the assessments were satisfactorily met, that the Degree of Alignment between the test items and the intended GLE (content standard) was highly satisfactory for all assessments, and that only a minor gap in coverage of the reading GLEs exists.

Item Alignment Review

Summary rating sheets for each of the NECAP tests showing the review panels' item-by-item ratings for level of alignment with the GLEs and Depth of Knowledge are provided in Appendix A (Reading) and Appendix B (Mathematics). For level of alignment to the GLE, the Distribution of Ratings across the four alignment levels is provided along with the median rating. For Depth of Knowledge, the distribution of panelists' classifications across the levels of DOK is provided.

Overall, the rating sheets show that the panelists found a high degree of alignment of the test items with their intended GLE. On each test, the median rating for the vast majority of items in relationship to GLEs was 3.0 or higher on a 4-point scale indicating level of alignment with the intended GLE:

- 4 – Item is aligned to the GLE to which it is coded.
- 3 – Item is aligned to the GLE to which it is coded, but is also aligned to another GLE.
- 2 – Item is aligned to the GLE to which it is coded, but better aligned to another GLE.
- 1 – Item does not align to the GLE to which it is coded.

In reading, there were only eight items across the twelve 2005-2006 and 2006-2007 tests reviewed and no more than two items on a single test with a median rating below 3.0. In mathematics, there were only two items across the 2005-2006 and 2006-2007 tests reviewed and no more than one item on a single test with a median rating below 3.0. In most cases where an item received a low rating on alignment, panelists' comments indicated that the item was more appropriate for another grade level.

The rating sheets also show a high degree of consistency in the classification of Depth of Knowledge level for each item.

Test Form Review

Reading.

Distribution of Emphasis. With very few exceptions, the alignment analysis regarding distribution of points across reporting categories (or standards) for reading affirmed that the target distributions were met. In third grade, the 2005-2006 target distributions for the two sub-parts of Level of Comprehension were reversed. At fifth grade, a similar distribution offset can be observed. These differences were not seen in the 2006-2007 analysis. In 2006-2007, only literary (type of text) at the fourth grade level fell outside the target (± 5 pct. points). With a larger pool of field-tested items available the fall 2005 test administration, the States were able to make the necessary adjustments to the Level of Comprehension distributions at grades 3 and 5. As the pool of available literary passages and items continues to grow, the NECAP partner States expect to meet the type of text target at all grades in future years.

Table 10

NECAP 2005-2006 Reading Tests Alignment Analysis Distribution of Points Across Reporting Categories				
Grade	Reporting Category	Number of Points	Percent of Points	Target Distribution (± 5 pct. points)
3	Total Test	52	100%	100%
	Word Identification/Vocabulary	20	38.5%	40%
	Level of Comprehension			
	Initial Understanding	12	23.1%	40%
	Analysis & Interpretation	20	38.5%	20%
	Type of Text			
Literary	16	30.8%	30%	
Informational	16	30.8%	30%	
4	Total Test	52	100%	100%
	Word Identification/Vocabulary	20	38.5%	35%
	Level of Comprehension			
	Initial Understanding	20	38.5%	40%
	Analysis & Interpretation	12	23.1%	25%
	Type of Text			
Literary	16	30.8%	35%	
Informational	16	30.8%	30%	
5	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	25	48.1%	40%
	Analysis & Interpretation	17	32.7%	40%
	Type of Text			
Literary	21	40.4%	40%	
Informational	21	40.4%	40%	
6	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	21	40.4%	40%
	Analysis & Interpretation	21	40.4%	40%
	Type of Text			
Literary	21	40.4%	40%	
Informational	21	40.4%	40%	
7	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	17	32.7%	35%
	Analysis & Interpretation	25	48.1%	45%
	Type of Text			
Literary	21	40.4%	40%	
Informational	21	40.4%	40%	

NECAP 2005-2006 Reading Tests Alignment Analysis Distribution of Points Across Reporting Categories				
Grade	Reporting Category	Number of Points	Percent of Points	Target Distribution (± 5 pct. points)
8	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	18	34.6%	35%
	Analysis & Interpretation	24	46.2%	45%
	Type of Text			
	Literary	22	42.3%	40%
Informational	20	38.5%	40%	

Table 11

NECAP 2006-2007 Reading Tests Alignment Analysis Distribution of Points Across Reporting Categories				
Grade	Reporting Category	Number of Points	Percent of Points	Target Distribution (± 5 pct. points)
3	Total Test	52	100%	100%
	Word Identification/Vocabulary	19	36.5%	40%
	Level of Comprehension			
	Initial Understanding	20	38.5%	40%
	Analysis & Interpretation	13	25.0%	20%
	Type of Text			
	Literary	16	30.8%	30%
Informational	17	32.7%	30%	
4	Total Test	52	100%	100%
	Word Identification/Vocabulary	20	38.5%	35%
	Level of Comprehension			
	Initial Understanding	20	38.5%	40%
	Analysis & Interpretation	12	23.1%	25%
	Type of Text			
	Literary	14	26.9%	35%
Informational	18	34.6%	30%	
5	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	22	42.3%	40%
	Analysis & Interpretation	20	38.5%	40%
	Type of Text			
	Literary	22	42.3%	40%
Informational	20	38.5%	40%	

NECAP 2006-2007 Reading Tests Alignment Analysis Distribution of Points Across Reporting Categories				
Grade	Reporting Category	Number of Points	Percent of Points	Target Distribution (± 5 pct. points)
6	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	21	40.4%	40%
	Analysis & Interpretation	21	40.4%	40%
	Type of Text			
Literary	21	40.4%	40%	
Informational	21	40.4%	40%	
7	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	18	34.6%	35%
	Analysis & Interpretation	24	46.1%	45%
	Type of Text			
Literary	22	42.3%	40%	
Informational	20	38.5%	40%	
8	Total Test	52	100%	100%
	Vocabulary	10	19.2%	20%
	Level of Comprehension			
	Initial Understanding	17	32.7%	35%
	Analysis & Interpretation	25	48.1%	45%
	Type of Text			
Literary	20	38.5%	40%	
Informational	22	42.3%	40%	

Content Coverage. With the lone exception of *Analysis and Interpretation of Literary Text-Author's Craft (R6)*, all reading GLE stems were assessed by at least one item (selected-response or constructed-response) on each of the 2005-2006 and 2006-2007 NECAP reading tests. *Analysis and Interpretation of Informational Text (R8)* was assessed by a few items at grades 7 and 8 in 2005-2006, but was much better represented on the 2006-2007 tests. Overall, these results reflect the previously discussed proclivity for informational texts to yield initial understanding items and literary texts to yield analysis/interpretation items.

Table 12

Number of Items Included on the 2005-2006 NECAP Reading Tests by GLE Stems						
Reading GLE Stems organized by reporting category	Grade Level					
	3	4	5	6	7	8
Skills and Strategies: Word Identification and Vocabulary Skills						
Word Identification (R1)	3	3	-	-	-	-
Vocabulary Strategies (R2)	2	5	5	6	2	6

Number of Items Included on the 2005-2006 NECAP Reading Tests by GLE Stems						
Reading GLE Stems organized by reporting category	Grade Level					
	3	4	5	6	7	8
Breadth of Vocabulary (R3)	9	6	5	4	8	4
Comprehension: Initial Understanding of Literary and Informational Texts						
Initial Understanding of Literary Text – Elements of literary texts (R4)	6	7	5	4	2	2
Initial Understanding of Informational Text (R7)	6	7	8	9	9	10
Comprehension: Analysis & Interpretation of Literary and Informational Texts						
Analysis and Interpretation of Literary Text – Elements of literary texts (R5)	4	2	7	7	6	6
Analysis and Interpretation of Literary Text – Author's craft (R6)	-	-	-	0	3	5
Analysis and Interpretation of Informational Text (R8)	4	3	3	4	3	1

Table 13

Number of Items Included on the 2006-2007 NECAP Reading Tests by GLE Stems						
Reading GLE Stems organized by reporting category	Grade Level					
	3	4	5	6	7	8
Skills and Strategies: Word Identification and Vocabulary Skills						
Word Identification (R1)	3	3	-	-	-	-
Vocabulary Strategies (R2)	6	2	5	4	2	6
Breadth of Vocabulary (R3)	4	9	5	6	8	4
Comprehension: Initial Understanding of Literary and Informational Texts						
Initial Understanding of Literary Text – Elements of literary texts (R4)	6	4	8	6	5	3
Initial Understanding of Informational Text (R7)	8	10	5	6	7	8
Comprehension: Analysis & Interpretation of Literary and Informational Texts						
Analysis and Interpretation of Literary Text – Elements of literary texts (R5)	4	4	5	5	8	6
Analysis and Interpretation of Literary Text – Author's craft (R6)	-	-	-	1	0	2
Analysis and Interpretation of Informational Text (R8)	3	2	6	6	4	5

A review of the expanded reading results reveals that the vast majority of reading GLE indicators has been assessed at least once during the initial two years of the program at each grade level. Within grade levels, however, there are particular indicators that have not yet been assessed on the NECAP tests. Additionally, across grade levels, there are GLE indicators that appear to be consistently under-represented. Two examples of such indicators are GLE 5.1 (making or explaining predictions) and GLE 8.1 (connecting information within or across texts).

Table 14

Combined Number of Items Included on the 2006-2007 NECAP Reading Tests by GLE Indicators						
Reading GLE Indicators organized by reporting category	Grade Level					
	3	4	5	6	7	8
Skills and Strategies: Word Identification and Vocabulary Skills						
Word Identification (R1)	6	6	-	-	-	-
Vocabulary Strategies (R2)	8	7	10	10	4	12
Breadth of Vocabulary (R3)						
R3.1	7	8	3	3	6	4
R3.2	6	7	7	7	10	4
Comprehension: Initial Understanding of Literary and Informational Texts						
Initial Understanding of Literary Text – Elements of literary texts (R4)						
R4.1	12	7	8	5	7	2
R4.2	-	4	5	5	0	3
Initial Understanding of Informational Text (R7)						
R7.1	3	0	1	2	2	3
R7.2	11	16	7	7	11	10
R7.3	-	1	5	5	3	5
Comprehension: Analysis & Interpretation of Literary and Informational Texts						
Analysis and Interpretation of Literary Text – Elements of literary texts (R5)						
R5.1	1	0	1	0	1	0
R5.2	3	4	5	7	6	5
R5.3	4	1	3	4	6	2
R5.4	-	-	1	2	1	3
R5.5	-	1	2	0	1	2
Analysis and Interpretation of Literary Text – Author's craft (R6)	-	-	-	1	3	7
Analysis and Interpretation of Informational Text (R8)						
R8.1	2	0	1	1	0	3
R8.2	1	1	1	3	0	0
R8.3	4	0	5	2	5	0
R8.4	-	2	1	0	1	2
R8.5	0	2	1	4	1	1

Depth of Knowledge. The Depth of Knowledge tables show that the test forms, overall, do measure skills across DOK levels 1 to 3. Consistent with specified distributions in the DOK ceiling tables, the majority of points at all grade levels are drawn from DOK levels 2 and 3. Also consistent with the DOK ceiling tables, the emphasis on higher level DOK increases across the grade levels. That is, the percentage of points at DOK level 3 is higher at the upper grades; and the percentage of points at DOK level 1 is higher at the lower grades. Evaluation of the level of DOK distribution at the individual GLE level is provided by the Webb Depth of Knowledge consistency results presented at the end of this chapter.

Table 15

NECAP 2005-2006 Reading Tests Depth of Knowledge (DOK) Alignment Analysis Distribution of DOK by Total Test and Reporting Category							
Grade	Reporting Category	DOK Level Number of Points			DOK Level Percentage of Points		
		1	2	3	1	2	3
3	Total Test	18	30	4	35%	58%	8%
	Word Identification/Vocabulary	6	14	0			
	Level of Comprehension						
	Initial Understanding	12	0	0			
	Analysis & Interpretation	0	16	4			
	Type of Text						
	Literary	6	10	0			
Informational	6	6	4				
4	Total Test	14	34	4	27%	65%	8%
	Word Identification/Vocabulary	6	14	0			
	Level of Comprehension						
	Initial Understanding	8	12	0			
	Analysis & Interpretation	0	8	4			
	Type of Text						
	Literary	4	12	0			
Informational	4	8	4				
5	Total Test	7	36	9	13%	69%	17%
	Vocabulary	1	9	0			
	Level of Comprehension						
	Initial Understanding	6	19	0			
	Analysis & Interpretation	0	8	9			
	Type of Text						
	Literary	3	10	8			
Informational	3	17	1				
6	Total Test	9	30	13	17%	58%	25%
	Vocabulary	2	8	0			
	Level of Comprehension						
	Initial Understanding	6	15	0			
	Analysis & Interpretation	1	7	13			
	Type of Text						
	Literary	3	10	8			
Informational	4	12	5				

NECAP 2005-2006 Reading Tests Depth of Knowledge (DOK) Alignment Analysis Distribution of DOK by Total Test and Reporting Category							
Grade	Reporting Category	DOK Level Number of Points			DOK Level Percentage of Points		
		1	2	3	1	2	3
7	Total Test	8	23	21	15%	44%	40%
	Vocabulary	3	7	0			
	Level of Comprehension						
	Initial Understanding	4	9	4			
	Analysis & Interpretation	1	7	17			
	Type of Text						
	Literary	1	7	13			
Informational	4	9	8				
8	Total Test	9	27	16	17%	52%	31%
	Vocabulary	4	6	0			
	Level of Comprehension						
	Initial Understanding	3	15	0			
	Analysis & Interpretation	2	6	16			
	Type of Text						
	Literary	3	7	12			
Informational	2	14	4				
The table indicates the distribution of points by DOK level for each of the 2005-2006 NECAP reading tests. There is no target distribution of DOK specified for the NECAP reading tests. Rather, the expected distribution is a function of the Distribution of Emphasis and the DOK ceilings.							

Table 16

NECAP 2006-2007 Reading Tests Depth of Knowledge (DOK) Alignment Analysis Distribution of DOK by Total Test and Reporting Category							
Grade	Reporting Category	DOK Level Number of Points			DOK Level Percentage of Points		
		1	2	3	1	2	3
3	Total Test	23	25	4	44%	48%	8%
	Word Identification/Vocabulary	7	12	0			
	Level of Comprehension						
	Initial Understanding	14	6	0			
	Analysis & Interpretation	2	7	4			
	Type of Text						
	Literary	5	11	0			
Informational	11	2	4				

**NECAP 2006-2007 Reading Tests
Depth of Knowledge (DOK) Alignment Analysis
Distribution of DOK by Total Test and Reporting Category**

Grade	Reporting Category	DOK Level Number of Points			DOK Level Percentage of Points		
		1	2	3	1	2	3
4	Total Test	22	26	4	42%	50%	8%
	Vocabulary	8	12	0			
	Level of Comprehension						
	Initial Understanding	14	6	0			
	Analysis & Interpretation	0	8	4			
Type of Text							
Literary	1	13	0				
Informational	13	1	4				
5	Total Test	10	34	8	19%	65%	15%
	Vocabulary	3	7	0			
	Level of Comprehension						
	Initial Understanding	6	16	0			
	Analysis & Interpretation	1	11	8			
Type of Text							
Literary	5	13	4				
Informational	2	14	4				
6	Total Test	13	22	17	25%	42%	33%
	Vocabulary	5	5	0			
	Level of Comprehension						
	Initial Understanding	7	10	4			
	Analysis & Interpretation	1	7	13			
Type of Text							
Literary	5	8	8				
Informational	3	9	9				
7	Total Test	12	24	16	23%	46%	31%
	Vocabulary	5	5	0			
	Level of Comprehension						
	Initial Understanding	7	11	0			
	Analysis & Interpretation	0	8	16			
Type of Text							
Literary	1	13	8				
Informational	6	6	8				
8	Total Test	6	30	16	12%	58%	31%
	Vocabulary	4	6	0			
	Level of Comprehension						
	Initial Understanding	2	11	4			
	Analysis & Interpretation	0	13	12			
Type of Text							
Literary	0	12	8				
Informational	2	12	8				

The table indicates the distribution of points by DOK level for each of the 2006-2007 NECAP reading tests. There is no target distribution of DOK specified for the NECAP reading tests. Rather, the expected distribution is a function of the Distribution of Emphasis and the DOK ceilings.

Mathematics.

Distribution of Emphasis. With two minor exceptions, the alignment analysis regarding distribution of points across reporting categories (or standards) for mathematics affirmed that the target distributions were met. In sixth grade, the 2005-2006 target distribution for numbers and operations was off by 5.6% or 3 to 4 raw score points. The same target was missed by the same amount in 2006-2007. In both years, this difference reflects an additional 3 points (equivalent to a single constructed-response item) allocated to a Functions and Algebra GLE.

