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# The Alignment of easyCBM® Math Measures to Curriculum Standards

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Abstract

The purpose of this study was to examine the alignment of the easyCBM® mathematics benchmark and progress monitoring measures to the National Council of Teachers of Mathematics *Curriculum Focal Points* (NCTM, 2006). Based on Webb's alignment model (1997, 2002), we collected expert judgments on individual math items across a sampling of forms for grades K, 1, and 3-8. We found generally strong alignment across grade levels, focal points, and test forms between the easyCBM® mathematics items and the content standards.

## Introduction

The purpose of this report is to present the results from a study of the alignment between the easyCBM®
(Alonzo, Tindal, Ulmer, & Glasgow, 2006) benchmark and progress monitoring measures in math and the National
Council of Teachers of Mathematics (NCTM) *Curriculum Focal Points for Kindergarten through Grade 8
Mathematics*, or "*Focal Points*" (NCTM, 2006). See Table 1 for the NCTM focal points and standard objectives by
grade level. The study was conducted from November 2009 to January 2010.

### NCTM *Focal Points*

The NCTM *Focal Points* were developed as, "a starting point in a dialogue on what is important at
particular levels of instruction and as an initial step toward a more coherent, focused curriculum in this country"
(NCTM, 2006). The document attempts to outline three areas of greatest importance, or focal points, on which to
focus mathematics instruction within each grade level. Each focal point has a description, which includes a variety
of interconnected skills. The NCTM *Focal Points* have been widely adopted by states as the basis of their state
content standards in mathematics.

### easyCBM®

The easyCBM® math measures consist of various test forms, each form with 16 items. Three benchmark
forms (Fall, Winter, and Spring) target each focal point in each grade level. Additionally, 10 progress monitoring
forms target each focal point in each grade level. Therefore, within a single grade, 13 forms are available per focal
point, or 39 forms total. A complete description of the development of the mathematics measures is presented in
several technical reports (Martinez, Ketterlin-Geller, & Tindal, 2007; Jung, Liu, Ketterlin-Geller, & Tindal, 2008;
Liu, Ketterlin-Geller, Yovanoff, and Tindal, 2008; Alonzo, Lai, & Tindal, 2009a, 2009b, 2009c; Alonzo & Tindal,
2009a, 2009b; Lai, Alonzo, & Tindal, 2009a, 2009b, 2009c, 2009d).

## Methods

In this study, we collected expert judgments on individual items across a sampling of forms. The forms in
the study included all of the benchmark forms for grades K, 1, and 3-8. Because the current grade 2 items on
easyCBM® were not targeted at the NCTM *Focal Points* for grade 2, they have not been included in this study.

Raters judged the alignment between each item and the target focal point for grades K and 1 using the descriptions of the NCTM *Focal Points* for grades 3 to 8. Also for grades 3 to 8, raters made a judgment on the depth of knowledge (Webb, 2002) of each objective and each individual item.

**Setting and Subjects**

We recruited and trained 13 teachers to rate items on alignment with NCTM *Focal Points* and on the level of depth of knowledge. The training was conducted in three separate groups, via an online conferencing service. Immediately after each training, we sent the materials to the raters to conduct their ratings individually, encouraging them not to discuss their decisions with other raters. The raters took between two to four weeks to complete the ratings on their own time. Raters then sent their completed rating forms back to us.

The 13 raters in the study were all certified teachers, with one employed as a district curriculum specialist, at the time of the study. Participants rated items primarily from one of three grade bands: K-1, 3-5, or 6-8. Each participant was teaching in one of the grades in her or his assigned grade band at the time of the study, except for the curriculum specialist who was working on grade K-8 curriculum. All participants had experience using easyCBM® math measures before the study.

**Measurement/Instrument Development**

Included in the study were all of the benchmark forms in grades K, 1, and 3-8. In addition to the benchmark forms, a portion of the progress monitoring forms for each focal point in each grade was included, between 5 out of 10 and 9 out of 10. At least two raters judged each form.