Table 17

NECAP 2005-2006 Mathematics Tests Alignment Analysis Distribution of Points Across Reporting Categories				
Grade	Reporting Category	Number of Points	Percent of Points	Target Distribution (± 5 pct. points)
3	Total Test	65	100%	100%
	Numbers and Operations	35	53.8%	55%
	Geometry and Measurement	10	15.4%	15%
	Functions and Algebra	10	15.4%	15%
	Data, Statistics, and Probability	10	15.4%	15%
4	Total Test	65	100%	100%
	Numbers and Operations	32	49.2%	50%
	Geometry and Measurement	13	20%	20%
	Functions and Algebra	10	15.4%	15%
	Data, Statistics, and Probability	10	15.4%	15%
5	Total Test	66	100%	100%
	Numbers and Operations	30	45.5%	50%
	Geometry and Measurement	13	19.7%	20%
	Functions and Algebra	13	19.7%	15%
	Data, Statistics, and Probability	10	15.2%	15%
6	Total Test	66	100%	100%
	Numbers and Operations	26	39.4%	45%
	Geometry and Measurement	17	25.8%	25%
	Functions and Algebra	13	19.7%	15%
	Data, Statistics, and Probability	10	15.2%	15%
7	Total Test	66	100%	100%
	Numbers and Operations	20	30.3%	30%
	Geometry and Measurement	16	24.2%	25%
	Functions and Algebra	19	28.8%	30%
	Data, Statistics, and Probability	11	16.7%	15%
8	Total Test	66	100%	100%
	Numbers and Operations	13	19.7%	20%
	Geometry and Measurement	16	24.2%	25%
	Functions and Algebra	27	40.9%	40%
	Data, Statistics, and Probability	10	15.2%	15%

Table 18

NECAP 2006-2007 Mathematics Tests Alignment Analysis Distribution of Points Across Reporting Categories				
Grade	Reporting Category	Number of Points	Percent of Points	Target Distribution (± 5 pct. points)
3	Total Test	65	100%	100%
	Numbers and Operations	35	53.8%	55%
	Geometry and Measurement	10	15.4%	15%
	Functions and Algebra	10	15.4%	15%
	Data, Statistics, and Probability	10	15.4%	15%
4	Total Test	65	100%	100%
	Numbers and Operations	32	49.2%	50%
	Geometry and Measurement	13	20%	20%
	Functions and Algebra	10	15.4%	15%
	Data, Statistics, and Probability	10	15.4%	15%
5	Total Test	66	100%	100%
	Numbers and Operations	30	45.5%	50%
	Geometry and Measurement	14	21.2%	20%
	Functions and Algebra	12	18.2%	15%
	Data, Statistics, and Probability	10	15.2%	15%
6	Total Test	66	100%	100%
	Numbers and Operations	26	39.4%	45%
	Geometry and Measurement	17	25.8%	25%
	Functions and Algebra	13	19.7%	15%
	Data, Statistics, and Probability	10	15.2%	15%
7	Total Test	66	100%	100%
	Numbers and Operations	20	30.3%	30%
	Geometry and Measurement	16	24.2%	25%
	Functions and Algebra	19	28.8%	30%
	Data, Statistics, and Probability	11	16.7%	15%
8	Total Test	66	100%	100%
	Numbers and Operations	13	19.7%	20%
	Geometry and Measurement	16	24.2%	25%
	Functions and Algebra	27	40.9%	40%
	Data, Statistics, and Probability	10	15.2%	15%

Content Coverage. The mathematics results indicate that the target of including at least one item measuring each mathematics GLE on each NECAP test was met in both 2005-2006 and 2006-2007.

Table 19

Number of Items Included on the 2005-2006 NECAP Mathematics Test by GLE						
Mathematics GLE organized by Reporting Category	Grade Level					
	3	4	5	6	7	8
Data, Statistics, and Probability						
M(DSP)-X-1	4	4	3	1	2	2
M(DSP)-X-2	3	1	1	1	2	2
M(DSP)-X-3	-	2	-	2	-	1
M(DSP)-X-4	2	-	1	-	2	-
M(DSP)-X-5	-	2	1	2	1	1
Functions and Algebra						
M(F&A)-X-1	8	4	3	2	5	6
M(F&A)-X-2	-	-	-	-	4	6
M(F&A)-X-3	-	-	3	3	3	6
M(F&A)-X-4	1	4	1	4	2	4
Geometry and Measurement						
M(G&M)-X-1	2	4	1	4	2	1
M(G&M)-X-2	-	-	-	-	-	3
M(G&M)-X-3	-	-	1	2	1	-
M(G&M)-X-4	-	-	1	-	-	2
M(G&M)-X-5	-	-	3	-	5	2
M(G&M)-X-6	2	1	2	5	3	3
M(G&M)-X-7	5	6	1	2	1	-
Numbers and Operations						
M(N&O)-X-1	9	10	6	4	6	3
M(N&O)-X-2	4	6	6	6	3	2
M(N&O)-X-3	9	2	4	2	2	-
M(N&O)-X-4	-	8	8	8	4	4
M(N&O)-X-5	6	-	-	-	-	-

Table 20

Number of Items Included on the 2006-2007 NECAP Mathematics Test by GLE						
Mathematics GLE organized by Reporting Category	Grade Level					
	3	4	5	6	7	8
Data, Statistics, and Probability						
M(DSP)-X-1	3	4	2	2	2	1
M(DSP)-X-2	3	1	1	2	1	2
M(DSP)-X-3	-	2	-	1	-	1
M(DSP)-X-4	2	-	2	-	2	-
M(DSP)-X-5	-	2	1	1	3	2
Functions and Algebra						
M(F&A)-X-1	6	4	3	3	5	6
M(F&A)-X-2	-	-	-	-	5	8
M(F&A)-X-3	-	-	1	2	2	4
M(F&A)-X-4	3	4	4	4	1	3
Geometry and Measurement						
M(G&M)-X-1	3	3	2	2	2	2
M(G&M)-X-2	-	-	-	-	-	2
M(G&M)-X-3	-	-	2	4	1	-
M(G&M)-X-4	-	-	2	-	-	2
M(G&M)-X-5	-	-	2	-	3	2
M(G&M)-X-6	2	3	2	4	4	3
M(G&M)-X-7	3	6	1	3	1	-
Numbers and Operations						
M(N&O)-X-1	9	9	7	6	4	1
M(N&O)-X-2	5	5	5	4	3	3
M(N&O)-X-3	9	4	5	1	2	-
M(N&O)-X-4	-	8	7	9	7	5
M(N&O)-X-5	7	-	-	-	-	-

Depth of Knowledge. One area in which the tests appear to fall short of a desirable distribution across DOK levels is at grade 3 in 2006-2007 where no points are drawn from DOK level 3. It was expected that at least one, if not more, of the DSP items would be written at DOK level 3. There was also a noticeable increase from 2005-2006 to 2006-2007 in the percentage of points at DOK level 3 on the grade 8 test. This increase will be reviewed by the States prior to the construction of the 2007-2008 test form.

Table 21

NECAP 2005-2006 Mathematics Tests Depth of Knowledge (DOK) Alignment Analysis Distribution of DOK by Total Test and Reporting Category							
Grade	Reporting Category	DOK Level Number of Points			DOK Level Percentage of Points		
		1	2	3	1	2	3
3	Total Test	19	41	5	29%	63%	8%
	Numbers and Operations	11	22	2			
	Geometry and Measurement	5	5	0			
	Functions and Algebra	2	8	0			
	Data, Statistics, and Probability	1	6	3			
4	Total Test	16	40	9	25%	62%	14%
	Numbers and Operations	9	16	7			
	Geometry and Measurement	4	9	0			
	Functions and Algebra	2	8	0			
	Data, Statistics, and Probability	1	7	2			
5	Total Test	13	42	11	20%	64%	14%
	Numbers and Operations	4	25	1			
	Geometry and Measurement	3	10	0			
	Functions and Algebra	5	4	4			
	Data, Statistics, and Probability	1	3	6			
6	Total Test	11	46	9	24%	70%	14%
	Numbers and Operations	5	21	0			
	Geometry and Measurement	3	10	4			
	Functions and Algebra	3	6	4			
	Data, Statistics, and Probability	0	9	1			
7	Total Test	16	39	11	24%	59%	17%
	Numbers and Operations	7	12	1			
	Geometry and Measurement	4	8	4			
	Functions and Algebra	4	13	2			
	Data, Statistics, and Probability	1	6	4			
8	Total Test	13	41	12	20%	62%	18%
	Numbers and Operations	2	11	0			
	Geometry and Measurement	3	9	4			
	Functions and Algebra	7	18	2			
	Data, Statistics, and Probability	1	3	6			
<p>The table indicates the distribution of points by DOK level for each of the 2005-2006 NECAP mathematics tests. There is no target distribution of DOK specified for the NECAP mathematics tests. Rather, the expected distribution is a function of the Distribution of Emphasis and the DOK ceilings.</p>							

Table 22

NECAP 2006-2007 Mathematics Tests Depth of Knowledge (DOK) Alignment Analysis Distribution of DOK by Total Test and Reporting Category							
Grade	Reporting Category	DOK Level Number of Points			DOK Level Percentage of Points		
		1	2	3	1	2	3
3	Total Test	16	49	0	25%	75%	0%
	Numbers and Operations	12	23	0			
	Geometry and Measurement	2	8	0			
	Functions and Algebra	1	9	0			
	Data, Statistics, and Probability	1	9	0			
4	Total Test	14	41	10	22%	63%	15%
	Numbers and Operations	8	16	8			
	Geometry and Measurement	5	8	0			
	Functions and Algebra	1	9	0			
	Data, Statistics, and Probability	0	8	2			
5	Total Test	15	44	7	23%	67%	11%
	Numbers and Operations	8	17	5			
	Geometry and Measurement	3	11	0			
	Functions and Algebra	2	10	0			
	Data, Statistics, and Probability	2	6	2			
6	Total Test	15	38	13	23%	58%	20%
	Numbers and Operations	6	20	0			
	Geometry and Measurement	5	8	4			
	Functions and Algebra	4	4	5			
	Data, Statistics, and Probability	0	6	4			
7	Total Test	16	36	14	24%	55%	21%
	Numbers and Operations	9	11	0			
	Geometry and Measurement	4	6	6			
	Functions and Algebra	1	14	4			
	Data, Statistics, and Probability	2	5	4			
8	Total Test	15	30	21	23%	45%	32%
	Numbers and Operations	3	4	6			
	Geometry and Measurement	5	7	4			
	Functions and Algebra	6	16	5			
	Data, Statistics, and Probability	1	3	6			
The table indicates the distribution of points by DOK level for each of the 2006-2007 NECAP mathematics tests. There is no target distribution of DOK specified for the NECAP mathematics tests. Rather, the expected distribution is a function of the Distribution of Emphasis and the DOK ceilings.							

Alignment Summary Tables – Based on Webb’s Four Alignment Criteria

The following tables present a summary of the evidence of alignment between the NECAP assessments and GLEs evaluated against Webb’s four alignment criteria: Categorical Concurrence, Depth of Knowledge consistency, Range of Knowledge, and Balance of Representation. For Categorical Concurrence, Range of Knowledge, and Balance of Representation, summary ratings were based on the procedures and criteria for alignment established by Webb. For Depth of Knowledge consistency, number of points was substituted for number of items to better reflect the design of the NECAP tests.

A review of the alignment summary tables reveals a small number of specific issues that need to be addressed by the States in the development of future NECAP tests. On the reading tests, in general, areas with weak alignment or lack of alignment are consistent with the previously discussed issue of the tendency for informational passages to yield initial understanding items and literary passages to yield analysis/interpretation items. On the mathematics tests, the lone area of any concern appears to be DOK consistency. In particular, there are fewer DOK level 3 items in some areas (e.g., Data, Statistics, and Probability) than prescribed in the DOK ceiling tables. The partner States have indicated that those areas will be addressed in future test forms.

According to NECAP representatives, the test contractor, Measured Progress, will be asked to create a catalog of items in the pool, organized by grade, content area, strand, GLE, and DOK level. The intent is to establish an enhanced item inventory and then to develop/field-test items to address those few areas where coverage could be improved. A worksheet will also be used to guide future populating of the test forms that would cover the intersection between distribution of emphasis and DOK similar to listing the ceiling for each GLE. Then item selection could be guided in part by ending up with roughly 50% of the items within each strand at the ceiling.

Reading

Grade 3: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	NO
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	WEAK	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 6: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	WEAK	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 8: 2005-2006	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	NO	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 3: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	WEAK
Type of Text: Informational	YES	YES	WEAK	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	NO	YES	WEAK
Comprehension: Analysis & Interpretation	YES	YES	WEAK	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	NO	YES	NO
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	NO	YES	YES
Type of Text: Literary	YES	WEAK	YES	WEAK
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 6: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	WEAK	YES
Comprehension: Analysis & Interpretation	YES	YES	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	WEAK
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 8: 2006-2007	Alignment Criteria			
Reading Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Word Identification/ Vocabulary	YES	YES	YES	YES
Comprehension: Initial Understanding	YES	YES	YES	WEAK
Comprehension: Analysis & Interpretation	YES	WEAK	YES	YES
Type of Text: Literary	YES	YES	YES	YES
Type of Text: Informational	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Mathematics

Grade 3: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	NO	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 6: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	NO	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 8: 2005-2006	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	NO	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 3: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	NO	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	NO	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 4: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 5: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	NO	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 6: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	NO	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 7: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	NO	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	YES	YES	YES
Data, Statistics, and Probability	YES	NO	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40%. Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40%. Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60.				

Grade 8: 2006-2007	Alignment Criteria			
Mathematics Standards	Categorical Concurrence	Depth of Knowledge Consistency	Range of Knowledge	Balance of Representation
Numbers and Operations	YES	YES	YES	YES
Geometry and Measurement	YES	YES	YES	YES
Functions and Algebra	YES	WEAK	YES	YES
Data, Statistics, and Probability	YES	YES	YES	YES
Categorical Concurrence: Yes=6 or more hits on standard; No=Fewer than 6 hits. Depth of Knowledge Consistency: Yes=50% or more points at or above ceiling DOK; No=Fewer than 40% Range of Knowledge: Yes=50% or more of objectives hits within standard; No=fewer than 40% Balance of Representation: Yes =Index of .70 or greater; No = Index less than .60				

VI. Conclusions and Recommendations

Conclusion

Based on the results of this alignment study, the NECAP reading and mathematics assessments administered at grades 3-8 in New Hampshire, Rhode Island, and Vermont under the New England Common Assessment Program do not appear to require restructuring or significant change. The comprehensive, systematic approach used, and the on-going involvement of hundreds of local educators, by the NECAP partners in developing the assessments were instrumental to ensuring that the final product would meet recognized standards for content validity and proper alignment. The findings of the alignment study affirmed that the overall Distribution of Emphasis targets for the assessments were satisfactorily met, that the Degree of Alignment between the test items and the intended GLE (content standard) was highly satisfactory for all assessments, and that only a minor gap in coverage of the reading GLEs exists. The States report that they will address that gap in future test forms.

Recommendations Regarding Test Items

With very few exceptions, the alignment analysis regarding Distribution of Points across reporting categories (or standards) for reading affirmed that the target distributions were met. In third grade, the 2005-2006 target distributions for the two sub-parts of Level of Comprehension were reversed. At fifth grade, a similar distribution offset can be observed. These differences were not seen in the 2006-2007 analysis. In 2006-2007, only literary (type of text) at the fourth grade level fell outside the target (± 5 pct. points). With a larger pool of field-tested items available for the fall 2005 test administration, the States were able to make the necessary adjustments to the Level of Comprehension distributions at grades 3 and 5. As the pool of available literary passages and items continues to grow, it is recommended that the NECAP partner States monitor this to affirm that they have achieved their plans to meet the type of text target at all grades in future years.

Recommendations Regarding Test Forms

See following recommendation under Depth of Knowledge.

Recommendations Regarding Alignment

A review of the alignment summary tables reveals a small number of specific issues to be addressed by the States in the development of future NECAP tests. On the reading tests, in general, areas with weak alignment or lack of alignment are consistent with the previously discussed issue of the tendency for informational passages to yield initial understanding items and literary passages to yield analysis/interpretation items. On the mathematics tests, the lone area of any concern appears to be Depth of Knowledge consistency. In particular, there are fewer DOK level 3 items in some areas (e.g., Data, Statistics, and Probability) than prescribed in the DOK ceiling tables. Again, the partner States have indicated that those areas will be addressed in future test forms.

Recommendations Regarding Depth of Knowledge

The mathematics tests do not appear to fully achieve the desired distribution across DOK levels at grade 3 in 2006-2007 where no points are drawn from DOK level 3. It was expected that at least one of the DSP items would be written at DOK level 3. There was also a noticeable increase from 2005-2006 to 2006-2007 in the percentage of points at DOK level 3 on the grade 8 test. It is recommended that the NECAP partner States review this increase for possible changes prior to the construction of the 2007-2008 test form.

Recommendations Regarding Content Coverage

A review of the expanded reading results reveals that the vast majority of reading GLE indicators has been assessed at least once during the initial two years of the program at each grade level.

Within grade levels, however, there are particular indicators that have not yet been assessed on the NECAP tests. Additionally, across grade levels, there are GLE indicators that appear to be consistently under-represented. Two examples of such indicators are GLE 5.1 (making or explaining predictions) and GLE 8.1 (connecting information within or across texts). It is recommended that the partner States operationalize their plan and timeline described in the preceding chapter to ensure that all reading GLEs are assessed in a systematic manner on at least a three-year cycle.

VII. References

NECAP Mathematics Grade-Level Expectations—Grades 3-8 (2004, May 11). Downloaded from the New Hampshire Department of Education website:

<http://www.ed.state.nh.us/Education/doe/organization/curriculum/NECAP/MathTSNE.pdf>

NECAP Reading Grade-Level Expectations—Grades K-5 (2006). Downloaded from the New Hampshire Department of Education website:

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The New England Common Assessment Program Guide to Using the 2005 NECAP Reports. (March 2006, revised January 2007) Downloaded from the New Hampshire Department of Education website:

http://www.ed.state.nh.us/education/doe/organization/curriculum/NECAP/documents/2005UserGuide_updateddistofemph_Revised1.2007.pdf

The New England Common Assessment Program Guide to Using the 2006 NECAP Reports (January 2007, revised February 2007). Downloaded from the New Hampshire Department of Education website:

http://www.ed.state.nh.us/education/doe/organization/curriculum/NECAP/2006%20Results/documents/NECAP_InterpGuide_2006_WEBVERSION_revised2_23_07.pdf

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Appendices

- A. New England Common Assessment Program Reading Alignment Study Rating Summaries**
- B. New England Common Assessment Program Mathematics Alignment Study Rating Summaries**
- C. Overview of Grade Level Expectations**
- D. The New England Common Assessment Program (NECAP) Alignment Study (Power Point Presentation for Training NECAP Alignment Study Panels)**
- E. Alignment Study Training Materials**
 - a. Confidentiality Agreement**
 - b. Depth of Knowledge Overview (Webb, 2002)**
- F. Sample Alignment Study Rating Forms**
 - a. Grade 3 Reading (2005-2006)**
 - b. Grade 3 Mathematics (2005-2006)**
- G. New England Common Assessment Program Reading and Mathematics Alignment Study Panelists**
- H. New England Common Assessment Program Technical Advisory Committee Members**

Appendix A
New England Common Assessment Program
Reading Alignment Study

Reported in the tables presented in this appendix are the results of the alignment panels' decisions regarding (1) alignment of the reading assessment items to the grade level expectations (content standards) and (2) depth of knowledge measured by the assessment items. Data were reviewed by separate panels for both the 2005-2006 and 2006-2007 NECAP assessments⁸. The number in the Alignment and DOK columns represents the percentage of panelists responding.

Reporting Categories—generic name for the eight reading content clusters that are included on the NECAP reports.

First number = Grade Level Expectation (GLE) Grade Level

Second number = GLE: 1 = Word Identification

2 & 3 = Vocabulary

4 = Initial Understanding of Literary Text

5 & 6 = Analysis and Interpretation of Literary Text

7 = Initial Understanding of Informational Text

8 = Analysis and Interpretation of Informational Text

Third number = GLE indicator

Fourth number = Depth of Knowledge assigned for the test development process.

Grade Level Expectation (GLE) Alignment (Summary Rating of Panelists)

4 = Item is aligned to the GLE to which it is coded.

3 = Item is aligned to the GLE to which it is coded, but is also aligned to another GLE.

2 = Item is aligned to the GLE to which it is coded, but better aligned to another GLE.

1 = Item does not align to the GLE to which it is coded.

Depth of Knowledge (DOK)

DOK level (1, 2, or 3) assigned by panelists. Panelists listed borderline items by indicating both levels (e.g., 1/2, 2/3). By design, the tests do not include items at DOK Level 4; a level requiring complex reasoning, planning, and thinking over an extended period of time.

Grade 3: Reading

Test Year: 2005-2006

Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median					
		1	2	3	4			1	1/2	2	2/3
1	2.1.1.1	0	29	0	71	4	100				
2	2.2.1.1	0	0	0	100	4	100				
3	2.3.1.2	0	7	0	93	4	11	11	78		

⁸ The NECAP assessments are given in the fall annually. Results are attributed to the previous year grade (e.g., 4th grade results are attributed to the prior year 3rd grade) for purposes of determining Adequate Yearly Progress under NCLB.

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
4	2.5.3.2	0	0	0	100	4			100		
5	2.5.3.2	0	0	0	100	4			100		
6	2.1.1.1	7	29	0	64	4	100				
7	2.5.2.2	57	0	0	43	1			46	15	38
8	2.3.2.2	7	0	0	93	4	8		92		
9	2.7.1.1	7	14	0	79	4	100				
10	2.7.2.1	0	0	0	100	4	100				
11	2.8.3.2	0	0	0	100	4			92	8	
12	2.3.2.2	23	23	15	38	3			38		62
13	2.7.2.1	0	0	0	100	4	100				
14	2.3.2.2	21	0	7	71	4		8	92		
15	2.8.2.2	0	0	7	93	4			100		
16	2.3.1.2	0	0	7	93	4	8	8	85		
17	2.8.1.3	14	7	29	50	3			23	15	62
18	2.4.1.1	0	0	0	100	4	100				
19	2.4.1.1	0	0	0	100	4	85		15		
20	2.4.1.1	7	0	0	93	4	85	8	8		
21	2.4.1.1	0	0	0	100	4	100				
22	2.3.1.2	0	0	0	100	4	8	15	77		
23	2.4.1.1	0	0	0	100	4	100				
24	2.2.1.1	0	0	14	86	4	38	8	54		
25	2.4.1.1	36	0	7	57	4	58	8	33		
26	2.3.1.1	0	0	0	100	4	46		54		
27	2.5.3.2	64	0	14	21	1	7		79	7	7
28	2.3.1.2	0	0	7	93	4	36		64		
29	2.1.1.1	7	0	7	86	4	93		7		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
30	2.7.2.1	0	0	0	100	4	93		7		
31	2.3.2.2	0	0	14	86	4	7		93		
32	2.7.2.1	0	0	0	100	4	100				
33	2.7.1.1	0	0	0	100	4	79		21		
34	2.8.1.2	29	0	36	36	3	7		93		

Grade 4: Reading
Test Year: 2005-2006
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	3.1.1.1	0	0	0	100	4	100				
2	3.3.1.2	0	7	21	71	4		7	93		
3	3.7.2.2	0	0	14	86	4			100		
4	3.3.2.2	29	0	0	71	4	7		64		29
5	3.7.2.1	0	0	0	100	4	64	21	14		
6	3.2.1.1	0	0	0	100	4	100				
7	3.7.2.2	0	0	7	93	4			93	7	
8	3.4.1.1	0	7	7	86	4		7	93		
9	3.5.3.2	0	21	7	71	4			100		
10	3.4.2.1	0	0	29	71	4	93	7			
11	3.2.1.2	0	7	36	57	4			100		
12	3.3.2.2	29	7	29	36	3			36	14	50
13	3.4.1.2	0	0	57	43	3			100		
14	3.2.1.2	0	0	14	86	4			100		
15	3.4.1.2	0	0	0	100	4			100		
16											

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
17	3.4.2.2	0	0	29	71	4			79		21
18	3.7.2.1	0	0	0	100	4	79		21		
19	3.7.2.2	0	0	0	100	4	7	14	79		
20	3.2.1.2	0	0	7	93	4	7		93		
21	3.7.2.1	0	21	43	36	3	21		79		
22	3.3.1.2	0	7	7	86	4			100		
23	3.7.2.1	0	0	0	100	4	64	14	21		
24	3.8.5.2	36	29	0	36	2			100		
25	3.8.4.2	0	0	0	100	4			100		
26	3.1.1.1	0	0	0	100	4	100				
27	3.8.2.3	0	21	43	36	3					100
28	3.3.2.1	0	0	0	100	4	100				
29	3.2.1.1	0	0	0	100	4	100				
30	3.4.1.1	0	0	0	100	4	100				
31	3.3.1.2	0	36	29	36	3			100		
32	3.4.1.1	0	0	0	100	4	57		43		
33	3.1.1.1	0	0	0	100	4	93		7		
34	3.5.2.2	0	0	29	71	4			71		29

Grade 5: Reading
Test Year: 2005-2006
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	4.3.2.2	0	0	0	100	4	7		93		
2	4.3.2.2	14	7	0	79	4			100		
3	4.2.1.2	21	0	0	79	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
4	4.5.2.2	0	0	7	93	4			100		
5	4.4.1.1	0	0	7	93	4	64	7	29		
6	4.4.1.2	50	14	0	36	1	31		69		
7	4.5.5.3	0	0	0	100	4					100
8	4.2.1.2	0	0	0	100	4	7		93		
9	4.8.2.2	36	0	36	29	3	7		93		
10	4.7.1.1	0	0	0	100	4	100				
11	4.7.2.2	0	21	0	79	4			100		
12	4.7.3.2	7	0	0	93	4			71		29
13	4.7.2.1	0	0	0	100	4			76		23
14	4.7.2.1	0	0	0	100	4	93		7		
15	4.3.2.2	7	7	0	86	4			93		7
16											
17	4.7.3.2	0	0	0	100	4			86		14
18	4.5.3.2	0	0	0	100	4			100		
19	4.5.2.2	0	0	7	93	4	7		93		
20	4.4.1.1	0	7	14	79	4	64	21	14		
21	4.3.1.2	0	0	0	100	4	7	14	79		
22	4.4.2.2	0	0	0	100	4			100		
23	4.2.1.2	0	0	0	100	4			100		
24	4.5.2.2	7	7	21	64	4			100		
25	4.4.1.1	0	0	0	100	4	100				
26	4.5.2.2	0	0	0	100	4			100		
27	4.5.3.3	0	7	0	93	4					100
28	4.2.1.1	0	0	0	100	4	43	43	14		
29	4.3.1.2	0	0	0	100	4		14	86		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
30	4.8.3.2	0	0	0	100	4			100		
31	4.7.2.2	0	0	0	100	4			100		
32	4.8.5.3	0	21	7	71	4			14	21	64
33	4.2.1.2	0	0	0	100	4			100		
34	4.7.3.2	0	14	0	86	4			64	29	7

Grade 6: Reading
Test Year: 2005-2006
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	5.2.1.2	0	0	7	93	4	7	7	86		
2	5.3.2.2	0	0	36	64	4		7	93		
3	5.7.2.1	0	0	0	100	4	100				
4	5.7.2.2	0	0	0	100	4	36	7	57		
5	5.2.1.2	0	0	36	64	4			79	14	7
6	5.7.2.1	0	0	0	100	4	79		21		
7	5.7.3.2	0	0	21	79	4			57	29	14
8	5.2.1.1	0	7	43	50	3.5	21	29	43	7	
9	5.3.2.2	0	0	43	57	4		7	93		
10	5.4.1.1	0	7	43	50	3.5	71	7	14	7	
11	5.5.3.2	0	0	21	79	4			86	14	
12	5.5.2.3	0	0	43	57	4					100
13	5.5.2.2	0	0	0	100	4		7	64	29	
14	5.4.1.1	0	0	0	100	4	64		36		
15	5.4.1.2	0	7	43	50	3.5	36	14	50		
16	5.5.2.2	0	14	29	57	4	64	21	14		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
17	5.5.3.3	0	21	36	43	3				14	86
18	5.2.1.2	0	0	21	79	4	7		93		
19	5.2.1.2	0	14	29	57	4			100		
20	5.7.2.2	0	7	57	36	3		14	79		7
21	5.7.1.1	0	0	0	100	4	100				
22	5.7.3.2	0	0	36	64	4			57	29	14
23	5.7.1.1	0	0	0	100	4	100				
24	5.8.1.2	0	7	36	57	4		7	71	14	7
25	5.8.5.2	79	21	0	0	1			100		
26	5.8.3.3	0	0	0	100	4			7	29	64
27	5.8.2.3	0	14	21	64	4					100
28	5.3.2.2	0	7	29	64	4			100		
29	5.3.1.1	0	0	0	100	4	93		7		
30	5.5.2.1	7	7	21	64	4	79	7	14		
31	5.2.1.2	0	0	57	43	3		7	93		
32	5.5.2.2	7	14	57	21	3			79	7	14
33	5.5.4.2	0	0	0	14	4			100		
34	5.4.2.2	0	79	0	21	2			21	21	57

Grade 7: Reading
Test Year: 2005-2006
Number of Panelists: 13

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	6.3.1.2	0	0	0	100	4			100		
2	6.3.2.2	0	0	0	100	4			100		
3	6.3.2.2	0	0	0	100	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
4	6.7.2.1	0	0	0	100	4	100				
5	6.7.1.1	0	23	38	38	3	62	8	31		
6	6.8.3.1	0	0	46	54	4	77		23		
7	6.7.3.3	0	0	0	100	4					100
8	6.2.1.2	0	0	25	75	4			100		
9	6.5.3.2	0	0	31	69	4			100		
10	6.4.1.2	0	0	8	92	4	69		31		
11	6.3.2.1	0	0	0	100	4	69	23	8		
12	6.5.3.3	0	0	85	15	3					100
13	6.5.2.2	0	23	15	62	4			100		
14	6.5.2.2	0	0	46	54	4			100		
15	6.6.1.3	0	0	0	100	4				31	69
16	6.4.1.1	0	0	38	62	4	85		15		
17	6.5.3.3	0	0	54	46	3					100
18	6.7.2.1	0	0	38	62	4	92		8		
19	6.3.2.1	0	0	46	54	4	46	31	23		
20	6.7.3.2	58	8	25	8	1	15	8	77		
21	6.3.2.2	0	0	0	100	4			100		
22	6.7.3.2	0	0	46	54	4			92	8	
23	6.7.2.2	0	0	0	100	4	46		54		
24	6.7.1.2	0	0	55	45	3	85		15		
25	6.7.2.2	0	0	17	83	4	100				
26	6.8.3.2	0	0	8	92	4			58	8	33
27	6.8.3.3	0	0	46	54	4					100
28	6.3.1.1	0	0	46	54	4	85		15		
29	6.2.1.2	0	0	69	31	3	8		92		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
30	6.6.1.2	0	0	54	46	3			85	15	
31	6.6.1.2	0	0	0	100	4			100		
32	6.3.2.2	0	0	0	100	4			100		
33	6.5.3.2	0	0	0	100	4			77	23	
34	6.5.5.3	0	0	0	100	4					100

Grade 8: Reading
Test Year: 2005-2006
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	7.2.1.1	0	0	0	100	4	93		7		
2	7.3.2.2	0	0	42	53	4			93		7
3	7.2.1.1	0	7	0	93	4	86	7	7		
4	7.7.1.1	7	0	0	93	4	93		7		
5	7.7.1.1	14	29	7	50	3.5	62	23	15		
6	7.7.2.2	0	7	0	93	4	14	14	71		
7	7.7.3.2	0	0	29	71	4			93		7
8	7.6.1.2	0	0	50	50	3.5			93		7
9	7.4.2.1	0	0	0	100	4	86		7		7
10	7.5.4.2	0	0	50	50	3.5			100		
11	7.6.1.1	0	21	14	64	4	79		21		
12	7.6.1.3	0	0	7	93	4					100
13	7.3.2.2	7	7	21	64	4		7	93		
14	7.6.1.1	0	21	14	64	4	79		14	7	
15	7.4.1.2	0	0	29	71	4			93	7	
16	7.5.4.2	0	0	29	71	4			86	7	7

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
17	7.5.2.3	0	0	14	86	4			7		93
18	7.2.1.1	0	7	21	71	4	71	21	7		
19	7.7.2.2	0	0	7	93	4			93	7	
20	7.3.1.2	7	14	36	43	3		7	86		7
21	7.2.1.2	0	7	7	86	4	36	7	43		14
22	7.7.3.2	0	0	21	79	4			71	14	14
23	7.7.2.2	0	0	7	93	4			92		8
24	7.7.2.2	0	0	7	93	4			93		7
25	7.7.3.2	0	29	21	50	3.5			43	21	36
26	7.7.3.2	7	14	7	71	4	7		86	7	
27	7.8.5.3	0	0	21	79	4					100
28	7.2.1.2	0	7	14	79	4	21	29	50		
29	7.3.1.1	7	7	29	57	4	92		8		
30	7.6.1.2	0	21	21	57	4			100		
31	7.2.1.2	0	7	14	79	4			100		
32	7.5.2.2	0	0	7	93	4			93		7
33	7.5.2.2	0	0	14	86	4			93		7
34	7.5.4.3	0	0	15	85	4					100

Grade 3: Reading
Test Year: 2006-2007
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	2.1.1.1	7	21	0	71	4	93	7			
2	2.3.1.1	0	0	0	100	4	100				
3	2.4.1.2	0	0	0	100	4	21		78		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
4	2.3.2.2	29	7	21	43	3	7		93		
5	2.4.1.1	0	0	7	93	4	71		29		
6	2.3.1.1	0	0	0	100	4	100				
7	2.4.1.2	0	0	14	86	4	21		79		
8	2.8.3.2	0	8	15	77	4		8	92		
9	2.8.3.1	0	0	7	93	4	64		36		
10	2.7.2.1	0	0	0	100	4	100				
11	2.7.2.1	0	0	0	100	4	100				
12	2.2.1.2	23	8	15	54	4			92		8
13	2.7.2.2	0	0	7	93	4	7	7	86		
14	2.7.2.1	0	0	0	100	4	93		7		
15	2.1.1.1	0	14	0	86	4	100				
16	2.2.1.1	0	0	0	100	4	100				
17	2.8.3.3	7	0	7	86	4					100
18	2.5.3.2	7	0	7	86	4			100		
19	2.4.1.1	7	0	0	93	4	100				
20	2.2.1.2	14	0	0	86	4	14	7	79		
21	2.4.1.1	7	0	0	93	4	100				
22	2.2.1.2	14	7	7	71	4			79		21
23	2.2.1.2	7	0	0	93	4	7	7	86		
24	2.4.1.1	7	7	0	86	4	86		14		
25	2.5.1.2	7	0	0	93	4			100		
26	2.5.2.1	7	0	0	93	4	64	14	21		
27	2.5.2.2	43	7	7	43	2.5	7	7	71		14
28	2.1.1.1	7	7	0	86	4	100				
29	2.2.1.1	7	0	0	93	4	100				

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
30	2.7.2.1	0	0	0	100	4	100				
31	2.7.1.1	0	0	0	100	4	100				
32	2.3.2.2	0	7	0	93	4	7		93		
33	2.7.2.1	0	0	0	100	4	100				
34	2.7.2.1	7	0	0	93	4	64	7	29		

Grade 4: Reading
Test Year: 2006-2007
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	3.3.1.1	0	0	0	100	4	100				
2	3.2.1.1	0	0	0	100	4	100				
3	3.3.2.2	0	0	0	100	4	29		71		
4	3.5.2.2	0	29	36	36	3			100		
5	3.4.1.2	0	29	0	71	4	14	21	64		
6	3.3.1.2	0	0	21	79	4	43		57		
7	3.5.5.2	0	21	7	71	4			79		21
8	3.7.2.1	0	29	36	36	3	100				
9	3.7.2.1	0	0	0	100	4	100				
10	3.7.2.1	0	0	0	100	4	71	29			
11	3.7.2.1	0	0	0	100	4	93				7
12	3.3.2.2	0	21	50	29	3			71		29
13	3.3.2.2	0	0	21	79	4	7		93		
14	3.7.2.1	0	0	7	93	4	100				
15	3.7.2.1	0	7	29	64	4	36	7	57		
16	3.7.2.1	0	0	0	100	4	100				

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
17	3.8.5.3	0	7	43	50	3.5				7	93
18	3.4.2.2	0	0	29	71	4	7		93		
19	3.5.2.2	0	0	0	100	4			100		
20	3.5.2.2	0	7	36	57	4			100		
21	3.3.2.2	0	29	36	36	3			100		
22	3.2.1.2	0	36	50	14	3			36	21	43
23	3.4.2.1	0	7	14	79	4	71		29		
24	3.3.1.1	0	0	21	79	4	50		50		
25	3.3.1.1	0	0	0	100	4	100				
26	3.1.1.1	0	0	7	93	4	100				
27	3.4.1.2	0	0	21	79	4			93		7
28	3.1.1.1	0	0	0	100	4	100				
29	3.3.1.1	0	0	14	86	4	93		7		
30	3.7.2.1	0	0	0	100	4	93		7		
31	3.7.2.1	0	0	0	100	4	100				
32	3.8.4.2	0	0	0	100	4	14		86		
33	3.1.1.1	0	0	0	100	4	100				
34	3.7.3.1	0	0	21	79	4	100				