**Design and Operational Procedures**

All participants attended one training session of 1.5 to 2 hours, during which we presented them with the rationale for doing an alignment study and explained the ratings and the scales with which they would make their judgments. The training also included a series of practice ratings on each of the three rating types: depth of knowledge of focal point objectives, depth of knowledge of items, and alignment between items and focal point objectives. During the practice rating sessions, we facilitated discussion among the participants as to their justifications for their ratings, and we clarified the specifics of how to do their ratings for this study. We did not make comments to influence the raters' judgments, but allowed the raters to discuss their judgments with each other. For their work on the ratings for the study, we encouraged the participants not to discuss their judgments or collaborate with one another.

Raters judged the alignment of each item in grades K and 1 with the target focal point, and the alignment of each item in grades 3 to 8 with the target objective within each focal point. The 4-point scale for alignment rating was described to the raters as follows: 0 = No link at all, 1 = Vague link, very indirect, 2 = Some link, but not direct, 3 = Clear, direct link.

For depth of knowledge ratings of items and objectives in grades 3 to 8, raters assigned a depth of knowledge level of 1, 2 or 3, using the following definitions of each level:

1. Recognition and Reproduction - Recognition or reproduction of fact, information, or procedure.

2. Skill and Concept - Using information or conceptual knowledge.

3. Strategic Thinking - Reasoning, developing a plan, some complexity, more than one possible answer.

Each rater received an electronic copy of the training presentation, a reference sheet with the rating scales and general considerations for their work, a rating form on which to enter their ratings, and all of the test forms to rate (see Appendix for examples).

**Data Preparation and Analysis**

**Item alignment to standards.** Descriptive statistics describe the alignment of individual items to the specific target objective, as judged by the teacher raters. Analyses were conducted by grade, by easyCBM mathematics test form, and also by grade separately for benchmark and progress monitoring assessments. The number of teacher raters was identified for each easyCBM mathematics form. Then, the frequency and percentage of teacher's ratings (zero to three) were calculated across the test forms. Thus, a count of ratings across all raters was calculated for each form, as well as the total number of ratings that were "linked to standards" (i.e., a sum of the total number of ratings of two and three).

Next, the alignment to standard ratings (i.e., zero to three) of each teacher rater was collapsed into dichotomous variables such that ratings of zero or one (i.e., no or vague link) were recoded to identify items that were not linked to the objectives, and ratings of two or three (i.e., some or clear link) were recoded to identify items that were linked to the objectives. Then, the frequency and percentage were calculated for the number of items within a form that were rated as linked to standards (i.e., two or three) across all raters. Finally, the total number of items linked to standards across all raters was calculated across benchmark measures and progress monitoring measures.

**Item depth of knowledge ratings.** Descriptive statistics describe the depth of knowledge ratings of individual items, as judged by the teacher raters. Analyses were conducted by grade, by easyCBM mathematics test form, and also by grade separately for benchmark and progress monitoring assessments. The number of teacher raters was identified for each easyCBM mathematics form. Then, the frequency and percentage of teacher's ratings (one to three) were calculated across the test forms. Thus, a count of ratings across all raters was calculated for each

form. Next, the frequency and percentage were calculated for the number of items within a form that were similarly rated across all raters. That is, the number of consensus depth of knowledge (DOK) item ratings (i.e., one, two, or three) within a form across raters.

**Standards depth of knowledge ratings.** Raters were further asked to judge the DOK required of the standards themselves, independent of the items. Table 44 summarizes the standards DOK ratings by grade, while tables 45 – 62 provide the participants ratings of each standard, organized by grade level focal points. Table 44 provides the number and percentage of 1, 2, and 3 ratings within each grade in relation to the total number of ratings obtained across the standards within the given grade. The results display the distribution of difficulty of the standards within each grade. Because the number of raters and standards varied by grade, the percentages are more interpretable than the raw numbers. Of the 87 standards in grades 3-8, only 13 had a consensus rating.