Grade 5: Reading
Test Year: 2006-2007
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	4.3.1.1	0	0	0	100	4	36		64		
2	4.2.1.1	0	0	0	100	4	100				
3	4.4.1.1	8	0	8	83	4	50		50		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
4	4.5.3.2	0	0	0	100	4	7		93		
5	4.5.1.2	33	0	0	67	4	23	15	62		
6	4.4.2.1	0	0	0	100	4	64		36		
7	4.5.5.3	0	0	0	100	4					100
8	4.3.2.2	0	0	7	93	4			100		
9	4.7.2.2	0	0	0	100	4			93		7
10	4.2.1.2	0	0	0	100	4			7		93
11	4.3.2.2	0	0	0	100	4			100		
12	4.7.3.2	0	0	0	100	4			93		7
13	4.7.2.1	0	0	0	100	4	100				
14	4.3.2.2	0	0	0	100	4			100		
15	4.7.3.2	0	0	0	100	4			100		
16	4.8.4.2	0	0	0	100	4			93		7
17	4.8.3.3	0	0	21	79	4			7		93
18	4.4.1.1	0	0	0	100	4	100				
19	4.4.1.1	0	0	0	100	4	100				
20	4.2.1.2	0	0	0	100	4		7	93		
21	4.4.2.2	0	0	0	100	4	7		93		
22	4.4.2.2	0	0	0	100	4			93		7
23	4.2.1.2	0	0	36	64	4			100		
24	4.4.1.2	8	8	38	46	3			92	8	
25	4.5.4.1	7	0	0	93	4	93		7		
26	4.5.2.2	0	7	0	93	4			100		
27	4.4.2.2	7	29	36	29	3			62		38
28	4.2.1.1	0	0	0	100	4	71	29			
29	4.3.2.2	0	0	0	100	4		14	86		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
30	4.7.2.1	0	0	0	100	4	100				
31	4.8.3.2	0	0	0	100	4			100		
32	4.8.3.2	7	7	0	86	4			100		
33	4.8.3.2	0	0	0	100	4			100		
34	4.8.1.2	0	14	21	64	4			92	8	

Grade 6: Reading
Test Year: 2006-2007
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	5.2.1.1	0	0	7	93	4	86	14			
2	5.3.2.2	0	7	36	57	4	7		93		
3	5.4.2.2	7	7	29	57	4			100		
4	5.3.2.2	0	0	14	86	4			100		
5	5.5.4.1	0	7	36	57	4	57	29	14		
6	5.6.1.2	0	0	0	100	4			86		14
7	5.4.2.2	0	7	50	43	4			64	28	7
8	5.8.5.2	21	0	29	50	3			93	7	
9	5.3.2.2	21	0	29	50	3.5			100		
10	5.3.1.1	0	0	7	93	4	93	7			
11	5.8.5.3	0	0	50	50	3.5			29	21	50
12	5.8.5.3	0	7	64	29	3					100
13	5.7.2.1	0	0	0	100	4	93		7		
14	5.8.2.2	71	21	7	0	1			100		
15	5.8.3.2	0	0	0	100	4		7	93		
16	5.8.2.2	0	0	7	93	4			93		7

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
17	5.7.2.2	0	7	71	21	3			79	14	7
18	5.4.1.1	0	0	7	93	4	7	43	50		
19	5.4.2.1	7	14	14	64	4	86	7	7		
20	5.2.1.2	0	0	29	71	4	6	21	71		
21	5.4.2.1	7	7	36	50	3.5	43	36	21		
22	5.5.3.3	0	29	21	50	3.5			7		93
23	5.4.1.1	0	0	29	71	4	21	57	21		
24	5.3.2.2	0	0	64	36	3		7	93		
25	5.5.2.2	0	0	29	71	4			93		7
26	5.5.3.2	0	7	29	64	4			92		8
27	5.5.2.3	0	7	43	50	3.5			7		93
28	5.3.1.1	0	7	29	64	4	71	21	7		
29	5.2.1.1	0	0	0	100	4	86	14			
30	5.2.1.1	0	7	43	50	3.5	57	43			
31	5.7.3.1	21	29	7	43	2.5	93	7			
32	5.7.2.2	0	36	14	50	3.5	7	7	86		
33	5.7.3.1	14	29	14	43	3	86	7	7		
34	5.7.3.3	0	0	29	71	4			7	14	79

Grade 7: Reading
Test Year: 2006-2007
Number of Panelists: 12

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	6.3.2.2	0	0	42	58	4			100		
2	6.3.1.1	45	0	18	36	3	100				

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
3	6.5.2.2	0	33	8	58	4			100		
4	6.5.2.2	0	0	67	33	3			100		
5	6.4.1.2	0	0	0	100	4	42		58		
6	6.5.4.2	0	0	8	92	4			100		
7	6.5.1.3	0	8	33	58	4					100
8	6.7.2.1	0	0	0	100	4	100				
9	6.3.1.1	0	0	42	58	4	100				
10	6.3.1.1	0	9	36	55	4	100				
11	6.7.2.1	0	0	9	91	4	67	17	17		
12	6.8.3.3	0	0	67	33	3					100
13	6.8.4.2	0	0	0	100	4			100		
14	6.7.2.1	0	0	0	100	4	100				
15	6.7.2.1	0	0	0	100	4	100				
16	6.7.2.1	0	0	0	100	4	83		8		8
17	6.8.5.3	0	0	42	58	4			8		92
18	6.3.2.2	0	0	0	100	4			100		
19	6.5.2.2	0	0	25	75	4	8		92		
20	6.4.1.1	0	0	73	27	3	25		75		
21	6.3.1.1	0	0	33	67	4	92		6		
22	6.4.1.2	0	33	8	58	4			58		42
23	6.4.1.2	0	0	33	67	4		25	75		
24	6.4.1.2	0	0	0	100	4			100		
25	6.5.3.2	0	0	67	33	3			100		
26	6.5.3.2	0	0	0	100	4			100		
27	6.5.2.3	0	0	42	58	4					100
28	6.2.1.2	0	0	0	100	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
29	6.3.2.1	0	0	50	50	3.5	73		27		
30	6.2.1.2	0	0	42	58	4			100		
31	6.7.2.1	0	0	0	100	4	100				
32	6.3.2.2	0	0	25	75	4			100		
33	6.8.3.2	0	0	0	100	4			83	8	8
34	6.7.2.2	0	0	42	58	4			100		

Grade 8: Reading
Test Year: 2006-2007
Number of Panelists: 14

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	7.3.2.2	0	0	0	100	4	7	7	86		
2	7.2.1.1	0	0	0	100	4	79	14	7		
3	7.2.1.1	0	0	0	100	4	86		14		
4	7.7.2.1	0	0	0	100	4	93		7		
5	7.7.2.1	0	0	0	100	4	93		7		
6	7.7.1.2	7	7	28	57	4			100		
7	7.7.3.3	0	0	0	100	4			7		93
8	7.4.1.2	0	0	21	79	4			92		8
9	7.5.2.2	0	0	7	93	4			93		7
10	7.3.2.2	0	0	7	93	4		7	86		7
11	7.5.3.2	0	14	14	71	4			93		7
12	7.4.2.2	0	0	21	79	4			93	7	
13	7.5.3.2	0	7	7	86	4			100		
14	7.2.1.2	0	7	21	71	4		8	92		
15	7.2.1.2	0	8	23	69	4		8	85	8	

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
16	7.5.5.2	7	21	29	43	3			100		
17	7.5.5.3	0	0	0	100	4			7	7	86
18	7.7.2.2	0	0	0	100	4			100		
19	7.7.2.2	0	0	15	85	4			100		
20	7.7.2.2	0	0	0	100	4			100		
21	7.7.2.2	0	0	8	92	4			93	7	
22	7.8.1.2	0	23	8	69	4	7		64	21	7
23	7.3.1.1	0	0	0	100	4	86		14		
24	7.8.4.2	0	0	0	100	4			93		7
25	7.8.4.2	0	0	54	46	3	8		92		
26	7.8.2.2	0	0	7	93	4	7		93		
27	7.8.2.3	0	0	0	100	4					100
28	7.2.1.2	0	0	29	71	4			100		
29	7.3.1.2	0	0	0	100	4		8	92		
30	7.4.2.2	0	0	0	100	4			100		
31	7.6.1.2	0	0	0	100	4			100		
32	7.5.2.2	8	8	0	85	4			100		
33	7.2.1.1	0	0	0	100	4	93		7		
34	7.6.1.3	7	7	50	36	3			8		92

Appendix B
New England Common Assessment Program
Mathematics Alignment Study

Reported in the tables presented in this appendix are the results of the alignment panels' decisions regarding (1) alignment of the mathematics assessment items to the grade level expectations (content standards) and (2) depth of knowledge measured by the assessment items. Data were reviewed by separate panels for both the 2005-2006 and 2006-2007 NECAP assessments⁹. The number in the Alignment and DOK columns represents the percentage of panelists responding.

Reporting Categories—generic name for the four mathematics content strands that are included on the NECAP reports.

First number = GLE: 1 = Number and Operations
 2 = Geometry and Measurement
 3 = Functions and Algebra
 4 = Data, Statistics, and Probability

Second number = GLE grade level

Third number = GLE indicator

Fourth number = Depth of Knowledge level assigned for the test development process.

Grade Level Equivalent (GLE) Alignment

4 = Item is aligned to the GLE (or content standard) to which it is coded.

3 = Item is aligned to the GLE to which it is coded, but is also aligned to another GLE.

2 = Item is aligned to the GLE to which it is coded, but better aligned to another GLE.

1 = Item does not align to the GLE to which it is coded.

Depth of Knowledge (DOK)

DOK level (1, 2, or 3) assigned by the panelists. Panelists listed borderline items by indicating both levels (e.g., 1/2, 2/3). By design, the tests do not include items at DOK Level 4; a level requiring complex reasoning, planning, and thinking over an extended period of time.

Grade 3: Mathematics

Test Year: 2005-2006

Number of Panelists: 16

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median					
		1	2	3	4			1	1/2	2	2/3
1	1.2.3.1	0	0	6	94	4	81	12	6		
2	1.2.3.1	0	0	0	100	4	88	6	6		
3	1.2.3.2	0	0	0	100	4	13	6	81		
4	1.2.5.2	0	0	6	94	4			100		

⁹ The NECAP assessments are given in the fall annually. Results are attributed to the previous year grade (e.g., 4th grade results are attributed to the prior year 3rd grade) for purposes of determining Adequate Yearly Progress under NCLB.

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
5	1.2.3.1	0	0	0	100	4	63	12	25		
6	1.2.1.1	38	0	0	62	4	100				
7	2.2.7.1	0	0	0	100	4	69	12	19		
8	1.2.3.1	0	0	0	100	4	88	6	6		
9	1.2.3.1	0	0	0	100	4	81	6	12		
10	1.2.1.2	0	0	0	100	4	31	6	63		
11	3.2.4.1	0	0	0	100	4	94	6			
12	1.2.2.1	0	0	0	100	4	94		6		
13	3.2.4.1	0	0	0	100	4	63	25	12		
14	1.2.3.2	0	0	0	100	4	6		94		
15	1.2.3.2	0	0	0	100	4			100		
16	1.2.1.2	0	0	50	50	3.5		12	88		
17	4.2.4.3	0	0	0	100	4				13	88
18	1.2.3.2	0	0	19	81	4			100		
19	4.2.2.2	0	0	31	69	4		6	94		
20	3.2.1.2	0	0	0	100	4			100		
21	2.2.7.1	0	0	0	100	4	100				
22	1.2.2.2	0	0	31	69	4		12	88		
23	1.2.1.2	0	0	0	100	4	50	6	44		
24	4.2.2.2	0	0	44	56	4		100			
25	3.2.1.2	0	0	0	100	4	6	94			
26	1.2.5.2	0	0	12	88	4		100			
27	1.2.1.1	0	0	0	100	4			100		
28	2.2.1.1	6	0	38	56	4	100				
29	4.2.4.2	0	0	0	100	4	81	6	12		
30	3.2.1.2	0	0	0	100	4		6	94		
31	4.2.2.2	6	0	31	62	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
32	2.2.6.1	0	0	0	100	4	6		94		
33	1.2.1.2	0	0	0	100	4	81	19			
34	3.2.1.2	0	0	0	100	4	6	25	69		
35	2.2.7.2	0	0	25	75	4			100		
36	1.2.1.3	0	0	0	100	4					100
37	1.2.5.2	0	0	0	100	4			94	6	
38	4.2.1.2	0	0	12	88	4	25	6	69		
39	1.2.5.1	0	0	0	100	4	87	6	6		
40	2.2.1.2	0	0	0	100	4		13	87		
41	1.2.2.1	0	0	0	100	4	94	6			
42	3.2.1.2	0	0	0	100	4		6	94		
43	1.2.1.2	0	0	0	100	4	31	19	50		
44	3.2.1.2	0	0	0	100	4	6	6	87		
45	2.2.6.1	0	0	0	100	4	56	37	6		
46	4.2.1.2	0	0	38	62	4.	6		94		
47	1.2.5.2	0	0	0	100	4	6	13	81		
48	3.2.1.2	0	0	0	100	4		13	87		
49	3.2.1.2	0	0	0	100	4	6		94		
50	4.2.1.1	0	0	0	16	4	87		13		
51	1.2.2.1	0	0	19	81	4	56	19	19		6
52	4.2.1.3	0	0	6	94	4			25	6	69
53	1.2.1.2	0	0	0	100	4	25	25	50		
54	1.2.5.2	0	0	0	100	4			69	31	
55	2.2.7.2	0	0	0	100	4			100		

Grade 4: Mathematics
 Test Year: 2005-2006
 Number of Panelists: 15

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	1.3.4.1	0	0	0	100	4	93		7		
2	1.3.4.1	0	0	0	100	4	100				
3	1.3.4.3	0	0	0	100	4			60	27	13
4	1.3.2.2	7	7	67	20	3		7	80	13	
5	1.3.1.1	0	0	0	100	4	87	7	7		
6	1.3.1.2	20	33	27	20	2			93		7
7	1.3.4.2	0	0	0	100	4			80	13	7
8	1.3.4.2	0	0	0	100	4	7		93		
9	1.3.4.2	0	0	0	100	4	60	13	27		
10	3.3.4.1	0	7	13	80	4	33	20	47		
11	4.3.5.2	0	0	0	100	4	20	7	60	7	7
12	3.3.4.2	0	0	13	87	4		7	93		
13	2.3.1.2	0	0	0	100	4	7	13	80		
14	1.3.1.2	0	0	7	93	4		7	87	7	
15	1.3.4.3	0	0	0	100	4					100
16	3.3.4.2	0	0	13	87	4			87	7	7
17									42		58
18	1.3.4.2	0	0	0	100	4			60	40	
19	4.3.3.2	7	7	13	73	4	7		93		
20	1.3.2.1	0	0	0	100	4	100				
21	2.3.6.2	0	0	0	100	4		7	93		
22	1.3.1.1	0	0	0	100	4	87	7	7		
23	2.3.1.1	0	0	7	93	4	93	7			
24	2.3.7.2	0	0	7	93	4	53	33	13		
25	1.3.2.1	0	0	0	100	4	47	13	40		
26	1.3.3.2	0	0	0	100	4	20		80		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
27	4.3.1.2	0	0	0	100	4			100		
28	3.3.1.1	0	0	0	100	4	40	20	40		
29	2.3.7.1	0	0	0	100	4	73	13	13		
30	3.3.1.2	0	0	0	100	4	20	13	67		
31	4.3.1.2	0	0	0	100	4		7	93		
32	2.3.1.2	0	7	0	93	4	7		93		
33	1.3.2.2	0	0	0	100	4	13	60	27		
34	2.3.7.2	0	0	0	100	4	13	20	67		
35	3.3.1.2	0	0	0	100	4	7		73	13	7
36	1.3.1.3	0	7	20	73	4			13		87
37	1.3.3.2	0	0	7	93	4	7	7	87		
38	1.3.1.1	0	0	0	100	4	100				
39	4.3.1.2	0	0	7	93	4		7	93		
40	3.3.4.2	0	0	0	100	4	7	7	87		
41	2.3.7.2	0	0	33	67	4	7	7	86		
42	3.3.1.2	0	0	0	100	4	7	7	87		
43	4.3.2.2	7	0	7	87	4			100		
44	1.3.1.1	0	0	0	100	4	87	7	7		
45	2.3.7.1	0	0	0	100	4	93	7			
46	4.3.5.1	0	0	0	100	4	87	7	7		
47	2.3.1.2	0	0	13	87	4		7	93		
48	4.3.3.2	0	0	0	100	4	13		87		
49	1.3.1.1	0	0	0	100	4	100				
50	2.3.7.1	0	0	7	93	4	100				
51	1.3.1.2	0	0	0	100	4	7		93		
52	1.3.2.2	0	0	0	100	4	7		79	14	
53	1.3.1.2	0	0	0	100	4	7		93		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
54	1.3.2.3	0	0	7	93	4			21		79
55	4.3.1.3	15	0	15	69	4	7		7		86

Grade 5: Mathematics
 Test Year: 2005-2006
 Number of Panelists: 17

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
		1	2	3	4	Median	1	1/2	2	2/3	3
1	1.4.2.2	0	0	0	100	4		6	94		
2	1.4.3.2	0	0	6	94	4			94	6	
3	1.4.4.1	0	0	6	94	4	87	13			
4	1.4.2.2	0	0	6	94	4			100		
5	1.4.4.2	0	0	6	94	4			100		
6	1.4.4.1	0	0	0	100	4	87	13			
7	1.4.4.3	0	0	12	88	4				13	87
8	1.4.4.2	31	0	0	69	4			94	6	
9	1.4.4.1	0	0	6	94	4	88	12			
10	1.4.3.2	0	6	41	53	4		6	94		
11	1.4.3.2	6	0	29	65	4	6	24	71		
12	3.4.4.1	0	0	0	100	4	59	35	6		
13	1.4.4.2	0	0	6	94	4			94	6	
14	4.4.1.3	0	0	24	76	4				18	82
15	1.4.4.2	0	0	0	100	4			100		
16	3.4.1.2	0	0	0	100	4	6		94		
17	2.4.1.1	0	0	0	100	4	100				
18	2.4.7.2	7	0	27	67	4			100		
19	4.4.1.2	0	0	6	94	4			100		
20	1.4.1.2	6	0	12	82	4	6	6	88		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
21	3.4.3.1	0	0	6	94	4	76	18	6		
22	1.4.2.2	0	0	12	88	4	18	12	71		
23	3.4.1.2	0	0	12	88	4			100		
24	1.4.2.2	0	12	12	76	4			100		
25	1.4.1.2	0	0	0	100	4	18	53	29		
26	2.4.5.1	0	0	12	88	4	53	18	29		
27	1.4.2.1	0	0	6	94	4	82		18		
28	2.4.6.2	0	0	0	100	4			41	35	24
29	4.4.2.3	0	0	0	100	4				12	88
30	3.4.3.3	24	0	6	71	4					100
31	1.4.3.2	0	0	0	100	4		12	82		6
32	2.4.4.1	0	0	6	94	4	82		18		
33	4.4.4.2	0	0	0	100	4			100		
34	1.4.1.2	0	0	18	82	4	6		94		
35	3.4.4.2	0	0	12	88	4		6	88	6	
36	1.4.1.2	0	0	0	100	4	12	24	65		
37	2.4.6.2	0	0	0	100	4		53	47		
38	1.4.2.2	0	0	6	94	4	6		88		6
39	2.4.3.2	0	0	0	100	4			100		
40	3.4.1.2	0	0	0	100	4		6	94		
41	1.4.1.2	0	0	12	88	4		47	53		
42	3.4.3.1	0	0	6	94	4	82	6	12		
43	4.4.1.2	0	12	53	35	3	6	24	71		
44	2.4.5.2	0	0	0	100	4	29	35	35		
45	4.4.5.1	0	0	0	100	4	71	12	18		
46	1.4.1.2	0	0	0	100	4			71	24	6
47	2.4.5.2	6	0	6	88	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
48	3.4.4.1	0	0	18	82	4	53	18	29		

Grade 6: Mathematics
 Test Year: 2005-2006
 Number of Panelists: 16

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	3.5.1.2	0	6	0	94	4	6		94		
2	1.5.4.2	0	0	0	100	4			100		
3	2.5.3.1	0	0	0	100	4	100				
4	1.5.4.2	0	0	6	94	4			100		
5	1.5.4.2	0	0	6	94	4			100		
6	2.5.1.2	0	0	0	100	4	13	25	63		
7	1.5.4.2	0	0	25	75	4	6	87	6		
8	1.5.4.1	0	0	0	100	4	63	13	25		
9	2.5.6.2	0	0	0	100	4	6		94		
10	3.5.3.1	0	0	0	100	4	56	13	25	6	
11	1.5.4.1	0	0	6	94	4	100				
12	1.5.2.1	0	0	6	94	4	100				
13	1.5.4.2	0	0	6	94	4	6		87	6	
14	1.5.4.2	0	0	25	75	4			81	13	6
15	4.5.3.2	6	19	31	44	3		6	94		
16	1.5.1.2	0	12	6	81	4	6	6	87		
17	2.5.3.2	0	0	0	100	4	19	37	44		
18	4.5.2.2	0	0	0	100	4			100		
19	1.5.2.2	0	0	12	88	4			100		
20	2.5.6.2	0	0	0	100	4		44	56		
21	3.5.4.1	0	0	6	94	4	69	25	6		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
22	1.5.2.2	0	0	0	100	4	31	25	44		
23	1.5.3.2	0	0	19	81	4		6	94		
24	2.5.6.1	0	0	0	100	4	100				
25	3.5.1.2	0	0	6	94	4	13		87		
26	3.5.3.1	0	6	0	94	4	100				
27	4.5.3.2	0	0	0	100	4	6		94		
28	3.5.1.3	0	0	0	100	4				19	81
29	1.5.2.2	6	0	6	88	4			100		
30	4.5.5.2	0	0	25	75	4			37	25	37
31	3.5.4.2	0	0	20	80	4			100		
32	2.5.6.2	0	0	0	100	4	25	31	44		
33	1.5.2.1	0	0	6	94	4	69	13	19		
34	4.5.1.3	0	0	0	100	4	6		56	13	25
35	1.5.1.1	6	0	0	94	4	100				
36	3.5.4.2	6	19	31	44	3	6	13	81		
37	2.5.1.2	0	0	0	100	4	31	25	44		
38	4.5.5.2	0	0	0	100	4	6	19	75		
39	1.5.1.2	0	0	0	100	4	6	6	87		
40	1.5.3.2	0	0	0	100	4	6	13	81		
41	1.5.2.2	0	0	6	94	4	6		94		
42	2.5.7.2	0	0	0	100	4			100		
43	2.5.7.2	0	0	0	100	4		6	94		
44	2.5.1.1	0	0	0	100	4	87	6	6		
45	3.5.1.2	0	0	6	94	4	19		81		
46	2.5.6.3	0	0	0	100	4			6		94
47	1.5.1.2	0	19	12	69	4			94		6
48	2.5.1.2	0	0	0	100	4	13		87		

Grade 7: Mathematics
 Test Year: 2005-2006
 Number of Panelists: 16

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4						
1	1.6.3.1	0	0	0	100	4	100				
2	1.6.4.2	0	0	0	100	4			100		
3	3.6.3.1	0	0	6	94	4	81	19			
4	3.6.4.2	0	0	6	94	4		6	75	19	
5	1.6.2.2	0	0	6	94	4		13	87		
6	2.6.6.1	0	0	0	100	4	87	6	6		
7	1.6.3.2	6	19	25	50	3.5		6	94		
8	1.6.4.2	0	0	0	100	4			100		
9	3.6.4.1	0	6	12	81	4	63	25	13		
10	1.6.4.3	0	0	25	75	4			25	13	63
11	4.6.4.2	0	0	0	100	4	6		94		
12	1.6.1.1	0	0	0	100	4	94	6			
13	1.6.2.2	0	0	31	69	4			63	25	13
14	2.6.5.3	0	19	25	56	4			6		94
15	1.6.4.2	0	0	6	94	4			100		
16	1.6.1.1	0	0	6	94	4	94	6			
17	4.6.1.2	0	6	56	38	3		6	94		
18	3.6.1.2	0	0	0	100	4			100		
19	2.6.5.1	0	0	0	100	4	87	13			
20	1.6.1.1	0	0	0	100	4	81	13	6		
21	4.6.4.1	0	0	0	100	4	81	13	6		
22	2.6.3.2	0	0	0	100	4	6	13	75		6
23	3.6.3.1	0	0	0	100	4	94		6		
24	2.6.6.2	0	0	12	88	4			94	6	

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
25	3.6.2.2	0	20	20	60	4	6		75	13	6
26	2.6.1.1	0	0	0	100	4	100				
27	4.6.2.2	0	0	0	100	4			81	13	6
28	3.6.2.2	0	0	6	94	4			87	13	
29	2.6.5.2	12	6	25	56	4			100		
30	4.6.5.3	6	0	0	94	4					100
31	3.6.1.2	0	0	0	100	4			69	31	
32	2.6.6.1	0	0	0	100	4	63	25	13		
33	3.6.1.2	0	0	0	100	4		13	63	25	
34	2.6.5.2	0	0	44	56	4	13	6	81		
35	4.6.2.2	0	0	0	100	4		6	94		
36	3.6.1.2	0	0	0	100	4	6		94		
37	1.6.1.1	0	0	0	100	4	94		6		
38	1.6.1.1	0	0	0	100	4	75	19	6		
39	2.6.1.2	0	0	0	100	4	37	31	31		
40	3.6.2.2	0	0	0	100	4	6	13	81		
41	2.6.7.2	0	0	0	100	4		6	69		25
42	1.6.2.1	0	6	19	75	4	94	6			
43	3.6.1.2	0	0	6	94	4		6	94		
44	2.6.5.2	0	0	0	100	4		6	69	13	13
45	3.6.3.1	0	0	0	100	4	63		13	25	
46	1.6.1.2	0	12	31	56	4			69	25	6
47	4.6.1.2	0	0	0	100	4			75	25	
48	3.6.2.3	0	0	0	100	4				13	87

Grade 8: Mathematics
 Test Year: 2005-2006
 Number of Panelists: 15

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	2.7.1.1	0	0	0	100	4	67	27	7		
2	3.7.3.1	0	0	7	93	4	80		20		
3	1.7.4.2	9	9	9	100	4	7		93		
4	2.7.2.2	0	0	40	60	4			100		
5	4.7.3.2	0	0	0	100	4	13		87		
6	1.7.2.1	0	0	0	100	4	93		7		
7	2.7.2.2	0	0	0	100	4			100		
8	3.7.3.1	0	0	7	93	4	80		20		
9	2.7.2.2	0	0	67	33	3			100		
10	1.7.4.2	0	0	0	100	4	7	13	80		
11	3.7.4.1	0	0	14	86	4	73		27		
12	1.7.4.2	0	0	0	100	4	7	13	80		
13	2.7.6.2	0	0	0	100	4		7	60	27	7
14	1.7.2.2	0	13	27	60	4			73	13	13
15	1.7.4.2	0	0	7	93	4			93	7	
16	2.7.5.1	0	7	13	80	4	73	13	13		
17	3.7.1.2	0	0	7	93	4		7	87	7	
18	3.7.4.2	0	0	0	100	4		7	87		7
19	3.7.2.2	7	20	20	53	4			80	7	13
20	1.7.1.2	0	0	0	100	4			100		
21	3.7.3.1	7	7	0	87	4	87		13		
22	3.7.2.2	0	0	0	100	4		7	93		
23	3.7.1.2	0	13	0	87	4			100		
24	3.7.2.2	0	7	13	80	4			100		
25	2.7.4.1	7	0	0	93	4	100				
26	4.7.2.2	0	0	0	100	4			93	7	

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
27	3.7.2.2	7	7	0	87	4	7		93		
28	2.7.5.3	0	0	13	87	4					100
29	3.7.1.3	0	0	13	87	4			40	7	53
30	3.7.4.2	7	7	20	67	4			47	27	27
31	4.7.2.3	0	7	0	93	4			60	7	33
32	3.7.3.1	0	7	0	93	4	80	7	13		
33	3.7.1.2	0	7	7	87	4			100		
34	1.7.1.1	0	0	0	100	4	100				
35	3.7.2.2	0	7	13	80	4	20	13	67		
36	4.7.5.1	0	7	0	93	4	93		7		
37	2.7.6.2	7	0	0	93	4			100		
38	3.7.2.1	7	0	7	86	4	87		13		
39	3.7.1.1	0	7	0	93	4	93		7		
40	1.7.1.2	0	0	7	93	4		7	93		
41	2.7.4.2	0	0	7	93	4	20	7	73		
42	3.7.4.2	0	0	7	93	4	7	7	87		
43	4.7.1.2	0	7	7	87	4	7	7	80	7	
44	3.7.3.2	0	0	0	100	4			87		13
45	3.7.1.2	0	7	0	93	4	33	7	60		
46	4.7.1.3	0	0	7	93	4			7		93
47	2.7.6.2	0	0	7	93	4			87		13
48	3.7.3.2	0	7	7	87	4		13	80	7	

Grade 3: Mathematics
 Test Year: 2006-2007
 Number of Panelists: 16

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
		1	2	3	4	Median	1	1/2	2	2/3	3

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
1	1.2.3.1	0	0	0	100	4	100				
2	1.2.1.1	0	0	0	100	4	100				
3	1.2.3.1	0	0	0	100	4	87	6	6		
4	1.2.5.2	0	0	0	100	4	6		94		
5	1.2.3.2	0	0	0	100	4	25	31	44		
6	1.2.3.1	0	0	0	100	4	94	6			
7	1.2.3.2	0	0	0	100	4	13	13	75		
8	1.2.3.1	0	0	6	94	4	44	6	50		
9	1.2.5.2	0	0	0	100	4	6	6	87		
10	1.2.1.2	0	0	0	100	4	25	6	69		
11	3.2.4.1	0	0	0	100	4	50	31	19		
12	1.2.3.2	0	0	0	100	4	25	13	63		
13	1.2.2.1	0	0	0	100	4	100				
14	1.2.1.2	20	13	0	67	4			44	19	38
15	4.2.1.2	0	0	6	94	4			94	6	
16	1.2.3.2	0	0	0	100	4			63	37	
17	4.2.4.2	0	0	0	100	4			75	6	19
18	1.2.3.2	0	0	0	100	4	19	6	75		
19	4.2.2.2	0	0	12	88	4	6		94		
20	1.2.2.1	0	0	0	100	4	69	31			
21	2.2.6.1	0	0	0	100	4	100				
22	1.2.5.2	0	0	0	100	4	31	19	50		
23	3.2.1.2	0	0	0	100	4	6		94		
24	1.2.1.2	0	0	0	100	4	6		94		
25	4.2.1.1	0	6	19	75	4	87	6	6		
26	3.2.4.2	0	0	0	100	4	37	25	37		
27	4.2.2.2	0	0	44	56	4	13	25	63		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
28	3.2.1.2	0	0	0	100	4			100		
29	1.2.2.2	0	0	19	81	4			100		
30	1.2.1.1	0	0	0	100	4	100				
31	2.2.1.2	0	0	0	100	4		6	94		
32	1.2.1.1	0	0	0	100	4	87	6	6		
33	4.2.1.2	0	0	12	88	4	25	6	69		
34	2.2.1.2	0	0	6	94	4			100		
35	3.2.4.2	0	0	0	100	4			94	6	
36	2.2.7.2	0	0	6	94	4			100		
37	1.2.5.2	0	0	19	81	4			100		
38	1.2.1.1	0	0	0	100	4	87	6	6		
39	3.2.1.2	0	0	0	100	4	6	6	87		
40	1.2.5.2	0	0	0	100	4			100		
41	2.2.6.2	0	0	0	100	4			100		
42	1.2.2.2	0	0	0	100	4	6	13	81		
43	3.2.1.2	0	0	0	100	4		6	94		
44	1.2.1.1	0	0	0	100	4	94		6		
45	1.2.5.2	0	0	12	88	4			100		
46	2.2.1.2	0	0	0	100	4			100		
47	4.2.4.2	0	0	0	100	4			100		
48	4.2.2.2	0	0	6	94	4			94	6	
49	2.2.7.1	0	0	6	94	4	31		56	13	
50	3.2.1.2	0	0	0	100	4	6		94		
51	1.2.2.2	0	0	6	94	4			94	6	
52	3.2.1.2	0	0	0	100	4		6	94		
53	1.2.1.1	0	0	0	100	4	50	6	44		
54	2.2.7.2	0	0	0	100	4			100		

Item #	Rpt. Cat(s)	Alignment				DOK			
		GLE							
55	1.2.5.2	0	0	0	100	4	87	13	

Grade 4: Mathematics
 Test Year: 2006-2007
 Number of Panelists: 15

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
1	1.3.4.1	0	0	0	100	4	100				
2	1.3.4.2	0	0	0	100	4		13	87		
3	1.3.4.1	0	0	0	100	4	87	13			
4	1.3.1.2	0	0	0	100	4	7	7	87		
5	1.3.4.2	0	0	0	100	4	8		92		
6	1.3.4.1	0	0	0	100	4	93		7		
7	1.3.4.2	0	0	0	100	4	7		93		
8	1.3.3.1	0	0	0	100	4	87	13			
9	1.3.1.1	0	0	0	100	4	87	13			
10	3.3.4.1	0	0	20	80	4	86	14			
11	4.3.5.2	0	0	0	100	4	7		93		
12	2.3.1.2	0	0	0	100	4	13		67	13	7
13	1.3.1.2	0	0	0	100	4	13	7	80		
14	1.3.4.3	0	0	0	100	4			80	13	7
15	1.3.1.3	7	20	13	60	4			67		33
16	1.3.4.3	0	0	0	100	4			73	13	13
17	3.3.4.2	0	0	0	100	4			93		7
18	1.3.4.3	0	0	20	80	4			33	7	60
19	2.3.6.2	0	0	0	100	4	53	27	20		
20	3.3.1.2	0	0	0	100	4	13	27	60		
21	4.3.3.2	0	0	29	71	4	13	7	80		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
22	2.3.7.2	7	7	47	40	3	7	21	71		
23	1.3.2.1	0	0	0	100	4	100				
24	2.3.1.2	0	0	0	100	4	13	7	80		
25	3.3.4.2	0	0	7	93	4			93	7	
26	1.3.2.2	0	0	0	100	4	20	7	73		
27	4.3.1.2	0	0	0	100	4			100		
28	2.3.7.1	0	0	0	100	4	93		7		
29	2.3.7.1	0	0	0	100	4	100				
30	4.3.5.2	0	0	0	100	4	7		93		
31	1.3.1.2	0	0	0	100	4	7	20	73		
32	1.3.1.2	0	0	0	100	4	13	20	67		
33	3.3.1.2	0	0	0	100	4	7	7	87		
34	1.3.1.2	0	0	0	100	4	7		93		
35	1.3.3.2	0	0	0	100	4			100		
36	4.3.1.3	0	0	0	100	4			7		93
37	1.3.2.2	0	0	40	60	4			100		
38	4.3.1.2	0	0	0	100	4			100		
39	1.3.1.2	0	0	0	100	4	40	20	40		
40	2.3.7.1	0	0	0	100	4	87		13		
41	1.3.3.1	0	0	0	100	4	73	13	13		
42	2.3.6.1	0	0	0	100	4	60		40		
43	3.3.1.2	0	0	0	100	4	11		89		
44	4.3.3.2	0	0	0	100	4	7		93		
45	1.3.2.1	0	0	0	100	4	73		27		
46	2.3.7.1	0	0	0	100	4	100				
47	4.3.1.2	0	0	33	67	4			100		
48	3.3.4.2	0	0	0	100	4		7	93		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
49	4.3.2.2	0	0	40	60	4	13		87		
50	2.3.1.2	0	0	0	100	4	27	13	60		
51	2.3.7.2	0	0	0	100	4			100		
52	1.3.2.2	0	0	0	100	4			100		
53	1.3.3.2	0	0	0	100	4	13	20	67		
54	2.3.6.2	0	0	40	60	4			67	20	13
55	3.3.1.2	0	0	0	100	4			47	27	27