**Individual rater.** A second set of descriptive statistics describes the alignment of individual items to specific target objective as judged by individual raters (Rater F, G, H, etc.). However, only Grade 3, 5, and 8 individual raters were analyzed. These analyses were conducted separately by grade and by easyCBM mathematics test form (benchmark and progress monitoring assessments). The percentage of individual ratings (zero to three) was computed across the test forms.

Similar sets of descriptive statistics describe the depth of knowledge of individual items to specific target objective as judged by individual raters (Rater F, G, H., etc.). However, only Grade 3, 5, and 8 individual raters were analyzed. These analyses were conducted separately by grade and by easyCBM mathematics test form (benchmark and progress monitoring assessments). The percentage of individual ratings (one to three) was computed across the test forms.

**Reliability of raters' ratings.** Intraclass correlation coefficients (ICC) were computed to measure the dependability of the ratings on the DOK levels of the NCTM focal point standard objectives, the DOK levels of each item, and the alignment between each item and the NCTM focal point standard objectives. A two-level hierarchical cross-classified model (HLM; Raudenbush & Bryk, 2002) was used to compute the ICC because the ratings were nested in items crossing raters.

In this cross-classified model, the level 1 or the "within-cell" model can be represented by:

$$y_{ijk} = \pi_{0jk} + e_{ijk}, \qquad e_{ijk} \sim N(0, \sigma^2),$$

where $y_{ijk}$ represents the rating $i$ for item $j$ scored by rater $k$. $\pi_{0jk}$ indicates the mean rating of items in cell $jk$ (i.e. ratings for item j by rater $k$). $e_{ijk}$ is the random effect for each rating, which is the deviation of the $ijk$ ratings from the cell mean.

At level 2 or the "between-cell" model,

$$\pi_{0jk} = \theta_0 + b_{00j} + c_{00k}, \qquad\qquad b_{00j} \sim N(0, \tau_{b00}) \text{ and } c_{00k} \sim N(0, \tau_{c00}).$$

$\theta_0$ indicates the grand mean rating of all items across all raters. $b_{00j}$ is the random main effect of item $j$, the

contribution of item $j$ averaged over all raters. $c_{00k}$ represents the random main effect of rater $k$, the contribution of

rater $k$ averaged over all items.

We then estimated three variance components: variance between raters ( $\tau_{b00}$), variance between items

( $\tau_{c00}$) and the variance at level 1 ( $\sigma^2$), the variance between cells not accounted for by the raters and items. By

partitioning of these components, we computed three kinds of intraclass (or intraunit) correlation coefficients:

(1) the correlation between residuals for ratings that are attributable to differences between items (or the percent of

total item variance ), $\rho_b = \dfrac{\tau_{b00}}{\tau_{b00} + \tau_{c00} + \sigma^2}$ ;

(2) the correlation between residuals for ratings that are attributable to differences between raters (or the percent of

total interrater variance ), $\rho_c = \dfrac{\tau_{c00}}{\tau_{b00} + \tau_{c00} + \sigma^2}$ ; and

(3) the correlation between residuals for ratings that are attributable to unique item-rater combinations (or the

percent of variance between cells, or error variance), $\rho_{bcd} = \dfrac{\sigma^2}{\tau_{b00} + \tau_{c00} + \sigma^2}$ . In this study, we are ultimately only

interested in how raters do not vary (i.e. how reliable are their ratings). Therefore, we computed the final estimates

of the reliability of the raters' ratings by deducting $\rho_c$ (i.e. the rater effects) from one.

**Results**

**Alignment to standards.** Across grades, focal points, and test forms, the teacher ratings of easyCBM

mathematics items aligned to national content standards were generally strong.