Grade 5: Mathematics
 Test Year: 2006-2007
 Number of Panelists: 17

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
		1	2	3	4	Median	1	1/2	2	2/3	3
1	1.4.1.1	0	6	35	59	4	100				
2	1.4.4.1	0	0	24	76	4	100				
3	4.4.4.2	0	0	0	100	4			94	6	
4	3.4.4.2	0	0	24	76	4		6	94		
5	1.4.4.3	0	0	12	88	4			6	47	47
6	2.4.4.2	0	0	6	94	4			82	12	6
7	1.4.4.2	0	0	12	88	4			100		
8	1.4.4.2	0	0	0	100	4	35	24	41		
9	1.4.3.2	0	0	6	94	4		6	88	6	
10	1.4.4.1	0	0	0	100	4	59	18	24		
11	1.4.2.2	0	12	12	76	4			100		
12	4.4.2.1	0	0	0	100	4	71	18	12		
13	1.4.4.2	0	0	0	100	4			88		12
14	1.4.4.3	0	0	0	100	4			6		94
15	2.4.3.2	0	0	0	100	4			94		6

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
16	3.4.4.1	0	0	29	71	4	82	18			
17	1.4.1.1	0	0	6	94	4	41	35	24		
18	3.4.3.1	0	0	6	94	4	94	6			
19	4.4.5.1	0	0	0	100	4	71	12	18		
20	1.4.2.2	0	0	0	100	4			94	6	
21	2.4.1.1	0	0	0	100	4	100				
22	1.4.2.2	0	0	0	100	4		24	76		
23	1.4.2.2	0	0	0	100	4	18	29	53		
24	2.4.6.1	0	0	0	100	4	59	29	12		
25	2.4.3.2	0	0	0	100	4			100		
26	3.4.1.2	0	0	19	81	4			94	6	
27	3.4.1.2	0	0	6	94	4	6		94		
28	2.4.5.2	0	0	18	82	4			41	41	18
29	1.4.3.1	0	0	6	94	4	65	18	18		
30	3.4.4.2	0	0	29	71	4		6	88	6	
31	4.4.1.3	0	0	18	82	4			35	35	29
32	1.4.1.1	0	0	6	94	4	71	12	18		
33	2.4.5.2	0	0	18	82	4			100		
34	1.4.1.1	0	0	0	100	4	100				
35	2.4.7.2	0	0	12	88	4			94	6	
36	1.4.3.2	0	6	25	69	4		18	76	6	
37	1.4.1.2	0	0	6	94	4	12	47	41		
38	3.4.1.2	0	0	0	17	4	12		88		
39	1.4.2.2	0	0	12	88	4			100		
40	2.4.1.1	0	0	0	100	4	82	6	12		
41	1.4.3.2	0	0	12	88	4	24	24	53		
42	1.4.3.2	0	0	0	100	4	12	41	41	6	

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
43	2.4.6.2	0	0	18	82	4			82	6	12
44	1.4.1.2	0	0	41	59	4			88	12	
45	4.4.1.2	0	0	12	88	4			71	29	
46	4.4.4.2	0	0	24	76	4			82	18	
47	1.4.1.2	0	0	6	94	4	6	24	65		6
48	3.4.4.2	0	0	0	100	4	6		41	35	18

Grade 6: Mathematics
 Test Year: 2006-2007
 Number of Panelists: 16

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE				Median	1	1/2	2	2/3	3
		1	2	3	4	Median	1	1/2	2	2/3	3
1	1.5.2.2	0	0	0	100	4	19	19	63		
2	1.5.4.1	0	0	0	100	4	87		13		
3	1.5.4.2	0	0	0	100	4	6	13	81		
4	2.5.1.2	0	0	0	100	4	31	6	63		
5	3.5.1.3	0	0	0	100	4		6	50	13	31
6	1.5.4.1	0	0	0	100	4	69	6	25		
7	4.5.3.2	0	0	0	100	4			100		
8	1.5.4.2	0	0	0	100	4	6		94		
9	1.5.4.2	0	0	0	100	4		31	69		
10	1.5.4.2	0	0	0	100	4		13	87		
11	3.5.4.1	0	0	0	100	4	100				
12	1.5.4.1	0	0	0	100	4	100				
13	1.5.4.2	0	0	0	100	4			100		
14	2.5.6.3	0	0	0	100	4				6	94
15	1.5.4.2	0	0	0	100	4			100		
16	1.5.1.1	0	0	0	100	4	100				

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
17	3.5.1.2	0	0	6	94	4	6	19	75		
18	2.5.3.1	0	0	0	100	4	100				
19	1.5.2.2	6	0	6	88	4	25	6	69		
20	4.5.2.2	0	0	6	94	4	6		94		
21	2.5.7.2	0	0	6	94	4	6	6	87		
22	3.5.4.2	12	12	31	44	3	6		94		
23	2.5.3.1	0	0	0	100	4	100				
24	2.5.6.2	0	0	0	100	4	37	19	44		
25	3.5.1.2	0	0	7	93	4	13	13	75		
26	1.5.3.2	0	0	0	100	4		25	75		
27	1.5.2.1	0	0	0	100	4	63	31	6		
28	1.5.1.2	0	19	12	69	4	6	69	19	6	
29	3.5.3.1	0	0	19	81	4	75	19	6		
30	4.5.5.3	0	0	6	94	4					100
31	4.5.2.2	0	0	0	100	4			94		6
32	2.5.3.1	0	0	0	100	4	100				
33	3.5.3.1	0	0	0	100	4	100				
34	1.5.1.2	0	0	0	100	4	19	44	37		
35	4.5.1.2	0	0	19	81	4	6		94		
36	1.5.1.2	0	0	0	100	4	6	44	50		
37	1.5.2.1	0	0	0	100	4	25	13	63		
38	2.5.6.1	0	0	0	100	4	81		19		
39	1.5.1.2	0	0	0	100	4	6		94		
40	2.5.1.1	0	0	0	100	4	100				
41	2.5.7.2	0	0	6	94	4	6		94		
42	3.5.4.2	0	0	0	100	4			100		
43	2.5.7.2	0	0	0	100	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
44	4.5.1.2	0	0	0	100	4		19	81		
45	2.5.3.2	0	0	0	100	4			100		
46	3.5.4.3	0	0	0	100	4					100
47	2.5.6.2	0	0	0	100	4			94		6
48	1.5.1.2	0	0	0	100	4			94	6	

Grade 7: Mathematics
Test Year: 2006-2007
Number of Panelists: 16

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
		1	2	3	4	Median	1	1/2	2	2/3	3
1	1.6.4.2	0	19	12	69	4			87	13	
2	1.6.3.1	0	0	0	100	4	100				
3	1.6.4.2	0	0	0	100	4	13		75	13	
4	3.6.1.2	0	0	0	100	4	6		87	6	
5	1.6.4.1	0	0	0	100	4	87	13			
6	1.6.3.1	0	0	0	100	4	69	25	6		
7	1.6.2.1	0	0	0	100	4	75	19	6		
8	1.6.4.1	0	0	0	100	4	94	6			
9	1.6.2.2	0	0	0	100	4		6	87	6	
10	4.6.1.2	0	12	62	25	3		13	87		
11	1.6.4.1	0	0	0	100	4	94		6		
12	1.6.4.2	0	0	0	100	4	37	6	50	6	
13	4.6.4.2	0	0	6	94	4		13	56	31	
14	1.6.1.2	0	0	31	69	4			87	13	
15	1.6.4.1	0	0	0	100	4	37	13	37	13	
16	4.6.5.2	0	0	0	100	4		31	63	6	
17	3.6.3.1	0	0	0	100	4	69	19	6	6	

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
18	2.6.6.1	0	0	0	100	4	81	13	6		
19	1.6.1.2	0	0	0	100	4	6	13	81		
20	3.6.2.2	0	15	23	62	4		7	67	20	7
21	2.6.3.1	0	0	0	100	4	94	6			
22	1.6.1.2	0	0	0	100	4	50	19	25	6	
23	1.6.2.2	0	0	0	100	4		25	69	6	
24	3.6.2.2	0	0	6	94	4	13	6	75	6	
25	2.6.1.1	0	0	0	100	4	75	25			
26	4.6.2.2	0	0	0	100	4			63	31	6
27	3.6.2.2	0	19	12	69	4	6		81	13	
28	2.6.5.3	0	0	25	75	4					100
29	2.6.6.2	0	0	0	100	4			75	19	6
30	4.6.4.3	0	0	44	56	4			6	31	63
31	3.6.2.2	0	0	19	81	4			81	6	13
32	3.6.1.2	0	0	6	94	4	13	6	81		
33	3.6.1.2	0	0	19	81	4	19	25	56		
34	2.6.5.2	0	0	0	100	4	7		67	13	13
35											
36	4.6.5.1	0	0	0	100	4	56	19	25		
37	2.6.1.1	0	0	0	100	4	81	19			
38	1.6.1.1	0	0	0	100	4	87		13		
39	3.6.2.2	0	19	6	75	4		6	69	19	6
40	3.6.4.2	0	0	6	94	4			100		
41	2.6.6.2	0	7	0	93	4	13	7	80		
42	2.6.7.2	0	0	27	73	4			87	13	
43	3.6.3.2	0	0	0	100	4		7	87	7	
44	2.6.6.2	0	0	8	92	4	20		73	7	

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
45	4.6.5.1	0	0	0	100	4	80	7	13		
46	3.6.1.3	0	0	0	100	4	7				93
47	2.6.5.3	0	0	0	100	4				7	93
48	3.6.1.2	0	0	0	100	4			53	33	13

Grade 8: Mathematics
 Test Year: 2006-2007
 Number of Panelists: 15

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
		1	2	3	4	Median	1	1/2	2	2/3	3
1	1.7.4.1	0	0	0	100	4	100				
2	3.7.1.2	0	0	0	100	4		7	93		
3	2.7.5.1	0	0	0	100	4	93	7			
4	3.7.3.1	0	7	0	93	4	93		7		
5	1.7.4.2	7	0	7	87	4	21	7	71		
6	2.7.2.2	0	0	20	80	4	13		87		
7	3.7.1.2	0	7	0	93	4			100		
8	1.7.2.1	0	7	0	93	4	100				
9	2.7.1.1	0	0	0	100	4	100				
10	1.7.4.2	0	0	0	100	4	20		80		
11	3.7.4.1	0	7	7	87	4	80		20		
12	1.7.2.3	0	0	0	100	4			33		67
13	3.7.1.2	0	0	0	100	4	7		80	13	
14	1.7.4.3	0	0	0	100	4			20	7	73
15	1.7.4.2	0	0	0	100	4			93	7	
16	3.7.2.1	0	0	7	93	4	93	7			
17	3.7.1.2	0	7	0	93	4		7	93		
18	2.7.4.2	0	0	0	100	4			100		

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
19	3.7.4.2	0	0	0	100	4			100		
20	4.7.2.2	0	0	0	100	4		7	87	7	
21	3.7.1.2	0	20	27	53	4			100		
22	3.7.2.2	0	0	0	100	4			100		
23	2.7.6.1	0	0	0	100	4	80	13	7		
24	4.7.3.2	0	0	0	100	4	13	7	80		
25	3.7.2.2	0	0	0	100	4	7		93		
26	1.7.2.3	0	0	13	87	4			53	20	27
27	3.7.2.3	0	0	7	93	4			33	7	60
28	4.7.5.3	9	9	13	87	4			100		
29	2.7.2.2	0	0	0	100	4			60	13	27
30	2.7.6.3	7	0	13	80	4					100
31	4.7.1.3	0	0	27	73	4			40	7	53
32	3.7.2.1	0	7	0	93	4	93	7			
33	2.7.6.2	0	0	0	100	4			93	7	
34	3.7.2.2	0	7	0	93	4			100		
35	3.7.4.2	47	7	7	40	2			100		
36	1.7.1.1	0	0	0	100	4	93		7		
37	3.7.3.1	0	7	7	87	4	93		7		
38	3.7.2.2	0	0	0	100	4		7	93		
39	4.7.2.2	0	0	0	100	4		7	79	14	
40	2.7.4.1	0	0	0	100	4	73	20	7		
41	3.7.3.1	0	0	0	100	4	80	13	7		
42	3.7.1.2	0	7	7	87	4			86	14	
43	4.7.5.1	0	7	0	93	4	67	27	7		
44	3.7.2.2	0	0	0	100	4			93		7
45											

Item #	Rpt. Cat(s)	Alignment					DOK				
		GLE									
46	3.7.1.3	0	0	7	93	4			33	7	60
47	2.7.5.2	0	7	13	80	4			93		7
48	3.7.3.2	0	0	0	100	4			100		

Appendix C

Overview of Grade Level Expectations

The text in this appendix is adapted from the NECAP reading grade level expectations (GLEs) for grades Kindergarten to 5. Described is how the GLEs were developed to identify academic content knowledge and skills expected of all students and how these are linked to instruction over the entire time of a student's learning. Similar text is provided for the reading GLEs at grades 5 to 12 and mathematics at grades 3 to 8.

READING

Kindergarten – Grade 5

New Hampshire and Rhode Island Grade Level Expectations (GLEs) for Grades K-5 Including New England Common Assessment Program (NECAP-STATE) GLEs for Reading in Grades 2-5

Introduction

The New England Common Assessment Program (NECAP) Reading GLEs have been developed as a means to identify the reading content knowledge and skills expected of all students, for large-scale assessment of reading in grades 3-8. *GLEs and GSEs are meant to capture the “big ideas” of reading that can be assessed, without narrowing the curriculum locally. They are not intended to represent the full reading curriculum for instruction and assessment locally, at each grade. The set of GLEs/GSEs includes concepts and skills intended to be assessed on demand, in a large-scale assessment (indicated by “State”) and other GLEs/GSEs (indicated by “Local”) for Local assessment purposes only. All of the Reading GLEs/GSEs described in this document are expected to be assessed Locally, even if indicated for large-scale assessment. “Local GLEs” in reading include those concepts and skills not easily assessed in an on-demand setting (e.g., reading fluency, reading accuracy, self-correcting while reading, depth and breadth of reading, etc.). Grade Level/Span Expectations – at any grade – represent reading content knowledge and skills introduced instructionally at least one to two years before students are expected to demonstrate confidence in applying them independently in an on-demand assessment.*

The NECAP GLEs in this document can be interpreted as describing the grade level expectations for the end of the grade identified, or the beginning of the next grade. For example, grade 2 NECAP GLEs identify grade level expectations in reading for both the end of grade 2 and the beginning of grade 3, for assessment purposes.

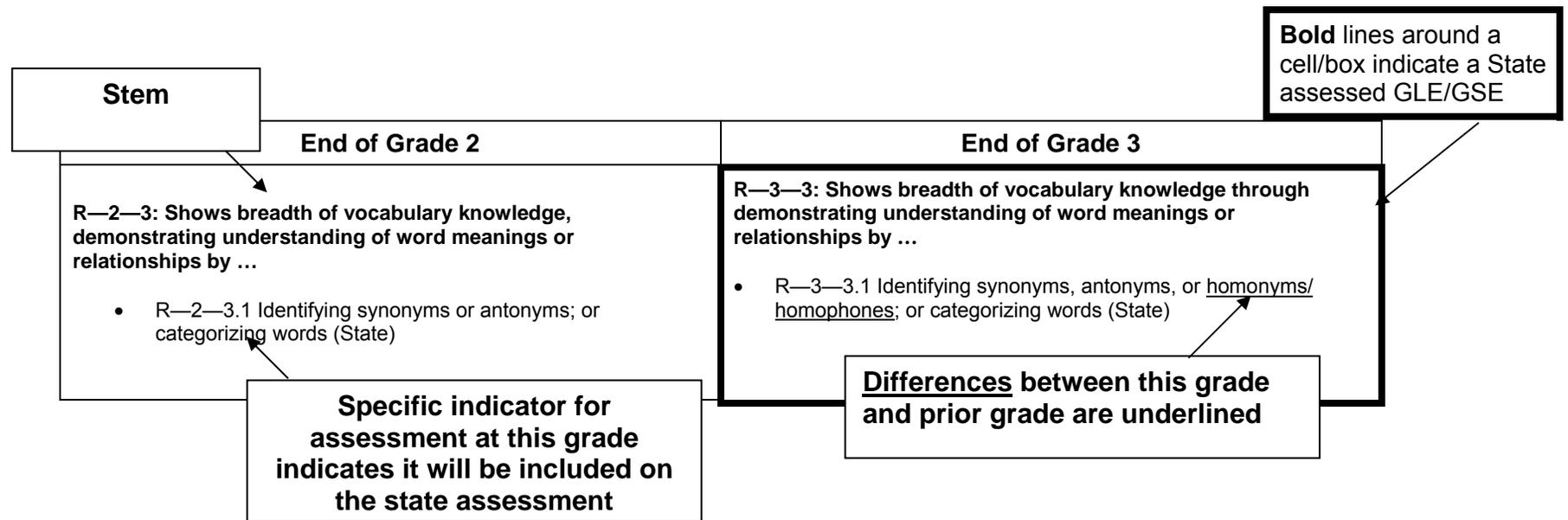
When using the NECAP Reading Grade Level Expectations, the following are important to understand:

- 1) All of the concepts and skills identified at a given grade level are “fair game” for large-scale assessment purposes *if indicated by “(State).”* However, conjunctions used throughout this document have specific meaning. The use of the conjunction “or” means that a student can be assessed on all or just some of the elements of the GLE in a given year. The use of “and” between elements of a GLE means that the *intent* is to assess each element every year. In some situations, “or” is used when students have choices about how they will provide supporting evidence for their response. (E.g., “R–4–5.2 Describing main characters’ physical characteristics or personality traits; or providing examples of thoughts, words, or actions that reveal characters’ personality traits” means that students may be asked to describe main characters’ physical characteristics OR to describe characters’ personality traits, OR to provide any or all of the following – thoughts, words, OR actions -- to support their responses that reveal characters’ personality traits.)
- 2) Each GLE includes three parts.
 - **A statement in bold**, called the “stem,” is at the beginning of each GLE. Each “stem” is the same or similar across the grades for a given GLE, and is meant to communicate the main curriculum and instructional focus of the GLE across the grades.
 - The un-bolded text within a GLE indicates how the GLE is specified at a given grade level. There are often several indicators for each GLE stem. Each indicator is coded.
 - Differences between adjacent grades are underlined. (Note: Sometimes nothing is underlined within a GLE. In these situations, differences in adjacent grades “assume increasing text complexity” and is noted for those GLEs.