In Kindergarten, the percent of items within benchmark forms that were linked to standards across all raters

was 88% for Numbers/Operations, 98% for Geometry, and 67% for Measurement (Tables 2-4). The Kindergarten

Measurement focal point was the least well linked to standards. In Kindergarten, the percent of items within

progress monitoring forms that were linked to standards across all raters ranged from 25% to 100%. Again, the

Kindergarten Measurement focal point was the least well linked to standards (65%); in the Numbers & Operations and Geometry focal points, 92% and 98% of items were linked to standards.

In grade one, the percent of items within benchmark forms that were linked to standards across all raters was 94% for Numbers & Operations, 83% for Geometry, and 94% for Numbers/Operations/Algebra (Tables 5-7). The percent of items within progress monitoring forms that were linked to standards across all raters 95% for Numbers & Operations, 91% for Geometry, and 84% for Numbers/Operations/Algebra.

In grade three, the percent of items within benchmark forms that were linked to standards across all raters was 83% for Numbers & Operations, 79% for Geometry, and 79% for Numbers/Operations/Algebra (Tables 8-10). The percent of items within progress monitoring forms that were linked to standards across all raters was 96% for Numbers & Operations, 72% for Geometry, and 90% for Numbers/Operations/Algebra.

In grade four, the percent of items within benchmark forms that were linked to standards across all raters was 92% for Numbers & Operations, 88% for Measurement, and 90% for Numbers/Operations/Algebra (Tables 11-13). The percent of items within progress monitoring forms that were linked to standards across all raters was 92% for Numbers & Operations, 97% for Geometry, and 96% for Numbers/Operations/Algebra.

In grade five, the percent of items within benchmark forms that were linked to standards across all raters was 77% for Geometry/Measurement/Algebra, 92% for Numbers & Operations, and 90% for Numbers/Operations/Algebra (Tables 14-16). The percent of items within progress monitoring forms that were linked to standards across all raters was 81% for Geometry/Measurement/Algebra, 99% for Numbers & Operations, and 79% for Numbers/Operations/Algebra.

In grade six, the percent of items within benchmark forms that were linked to standards across all raters was 88% for Numbers & Operations, 96% for Algebra, and 100% for Numbers/Operations/Ratios (Tables 17-19). The percent of items within progress monitoring forms that were linked to standards across all raters was 88% for Numbers & Operations, 74% for Algebra, and 94% for Numbers/Operations/Ratios.

In grade seven, the percent of items within benchmark forms that were linked to standards across all raters was 75% for Numbers/Operations/Algebra/Geometry, 92% for Measurement/Geometry/Algebra, and 88% for Numbers/Operations/Algebra (Tables 20-22). The percent of items within progress monitoring forms that were linked to standards across all raters was 80% for Numbers/Operations/Algebra/Geometry, 88% for Measurement/Geometry/Algebra, and 88% for Numbers/Operations/Algebra.

In grade eight, the teacher ratings of easyCBM mathematics items aligned to national content standards were weaker than other grades. The percent of items within benchmark forms that were linked to standards across all raters was 65% for Algebra, 42% for Geometry/Measurement, and 77% for Data Analysis/Numbers & Operations/Algebra (Tables 23-25). The percent of items within progress monitoring forms that were linked to standards across all raters was 66% for Algebra, 58% for Geometry/Measurement, and 73% for Data Analysis/Numbers & Operations/Algebra.

**Depth of knowledge ratings.** Across grades and focal points, the teacher depth of knowledge ratings of easyCBM mathematics items were generally and consistently scores of one (Recognition and Reproduction) and two (Skill and Concept) (Tables 26-43). Within the forms, the consensus across raters of DOK item ratings ranged from 0% to 100%; that is, the exact same DOK rating across raters for items within a form. More often, the consensus across raters of DOK item ratings ranged from 13% to 50%. Consensus was obtained on DOK for very few items for the most complex level (Strategic Thinking). In fact, overall, inter-rater DOK ratings reflected little agreement. This indicates that DOK is rather subjective, so it is more difficult to draw substantive conclusions from these findings.

*Selected individual raters.'* In Grade 3, all raters mostly rated approximately 60% to 90% of the Grade 3 benchmark mathematics items having direct link to the standards to the focal points of Number and Operations, Geometry, and Algebra for all three forms (Fall, Winter, and Spring). Rater T rated most items (about 90%) having a strong link on all forms for all focal points. Raters G rated one focal point, Number and Operations and evaluated a majority of items (about 85%) having strong link on all three forms. Rater H rated more than 80% of items of two focal points, Geometry and Algebra on all three forms and reviewed them as having direct link to the standards. However, Rater E was stringent, especially with the Number and operations and Geometry items, rating 50 to 70% of them as being strongly linked to the standards. In general, with the exception of two items, none of the items were rated as having no link to the standards.

Three to five raters completed standard depth of knowledge for grade 3 benchmark measures. Most Number and Operation items (above 85%) were rated as "Recognition and reproduction (1)" or "Skill and concept (2)." On the other hand, most items of Geometry and Algebra were rated as "Skill and concept (2)" or "Strategic thinking (3)." This indicates that the standards of Geometry and Algebra are generally more difficult than the items of Number and Operation. Overall, none of the items on the three forms were rated as "Extended thinking (4)." Rater G had a few missing-rating Geometry items, which is indicated in the table 64. Item "depth of knowledge" for

grade 3 benchmark measures was rated by three raters. Most items were rated as "Recognition and reproduction (1)" or "Skill and concept (2)," ranging from 75 to 100%. More geometry items (ranging 6 to 25%) on all three forms were rated "Strategic thinking (3)."

Six forms (form 1, 3, 4, 5, 7, and 9) were reviewed for Grade 3 focal points of Number and Operation as well as Geometry in this study. Most items (approximately 75%) of these focal points on the six forms were rated as having strong link to the standards. However, Rater G did not have any items as being directly linked to the standard for the focal point Number and Operation on form 1. Also, several items were rated as not being linked to the standard for Geometry focal point on form 4. For the Algebra focal point, five forms (form 1, 3, 5, 7, and 9) were rated. Approximately 66% items were rated as having direct linked to the standard across all five forms, however Rater E did not have any item linking strongly to the standard for the form 9. Overall, a vast majority of the items of all three focal points across all forms rated as not having direct link to the standards with exception of a few Geometry items on form 4. In addition, there was more consistent rating for the focal points of Number and Operations as well as Algebra than for Geometry focal point across the raters. Lastly, there was one out of range value in the data, and was considered as a missing value.

About 86% of standards of the focal point of Number and Operation across all forms were rated as "Recognition and reproduction (1)" or "Skill and concept (2)" for the Standard depth of knowledge. Rater T was more flexible than other raters, rating about 35% or more standards as "Strategic thinking (3)" for five forms. Most Geometry standards were rated as "Skill and concept (2)" or "Strategic thinking (3)" across all forms. There are no standards rated as "Recognition and reproduction (1)" or "Extended thinking (4)." In general, Rater H had a few missing ratings of Geometry standards. Most Algebra standards were rated as "Recognition (1)" or "Skill and concept (2)" by Rater E and G. Rater T, however, Rated most of items as "Strategic thinking (3)."

More items of Number and Operation as well as Algebra focal points were rated as "Recognition and reproduction (1)" or "Skill and concept (2)" than Geometry items for the item depth of knowledge of Grade 3 progress monitoring forms. There were more Geometry items as "Strategic thinking (3)" across all forms, ranging from 6.3 to 81%. In contrast, Rater G rated most Algebra (from 94 to 100%) items as "Recognition and reproduction (1)." Overall, there was more consistent rating across raters for the focal points of Number and Algebra as well as Algebra than for Geometry.