SAMPLE TEXTS AT GRADE 7: <i>Roll of Thunder, Hear My Cry; Diary of a Young Girl; Muse magazine</i>	SAMPLE TEXTS AT GRADE 8: <i>The Upstairs Room; Narrative of the Life of Frederick Douglass; The Giver; Science magazine</i>	SAMPLE TEXTS AT HIGH SCHOOL: <i>To Kill a Mockingbird; Night; Into Thin Air; Newsweek magazine</i>
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3) Each GLE is coded for the content area, the grade level, the GLE “stem” number, and the specific indicator for that GLE stem. [e.g., “R—5—6.2” means R (Reading) – 5 (grade 5) - 6th GLE “stem”) – 2 (the second specific indicator for the 6th GLE stem).]

Sample New Hampshire and Rhode Island Reading GLE



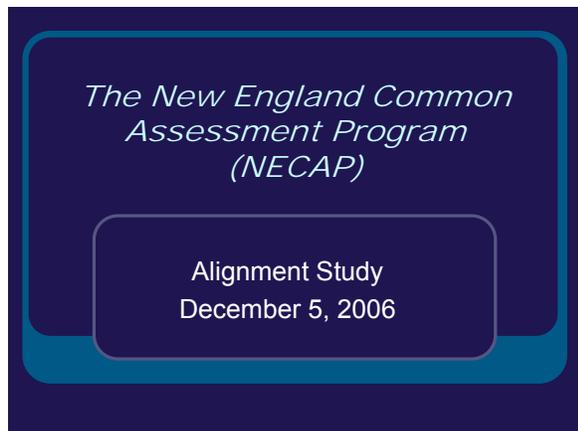
The GLE stem identifies “the what,” meaning, “What is the big idea for instruction and assessment?”

2006 Version

All of the concepts and skills identified at a given grade level are “fair game” for large-scale assessment purposes. However, conjunctions used throughout this document have specific meaning. The use of the conjunction “or” means that a student can be assessed on all or just some of the elements of the GLE in a given year. The use of “and” between elements of a GLE means that the *intent* is to assess each element every year. In some situations, “or” is used when students have choices about how they will cite supporting evidence for their response.

Appendix D

The New England Common Assessment Program (NECAP) Alignment Study (Power Point Presentation for Training NECAP Alignment Study Panels)



What is alignment?

- ... the extent of agreement, overlap, or intersection among standards (GLEs), instruction, and assessments.
- Accurate inferences about student achievement and growth over time can only be made when there is alignment between the standards (GLEs) and assessments.

NCLB: Alignment ensures that the assessments:

- Cover the full range of content specified in the GLEs
- Measure the content and process related to the GLEs
- Reflect the same degree and pattern of emphasis in the GLEs
- Reflect the full range of cognitive complexity and level of difficulty as the GLEs and
- Yield results that represent all achievement levels specified in the GLEs

NECAP Alignment Study based on Norman Webb

1. Categorical Concurrence- do test items assess the GLEs that they say they assess?
2. Depth-of-Knowledge Consistency- does the cognitive demand of the test item match the DOK level coded for the item?
3. Range of Knowledge- Does the span of knowledge expected in the GLEs match the span of knowledge needed to answer test items correctly?
4. Balance of Representation- Are the items distributed across the GLEs and according to the test specifications?

Today's Alignment Focus

Our work today is to focus on-

- Categorical Concurrence- *Do the test items align to the GLE?*

AND

- Depth-of-Knowledge- *Does the item require the DOK level we think it does?*
- A consultant will work on the final two alignment categories after receiving today's work from RI, NH, and VT

Alignment is planned for from the start of test design.

- Distribution of Emphasis
- Depth-of-Knowledge Ceilings
- Items are written to align with GLEs
- Item Review Committees
- DOE Content Specialists Review Test Forms

Alignment- *Distribution of Emphasis*

- The NECAP tests are designed to reflect the *Distribution of Emphasis* that was developed as part of the test specifications.
- The distribution communicates which GLEs are given more emphasis at each grade level.

Distribution of Emphasis for Reading

Reading Content Clusters	Distribution of Emphasis					
	2 (3)	3 (4)	4 (5)	5 (6)	6 (7)	7 (8)
Word Identification	20%	15	-	-	-	-
Vocabulary	20%	20	20	20	20	20
Init. Understanding <i>Literary</i>	20%	20	20	20	15	15
Init. Understanding <i>Informational</i>	20%	20	20	20	20	20
Analysis and Interpretation	10%	15	20	20	25	25
Analysis and Interpretation <i>Informational</i>	10%	10	20	20	20	20
TOTALS	100%	100	100	100	100	100

Distribution of Emphasis for Mathematics

Mathematics Content Strands	Distribution of Emphasis					
	2 (3)*	3(4)	4(5)	5(6)	6(7)	7(8)
Number and Operations	55%	50	50	45	30	20
Geometry and Measurement	15%	20	20	25	25	25
Algebra and Functions	15%	15	15	15	30	40
Data, Statistics, & Probability	15%	15	15	15	15	15
Total	100%	100	100	100	100	100

* 2 (3) indicates end of grade 2 GLEs are tested at the beginning of grade 3

Alignment- *Depth of Knowledge*

- Level 1- Recall and Reproduction
- Level 2- Skills and Concepts
- Level 3- Problem Solving and Strategic Thinking
- Level 4- Extended Thinking

Based on the work of Norman Webb

Alignment- *Item Review Committees*

- Every item is reviewed by a panel of teachers representing the three states.
- The teacher panels evaluate each item against a rubric that considers GLE alignment, depth of knowledge, universal design issues, correctness, and language.

NECAP Item Review Committee *Item Review Criteria*

1. Grade Level Expectations Alignment-
 - Is the test item aligned to the appropriate GLE?
 - If not, which GLE or grade level is more relevant?
2. Correctness-
 - Are the questions and distracters correct with respect to content, accuracy and developmental appropriateness?
 - Do the distracters represent plausible misunderstandings about the GLE content?
 - Are the scoring guides consistent with GLE wording and developmental appropriateness?
 - Do the scoring guides focus on important aspects of the GLE content and/or process?

NECAP Item Review Committee *Item Review Criteria cont.*

3. Depth of Knowledge-
 - Is the test coded to the appropriate Depth of Knowledge?
 - Or, if consensus cannot be reached, is there clarity around why the item might be on the border of two levels?
4. Language-
 - Is the language clear?
 - Is the language accurate (syntax, grammar, conventions)?
5. Universal Design-
 - Is there an appropriate use of simplified language?
 - Are charts, tables and diagrams necessary to the item?
 - Are charts, tables and diagrams easy to read?
 - Are instructions easy to follow?
 - Is the item amenable to accommodations- Braille, read aloud?

Part 1 of the Alignment Study Today's Task

- Review all of the common items on the 2005 and 2006 NECAP tests
- Independently complete review sheet for each item
- Discuss findings
- Review and possibly revise findings based on discussions

Part 2 of the Alignment Study Next Steps

- Individual ratings will be summarized by grade and given to an external consultant
- Consultant will summarize findings from all 3 states and review alignment against all four components of alignment and write report
- Report will be sent to USDE and posted on RIDE's website by April 2007

Alignment Review Questions

- Does the test item align to the GLE to which it is coded?

YES

YES- but it also is aligned to GLE:

NO- a more appropriate GLE is:

Alignment Review Question

- Is the test item coded to the appropriate Depth of Knowledge level?

YES

NO- it is more similar to level __

because _____

Table Level Discussions

- Table discussions should begin only when everyone at your table has completed an independent review
- Begin with Item 1- discuss only when someone at the table feels that either the GLE or DOK has not been coded accurately.
- After all items have been discussed, go back and individually review ratings. If you feel that you missed something in considering your rating of an item or if someone has provided a viewpoint that causes you to want to change your rating, please make those adjustments.
- Make any changes you feel are needed based on your discussions.
- It is **not necessary** to reach consensus!

Practice Item

- Item number: 202192
- Contract: 1363 Year: 05-06 Test: Assessment Use grade: 3
- Notes: CE
- Subject: Language Arts
- Location(s): 0-1-1
- Internal Codes: 41-0-8
- Rpt Cat(s): 2.1.1.1 2.1.1 designates the GLE and the 1 is the DOK Level
- Item Type: MC Key: A
- Cluster: Stand Alone Seq#: 0

Practice Item

1. Which word rhymes with eight?

- A. gate
- B. hat
- C. fight
- D. bite

Appendix E
Alignment Study Training Materials
A. Confidentiality Agreement

New England Common Assessment Program

NONDISCLOSURE AGREEMENT

The New England Common Assessment Program evolved from a partnership among the New Hampshire, Rhode Island, and Vermont Departments of Education to develop and administer a shared statewide assessment system. The design of the program requires that the test questions remain secure. To maintain the security of the tests, only authorized persons are permitted to view the test questions and reading passages. With the exception of questions and reading passages released by the New Hampshire, Rhode Island, and Vermont Departments of Education with official reports and on their State websites, all test questions, draft or final, and reading passages are to be regarded as secure instruments.

I understand that it is my professional responsibility to maintain the security of the tests. I will not reproduce, discuss, or in any way release, share, or distribute the test questions or reading passages to unauthorized personnel.

The undersigned is an employee, contractor, consultant, or committee member for the New England Common Assessment Program, or person otherwise authorized to view secure New England Common Assessment Program materials and hereby agrees to be bound to the terms of this agreement restricting the disclosure of said materials.

Name (printed)

Signature

Date

State



B. Excerpts from Depth of Knowledge Overview (Webb, 2002)

Depth-of-Knowledge Levels for Four Content Areas¹⁰

Norman L. Webb
March 28, 2002

Language Arts Levels of Depth of Knowledge

Interpreting and assigning depth-of-knowledge levels to both objectives within standards and assessment items is an essential requirement of alignment analysis. Four levels of depth of knowledge are used for this analysis.

Reading (based on Wixson, 1999)

Level 1

Level 1 requires students to receive or recite facts or to use simple skills or abilities. Oral reading that does not include analysis of the text as well as basic comprehension of a text is included. Items require only a shallow understanding of text presented and often consist of verbatim recall from text or simple understanding of a single word or phrase. Some examples that represent but do not constitute all of Level 1 performance are:

- Support ideas by reference to details in the text.
- Use a dictionary to find the meaning of words.
- Identify figurative language in a reading passage.

Level 2

Level 2 includes the engagement of some mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing of text or portions of text. Inter-sentence analysis of inference is required. Some important concepts are covered but not in a complex way. Standards and items at this level may include words such as summarize, interpret, infer, classify, organize, collect, display, compare, and determine whether fact or opinion. Literal main ideas are stressed. A Level 2 assessment item may require students to apply some of the skills and concepts that are covered in Level 1. Some examples that represent but do not constitute all of Level 2 performance are:

- Use context cues to identify the meaning of unfamiliar words.
- Predict a logical outcome based on information in a reading selection.
- Identify and summarize the major events in a narrative.

Level 3

Deep knowledge becomes more of a focus at Level 3. Students are encouraged to go beyond the text; however, they are still required to show understanding of the ideas in the text. Students may be encouraged to explain, generalize, or connect ideas. Standards and items at Level 3 involve reasoning and planning. Students must be able to support their thinking. Items may involve abstract theme identification, inference across an entire passage, or students' application of prior knowledge. Items may also involve more superficial connections between texts. Some examples that represent but do not constitute all of Level 3 performance are:

- Determine the author's purpose and describe how it affects the interpretation of a reading selection.
- Summarize information from multiple sources to address a specific topic.
- Analyze and describe the characteristics of various types of literature.

¹⁰ This paper has been re-formatted for inclusion in this report. Also, DOK information related to science and social studies has been omitted.

Level 4

Higher order thinking is central and knowledge is deep at Level 4. The standard or assessment item at this level will probably be an extended activity, with extended time provided. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. Students take information from at least one passage and are asked to apply this information to a new task. They may also be asked to develop hypotheses and perform complex analyses of the connections among texts. Some examples that represent but do not constitute all of Level 4 performance are:

- Analyze and synthesize information from multiple sources.
- Examine and explain alternative perspectives across a variety of sources.
- Describe and illustrate how common themes are found across texts from different cultures.

Writing

Level 1

Level 1 requires the student to write or recite simple facts. This writing or recitation does not include complex synthesis or analysis but basic ideas. The students are engaged in listing ideas or words as in a brainstorming activity prior to written composition, are engaged in a simple spelling or vocabulary assessment or are asked to write simple sentences. Students are expected to write and speak using Standard English conventions. This includes using appropriate grammar, punctuation, capitalization and spelling. Some examples that represent but do not constitute all of Level 1 performance are:

- Use punctuation marks correctly.
- Identify Standard English grammatical structures and refer to resources for correction.

Level 2

Level 2 requires some mental processing. At this level students are engaged in first draft writing or brief extemporaneous speaking for a limited number of purposes and audiences. Students are beginning to connect ideas using a simple organizational structure. For example, students may be engaged in note-taking, outlining or simple summaries. Text may be limited to one paragraph. Students demonstrate a basic understanding and appropriate use of such reference materials as a dictionary, thesaurus, or web site. Some examples that represent but do not constitute all of Level 2 performance are:

- Construct compound sentences.
- Use simple organizational strategies to structure written work.
- Write summaries that contain the main idea of the reading selection and pertinent details.

Level 3

Level 3 requires some higher level mental processing. Students are engaged in developing compositions that include multiple paragraphs. These compositions may include complex sentence structure and may demonstrate some synthesis and analysis. Students show awareness of their audience and purpose through focus, organization and the use of appropriate compositional elements. The use of appropriate compositional elements includes such things as addressing chronological order in a narrative or including supporting facts and details in an informational report. At this stage students are engaged in editing and revising to improve the quality of the composition. Some examples that represent but do not constitute all of Level 3 performance are:

- Support ideas with details and examples.
- Use voice appropriate to the purpose and audience.
- Edit writing to produce a logical progression of ideas.

Level 4

Higher-level thinking is central to Level 4. The standard at this level is a multi- paragraph composition that demonstrates synthesis and analysis of complex ideas or themes. There is evidence of a deep awareness of purpose and audience. For example, informational papers include hypotheses and

supporting evidence. Students are expected to create compositions that demonstrate a distinct voice and that stimulate the reader or listener to consider new perspectives on the addressed ideas and themes. An example that represents but does not constitute all of Level 4 performance is:

- Write an analysis of two selections, identifying the common theme and generating a purpose that is appropriate for both.

Source of Challenge Criterion

The Source of Challenge criterion is only used to identify items where the major cognitive demand is inadvertently placed and is other than the targeted language arts skill, concept, or application. Cultural bias or specialized knowledge could be reasons for an item to have a source of challenge problem. Such items characteristics may cause some students to not answer an assessment item or answer an assessment item incorrectly or at a lower level even though they have the understanding and skills being assessed.

Mathematics Depth-of-Knowledge Levels

Level 1 (Recall)

This includes the recall of information such as a fact, definition, term, or a simple procedure, as well as performing a simple algorithm or applying a formula. That is, in mathematics a one-step, well-defined, and straight algorithmic procedure should be included at this lowest level. Other key words that signify a Level 1 include “identify,” “recall,” “recognize,” “use,” and “measure.” Verbs such as “describe” and “explain” could be classified at different levels depending on what is to be described and explained.

Level 2 (Skill/Concept)

This includes the engagement of some mental processing beyond a habitual response. A Level 2 assessment item requires students to make some decisions as to how to approach the problem or activity, whereas Level 1 requires students to demonstrate a rote response, perform a well-known algorithm, follow a set procedure (like a recipe), or perform a clearly defined series of steps. Keywords that generally distinguish a Level 2 item include “classify,” “organize,” “estimate,” “make observations,” “collect and display data,” and “compare data.” These actions imply more than one step. For example, to compare data requires first identifying characteristics of the objects or phenomenon and then grouping or ordering the objects.

Some action verbs, such as “explain,” “describe,” or “interpret” could be classified at different levels depending on the object of the action. For example, if an item required students to explain how light affects mass by indicating there is a relationship between light and heat, this is considered a Level 2. Interpreting information from a simple graph, requiring reading information from the graph, also is a Level 2. Interpreting information from a complex graph that requires some decisions on what features of the graph need to be considered and how information from the graph can be aggregated is a Level 3. Caution is warranted in interpreting Level 2 as only skills because some reviewers will interpret skills very narrowly, as primarily numerical skills, and such interpretation excludes from this level other skills such as visualization skills and probability skills, which may be more complex simply because they are less common. Other Level 2 activities include explaining the purpose and use of experimental procedures; carrying out experimental procedures; making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables, graphs, and charts.

Level 3 (Strategic Thinking)

This requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. In most instances, requiring students to explain their thinking is a Level 3. Activities that require students to make conjectures are also at this level. The cognitive demands at Level 3 are complex and abstract. The complexity does not result from the fact that there are multiple answers, a possibility for both Levels 1 and 2, but because the task requires more demanding reasoning. An activity, however, that has more than one possible answer and requires students to justify the response they give would most likely be a Level 3. Other Level 3 activities include drawing conclusions from observations; citing evidence

and developing a logical argument for concepts; explaining phenomena in terms of concepts; and using concepts to solve problems.