In Grade 5 Benchmark Measures (Fall, Winter, and Spring) ratings on the strength of link between mathematics items and standards, all raters consistently rated 70% to 80% of the Grade 5 benchmark measures mathematics items for focal points Numbers and Operations and Geometry Measurement and Algebra on all three forms as having direct link to the standards. Rater T rated 80% to 100% of the Numbers Operations and Algebra items as being directly linked to the standard. Raters F and G however rated the majority of the items on Fall benchmark measure as having strong link (over 90%), fewer items on the Winter measure as having strong link (less than 40%) and more items as being moderately linked (over 60%), and half of the Spring measure as being directly linked to the standard. Rater H consistently rated about 60% to 70% of the items on Fall, Winter, and Spring measures as having moderate link to the standard. Overall, none of the items on all three benchmark forms were rated as having no link to the standards and very few items as vaguely linked (6% to 10%) (see Table 72).

Ratings on the standards depth of knowledge reflected that on all three Numbers and Operations focal point benchmark measures, all raters rated over 80% of the items as "Recognition and Reproduction" or "1" and 10% to 30% as "Skill and Concept" or "2." No items were rated as "Strategic Thinking" or "3" and "Extended Thinking" or "4." Raters F, G, and C rated 50% to 80% of the items on the Geometry Measurement and Algebra measures as "1," less as "2" (10% to 30%), and about 10% as "3." Raters H and B on the other hand rated more of the same items as "2," about 10% as "1" and 10% to 20% as "3." Finally, Rater T did not rate any items as a "1," but rated most of the items as "2" and fewer as "3." On the Numbers Operations and Algebra measures, all raters rated more items as "2" (50% to 80%) and less as "1" (10% to 40%). Rater H rated all items as "3" (see Table 73).

On the item depth of knowledge ratings of the Numbers and Operations benchmark measures, Rater G consistently rated all of the items as "1." Raters F and T rated about equal amount of items as "1" and "2" on the Winter and Spring measures. However, their ratings differ for the Fall measure – about 30% as "1" and about 60% as "2" for Rater F and about 60% as "1" and 30% as "2" for Rater T. On the Geometry Measurement and Algebra measures, Rater F rated over 80% as "2" and about 10% as "3" on the Fall and Spring measures and all of the items as "1" on the Winter measure. Raters G and T rated most of the items (about 60% to 80%) as "2" and some (10% to 30%) as "3." Rater H only rated the Winter and Spring measures, with about 40% as "1" and half of all the items as "2" on the Winter measure and about 50% as "1," 30% as "2," and very few as "3" on the Spring measure. Finally, Raters F and T both rated more of the items (60% to 90%) on all three benchmark measures with Numbers Operations and Algebra focal point as "1" and about 10% to 30% as "2." Both did not rate any of these items as "3."

Rater H on the other hand rated about 60% to 80% items as "2," about 10% to 20% as "1" and few as "3" (see Table 74).

On Grade 5 Progress Monitoring Measures (Forms 1, 3, 5, 7, and 9), all raters consistently rated all items as having a strong link to the standards on the Numbers and Operations measures. Few items were rated as having moderate link and very few items were rated as being moderately linked to the standards by Rater F. None of the items were rated as having no link to the standards. On the Geometry Measurement and Algebra forms, more items were rated as having strong link to the standards (60% to 80%), some items were rated as having moderate link (10% to 30%), and fewer items were rated as having weak link to the standards (10% to 20%). Here, all raters rated the items across the forms differently. In general, raters F, T, and C gave more lenient ratings compared to Raters H and B. On the Numbers Operations and Algebra forms, Rater F in general rated about 60% to 80% of the items as directly linked and 10% to 30% as moderately linked to the standards. Raters G and T rated the majority of the items as having directly linked to the standards (90% to 100%). Rater H on the other hand rated more items as being moderately linked (60% to 80%), about 10% as having strong link, and less than 10% as having weak link to the standards. Overall, none of the items were rated as having no link to the standards (see Table 75a-c).