Level 4 (Extended Thinking)

This requires complex reasoning, planning, developing, and thinking most likely over an extended period of time. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. For example, if a student has to take the water temperature from a river each day for a month and then construct a graph, this would be classified as a Level 2. However, if the student is to conduct a river study that requires taking into consideration a number of variables, this would be a Level 4. At Level 4, the cognitive demands of the task should be high and the work should be very complex. Students should be required to make several connections—relate ideas *within* the content area or *among* content areas—and have to select one approach among many alternatives on how the situation should be solved, in order to be at this highest level. Level 4 activities include designing and conducting experiments; making connections between a finding and related concepts and phenomena; combining and synthesizing ideas into new concepts; and critiquing experimental designs.

Appendix F
Sample External Alignment Study Rating Forms
A. Reading

New England Common Assessment Program
Alignment Study

Content Area: Reading

Grade: 3

Test Year: 2005-2006

Item #	Rpt. Cat(s)	Alignment				Depth of Knowledge	Alternate GLE or Comment
		GLE					
1	2.1.1.1	1	2	3	4		
2	2.2.1.1	1	2	3	4		
3	2.3.1.2	1	2	3	4		
4	2.5.3.2	1	2	3	4		
5	2.5.3.2	1	2	3	4		
6	2.1.1.1	1	2	3	4		
7	2.5.2.2	1	2	3	4		
8	2.3.2.2	1	2	3	4		
9	2.7.1.1	1	2	3	4		
10	2.7.2.1	1	2	3	4		
11	2.8.3.2	1	2	3	4		
12	2.3.2.2	1	2	3	4		
13	2.7.2.1	1	2	3	4		
14	2.3.2.2	1	2	3	4		
15	2.8.2.2	1	2	3	4		
16	2.3.1.2	1	2	3	4		
17	2.8.1.3	1	2	3	4		
18	2.4.1.1	1	2	3	4		
19	2.4.1.1	1	2	3	4		
20	2.4.1.1	1	2	3	4		

Item #	Rpt. Cat(s)	Alignment				Depth of Knowledge	Alternate GLE or Comment
		GLE	GLE	GLE	GLE		
21	2.4.1.1	1	2	3	4		
22	2.3.1.2	1	2	3	4		
23	2.4.1.1	1	2	3	4		
24	2.2.1.1	1	2	3	4		
25	2.4.1.1	1	2	3	4		
26	2.3.1.1	1	2	3	4		
27	2.5.3.2	1	2	3	4		
28	2.3.1.2	1	2	3	4		
29	2.1.1.1	1	2	3	4		
30	2.7.2.1	1	2	3	4		
31	2.3.2.2	1	2	3	4		
32	2.7.2.1	1	2	3	4		
33	2.7.1.1	1	2	3	4		
34	2.8.1.2	1	2	3	4		

GLE Alignment

4 = Item is aligned to the GLE to which it is coded.

3 = Item is aligned to the GLE to which it is coded, but is also aligned to another GLE. Please indicate the GLE(s).

2 = Item is aligned to the GLE to which it is coded, but better aligned to another GLE. Please indicate the GLE(s).

1 = Item does not align to the GLE to which it is coded. Please indicate the GLE(s).

Depth of Knowledge (DOK)

Indicate the DOK level (1, 2, or 3). Indicate borderline items by listing both levels (e.g., 1/2, 2/3).

B. Mathematics

Content Area: Mathematics

Grade: 3

Test Year: 2005-2006

Item #	Rpt. Cat(s)	Alignment				Depth of Knowledge	Alternate GLE or Comment
		GLE					
1	1.2.3.1	1	2	3	4		
2	1.2.3.1	1	2	3	4		
3	1.2.3.2	1	2	3	4		
4	1.2.5.2	1	2	3	4		
5	1.2.3.1	1	2	3	4		
6	1.2.1.1	1	2	3	4		
7	2.2.7.1	1	2	3	4		
8	1.2.3.1	1	2	3	4		
9	1.2.3.1	1	2	3	4		
10	1.2.1.2	1	2	3	4		
11	3.2.4.1	1	2	3	4		
12	1.2.2.1	1	2	3	4		
13	3.2.4.1	1	2	3	4		
14	1.2.3.2	1	2	3	4		
15	1.2.3.2	1	2	3	4		
16	1.2.1.2	1	2	3	4		
17	4.2.4.3	1	2	3	4		
18	1.2.3.2	1	2	3	4		
19	4.2.2.2	1	2	3	4		
20	3.2.1.2	1	2	3	4		
21	2.2.7.1	1	2	3	4		
22	1.2.2.2	1	2	3	4		
23	1.2.1.2	1	2	3	4		

Item #	Rpt. Cat(s)	Alignment				Depth of Knowledge	Alternate GLE or Comment
		GLE					
24	4.2.2.2	1	2	3	4		
25	3.2.1.2	1	2	3	4		
26	1.2.5.2	1	2	3	4		
27	1.2.1.1	1	2	3	4		
28	2.2.1.1	1	2	3	4		
29	4.2.4.2	1	2	3	4		
30	3.2.1.2	1	2	3	4		
31	4.2.2.2	1	2	3	4		
32	2.2.6.1	1	2	3	4		
33	1.2.1.2	1	2	3	4		
34	3.2.1.2	1	2	3	4		
35	2.2.7.2	1	2	3	4		
36	1.2.1.3	1	2	3	4		
37	1.2.5.2	1	2	3	4		
38	4.2.1.2	1	2	3	4		
39	1.2.5.1	1	2	3	4		
40	2.2.1.2	1	2	3	4		
41	1.2.2.1	1	2	3	4		
42	3.2.1.2	1	2	3	4		
43	1.2.1.2	1	2	3	4		
44	3.2.1.2	1	2	3	4		
45	2.2.6.1	1	2	3	4		
46	4.2.1.2	1	2	3	4		
47	1.2.5.2	1	2	3	4		
48	3.2.1.2	1	2	3	4		
49	3.2.1.2	1	2	3	4		
50	4.2.1.1	1	2	3	4		

Item #	Rpt. Cat(s)	Alignment				Depth of Knowledge	Alternate GLE or Comment
		GLE	GLE	GLE	GLE		
51	1.2.2.1	1	2	3	4		
52	4.2.1.3	1	2	3	4		
53	1.2.1.2	1	2	3	4		
54	1.2.5.2	1	2	3	4		
55	2.2.7.2	1	2	3	4		

GLE Alignment

4 = Item is aligned to the GLE to which it is coded.

3 = Item is aligned to the GLE to which it is coded, but is also aligned to another GLE. Please indicate the GLE(s).

2 = Item is aligned to the GLE to which it is coded, but better aligned to another GLE. Please indicate the GLE(s).

1 = Item does not align to the GLE to which it is coded. Please indicate the GLE(s).

Depth of Knowledge (DOK)

Indicate the DOK level (1, 2, or 3). Indicate borderline items by listing both levels (e.g., 1/2, 2/3).

Appendix G
New England Common Assessment Program
Reading and Mathematics Alignment Study Panelists

NECAP Alignment Study Reading Panelists		
Name	School or Organization	State
Alger, Nicole	Ponaganset Middle School	RI
Alling, Kara	Woonsocket Middle School	RI
Bailey, Jayne	Blackrock School	RI
Barone, Jennfier	Lyndon Town School	VT
Benson, Matthew	Manchester School District	NH
Benzo, Ann	Tiogue	RI
Bettez, Mary	Knotty Oak Middle School	RI
Blethroade, Karen	Seabrook School District	NH
Boucher, Linda	Kearsarge Regional School	NH
Bouclin, Marilynn	Thornton Elementary School	RI
Bridgeman, Katie	Manchester School District	NH
Caruso, Sally	Kickemuitt Middle School	RI
Castaldi, Dawn	Washington Oak School	RI
Cicconi, Emily	Kearsage Regional School	NH
Cloutier, Karen	Gorham School District	NH
Cross, Marcia	Nicholas Ferri Middle School	RI
Cruz-Peralta, Olga	Laurel Hill Elementary School	RI
D'Alfonso, Pat	Greenbush Elementary School	RI
Donovan, June	Kevin Coleman Elementary School	RI
Drinker, Beth Ann	Grafton Elementary School	VT
Dulude, Diane	West Gloucester Elementary School	RI
Dumont, Melissa	Manchester School District	NH
Dwyer, Lisa	Merrimack Valley	NH
Evarts, Kristine	Beeman Elementary School	VT
Fallon Pelletier, Margaret	West Gloucester Elementary School	RI
Filomeno, Linda	Central Administration	RI
Flaherty, Pat	Alan Shawn Feinstein School	RI
Foust, Pam	Camels Hump Middle School	VT
Franklin, Jane	Halliwell Memorial School	RI
Gannon, Sandra	Ponaganset Middle School	RI
Garrow, Janice	Rutland Intermediate School	VT

**NECAP Alignment Study
Reading Panelists**

Name	School or Organization	State
Garside, Laura	Manchester School District	NH
Gillespie, Charlotte	Manchester School District	NH
Godin, Stacy	Seabrook School District	NH
Harrington, Alberta	SVSU	VT
Harrison, Kyle	Portsmouth School District	NH
Hayes, Marie	Porters Point School	VT
Heath, Karen	Barre City Elem/Middle School	VT
Hogan, Mary	Candia School District	NH
Holiday, Lyle	Academy School	VT
Hunt, Sharon	Gilman Middle School	VT
Italiano, Lisa	Orchard Elementary School	VT
Jeffrey, marilyn	Northfield Elementary School	VT
Kawecki, Bonnie	Randolph Elementary School	VT
Kershaw, Sandra	Ponaganset Middle School	RI
Kiernan, Lisa	Washington Oak School	RI
Klein, Cherae	Halliwell Memorial School	RI
Knox, Betsy	Hinesburg Community School	VT
Krasofski, Prudence	Warren Elementary School	VT
Lachance, Diana	Blackrock School	RI
Laro, Margaret (Peggy)	Richmond Elementary School	VT
Levitan, Ph.D., Valerie	Rochester School	VT
Loiselle, Kristin	Ponaganset Middle School	RI
McCraw, Richard	Williston Central School	VT
McLaughlin, Tammy	Manchester School District	NH
Morse, Jillian	Washington Oak School	RI
Murphy, Ruth	Milton Elementary School	VT
Murray, Karen	Hookset School District	NH
Pape, James	Winooski Middle/HS	VT
Partridge, Judi	Hillsboro Deering Schools	NH
Pierce, Melissa	Citizen's Memorial School	RI
Pora, Katheen	Harris School	RI
Puntin, Beverly	Merrimack Valley	NH
Rael, Nancy	Londonderry School District	NH
Regimbal, Julie	Milton Town S.D.	VT

**NECAP Alignment Study
Reading Panelists**

Name	School or Organization	State
Reid, Mary Lou	Brattleboro Area Middle School	VT
Royce, Carol	Orange East S.U.	VT
Russell, Susan	Westerly Middle School	RI
Sacherski, Beth	Manchester School District	NH
Salisbury, Marilyn	Robert F. Kennedy School	RI
Sawyer, William	Merrimack School District	NH
Schwartz, Martha	William Windsor Elementary School	RI
Signor, Shannon	Manchester School District	NH
Simoese, Amy	Halliwell Memorial School	RI
Sinotte, Jenna	Tiogue	RI
Skinner, Kathleen	Bow School District	NH
Tapia, Mona	Porters Point School	VT
Thompson, Ellen	Essex Town S.D.	VT
Thompson, Mariann	Dothan Brook School	VT
Thomson, Tammy	Seabrook School District	NH
Wallace, Catherine	Knotty Oak Middle School	RI
Widdison, Michelle	Auburn School District	NH
Wright, Kathleen	Manchester Elem/Middle School	VT
Zambrello, Janis	Arlington Memorial HS	VT

**NECAP Alignment Study
Mathematics Panelists**

Name	School or Organization	State
Abele-Austin, Mary	Thatcher Brook Primary School	VT
Ainley, Dorothy	Old County Road School	RI
Alberino, Annemarie	Robert F. Kennedy School	RI
Amos, Carol	Twinfield Union School	VT
Annetts, Barbara	Stowe Elementary School	VT
Arnault, Cathy	Seabrook School District	NH
Bacon, Julie	Deerfield Valley Elementary School	VT
Bacon, Kelly	Washington Oak School	RI
Barrett-Morse, Holly	Reading Elementary School	VT
Barry, Madelaine	Concord School District	NH
Benz, Lin	Raymond School District	NH

**NECAP Alignment Study
Mathematics Panelists**

Name	School or Organization	State
Carnevale, Linda	Webster Elementary School	RI
Chase, Carol	Waterford School	VT
Clark, Leslie	Pawtucket School Department	RI
Comella, Michael	Springfield Middle School	RI
Cossa, John	Mt. Anthony Union Middle School	VT
Cruikshank, Lisa	Rochester Elementary School	VT
Cyr, Pam	Shelburne Community School	VT
Daniels, Diane	Lincoln-Woodstock School District	NH
Dantas, Nicole	Pawtucket School Department	RI
Deese, Susan	Rochester School District	NH
Dogon, Anne	Tower Street School	RI
Drolet, Kathleen	Nashua School District	NH
Dubord, Kerri	Aldrich Jr. High School	RI
Earle, Beth	Veterans School	RI
Emory, Paige	Stowe Middle School	VT
Fennelly, Kristen	Manchester School District	NH
Ferullo, Sally	Rochester School District	NH
Fowler, Kathy	Timberlane School District	NH
Fowler, Megan	Timberlane School District	NH
Frenette, Nancy	Braintree School	VT
Fuge, Laurie	Charlotte Woods School	RI
Gale, Amy	Caledonia North S.U.	VT
Gattinella, Donna	Veterans School	RI
Gauvin, Joyce	Kevin Coleman School	RI
Goodwin, Meridee	Gallagher Middle School	RI
Green, Kelley	Rockingham Central Elementary School	VT
Hall, Arlene	Robertson Elementary	RI
Halpin, Susan	Pawtucket School Department	RI
Harper, Jennifer	Cavendish Town Elementary School	VT
Hartung, Amanda	Bow School District	NH
Hayes, Rosemary	Sgt. Cornel Young Elementary	RI
Heath, Andrea	Portsmouth School District	NH
Hebert-Mayne, Karen	Manchester Elem/Middle School	VT
Hicks, Kimberly	Kickemuit Middle School	RI

**NECAP Alignment Study
Mathematics Panelists**

Name	School or Organization	State
Hulbert, Beth	Barre S.U.	VT
Irvin, Marsha	Merrimack Valley School District	NH
Jones, Cynthia	Laurel Hills Elementary School	RI
Keenaghan, Kathy	Administration	RI
Kekladk, Christine	Mt. Anthony Middle School	VT
Kelley, Patricia	Burrillville Middle School	RI
Kerins, Melissa	J.H. Gaudet Middle School	RI
Konowitz, Stephanie	Hinesburg Community School	VT
Kue, Yeu	Providence School Department	RI
Landrigan, Philomena	Manchester School District	NH
Latchaw, Peter	Portsmouth School District	NH
Longchamp, Julie	Williston Central School	VT
Marcoux, Kathi	Southwest Vermont S.U.	VT
Marnik, Stephen	Dr. E.A. Ricci Middle School	RI
McElroy, Cheryl Anne	ASF at Broad Street	RI
Mulvey, Dawn	Bartlett School District	NH
Murphy, Lynn	Waits River Valley School	VT
Nemlich, Keith	Flood Brook Union School	VT
Niles, Nancy	George J. West Elementary	RI
Page, Sharon	Exeter School District	NH
Paquette, Arnell	Beemen Elementary School	VT
Parker, Linda	Windsor State Street School	VT
Payne-Lewis, Julia	Academy School	VT
Pazmino, Aracelis	Laurel Hill Elementary School	RI
Perry, Kristin	Washington Oak School	RI
Pollack, Nancy	Hinesburg Community School	VT
Pollard, Claire	Providence School Department	RI
Polychronopoulos, Zoe	Exeter School District	NH
Pora, Patricia	Leo A. Savoie Elementary School	RI
Quimby, Beth	Barton Graded School	VT
Redman Jr, Travis	Rutland Town School	VT
Rhealt, Nicole	Merrimack School District	NH
Robertson, Stuart Paul	Pelham School District	NH
Rossiter, Gloria	Aldrich Jr. High School	RI

**NECAP Alignment Study
Mathematics Panelists**

Name	School or Organization	State
Scipione, Jan	North Hampton School District	NH
Seekell, Kevin	Knotty Oak Middle School	RI
Silver, Eva	George J. West Elementary	RI
Small, Charlotte	Exeter School District	NH
Spates, Jeanne	Derby Elementary School	VT
Stearns, Penny	Burlington School District	VT
Stenstream, Phyllis	Exeter School District	NH
Stouber, Donna	Kickemuitt Middle School	RI
Tarno, Elizabeth	Warren Elementary School	VT
Teto, Jr., Richard	Springfield Middle School	RI
Vandervelde, Mary	Blackrock School	RI
Watson, Elaine	Williamstown Elementary School	VT
Weiss, Eric	Lamoille Union Middle School	VT
Whitehead, Loretta	Lyndon Town School	VT
Wright, Ida	Benson Village School	VT
Zanella, Maria	Hope Highlands School	RI

Appendix H
New England Common Assessment Program
Technical Advisory Committee Members

NECAP Technical Advisory Committee Members		
Name	Organization	State(s)
Sylvia Blanda	Westerly School Department	RI
Dale Carlson	NAEO-Westat	VT
Lizanne DeStefano	University of Illinois at Urbana-Champaign	VT
Jonathan Dings	Boulder (CO) School District	VT
William Erpenbach	WJE Consulting, Lt.	RI
Richard Hill	NCIEA	NH, RI
Bill Mathis	Rutland Northeast Supervisory Union	VT
Bob McNamara	Washington West Supervisory Union	VT
Jon Mickelson	Providence Public Schools	RI
Charles Pugh	Moultonborough School District	NH
Rachel Quenemoen	NCEO	NH
Stanley Rabinowitz	WestEd	NH
Christine Rath	Concord School District	NH
Joseph Ryan	Independent Consultant	RI
Steve Sireci	University of Massachusetts Amherst	NH
Bob Stanton	Lamoille South Supervisory Union	VT
Laress Wise	HumRRO	RI
Phoebe Winter	Independent Consultant	VT
Carina Wong	Independent Consultant	NH