On all five Numbers and Operations focal point progress monitoring forms, raters F and G rated 60% to 80% of the items standards depth of knowledge as "Recognition and Reproduction" or "1" and 10% to 30% as "Skill and Concept" or "2." Both raters did not rate any of these items rated as "Strategic Thinking" or "3" and "Extended Thinking" or "4." Rater T on the other hand rated 70% to 80% of the items as "2," 10% to 20% of the items as "3," and no items as "4." Across the Geometry Measurement and Algebra forms, raters F, G, and C rated 50% to 90% items as "1," 10% to 30% as "2," and 10% to 30% as "3." Raters H, T, and B on the other hand rated 50% to 90% items as "2," 10% to 20% as "1," 10% to 20% as "3," and no items as "4." On the Numbers Operations and Algebra progress monitoring measures, raters F, G, and T consistently rated more items (over 50%) as "2," slightly less (30% to 40%) items as "1" and no items as "3" or "4." On form 3, raters F and H rated half of the items as "1" and the other half as "2." Rater H consistently rated all the items across these forms as "3."

On the item depth of knowledge ratings on the Numbers and Operations progress monitoring forms, Rater F in general rated 50% to 80% of the items as "2," about 10% to 40% as "1," and no items as "3" or "4" on forms 1, 3, 7, and 9. On form 5, Rater F rated half of the items as "1" and about 40% as "2." Rater G consistently rated all of the items as "1." And Rater T rated most of the items on Form 1 as "1" and some as "2." On the Geometry

Measurement and Algebra forms, rater F consistently rated 60% to 80% of the items as "1," 10% to 30% as "2," and no items as "3" or "4." Rater H consistently rated 40% to 50% of the same items as "2," 30% to 50% as "1," 10% to 20% of the items as "3," and no items as "4." Rater T rated only form 1, with more items as "1" and some as "2." Raters B and C only rated form 4. Rater B rated more items as "2," some as "1," and few as "3" where as rater C rated the majority of the items as "1" and the rest as "2." On the Numbers Operations and Algebra progress monitoring measures, Raters G and T rated only form 1. Rater G rated all the items as "1" where as rater T rated half of the items as "1," about 30% as "2," and about 10% as "3." On forms 7 and 8, rater H rated about 80% to 90% of the items as "2" and some items as "3." Rater F rated all of five forms and rated the majority of the items as "1" and some as "2." In general, very few items were rated as "3" and no items were rated as "4" (see Table 76a-c).

In Grade 8, less inter-rater consistency was found for the focal points of Algebra and Geometry measurement compared to Data analysis. In average, 61% of items of all focal points on all three benchmark measures (Fall, Winter, and Spring) were rated as having direct link to the standards; however there is quite a bit of variation between raters, ranging from 25 to 100%. Moreover, Rater J rated a number of items as having no link to the standards across all three focal points on all three measures. Considerably more items were rated as having less direct link to the standards compared benchmark measures of other grades.

Most standards of Algebra and Geometry measurement were rated as "Recognition and reproduction (1)" or "Skill and concept (2)" while most standards of Data analysis were rated as "Skill and concept (2)" or "Strategic thinking (3)." Rater K rated a few standards as "Strategic thinking (3)" for all focal points across all forms. For Data analysis focal point, Rater J and L reached the complete consensus, rating all standards as "Skill and concept (2)" while Rater K rated most standards rated as "Strategic thinking (3)." None of standards were rated as "Extended thinking (4)" for all three focal points across all forms.

Two raters judged item depth of knowledge for all three focal points across all forms. Rater J rated all Algebra and Geometry measurement items as "Recognition and reproduction (1)" for all three forms. Rater L and K rated most items (64 to 100%) for "Recognition and reproduction (1)" or "Skill and concept (2)" for all focal points across all forms. There was more variation among raters for grade 8 compared to other grades.

Five Grade 8 progress monitoring forms were reviewed in this study (form 1, 3, 5, 7, and 9). All raters rated fewer items as having strong link to the standards and rated more items as having no link to the standards for grade 8 across all focal points. Rater L did not rate any items having direct link to the standards for focal points of Geometry

measurement. There was more inter-rater consistency for the Data analysis items than for Algebra and Geometry measurement items.

Most standards of grade 8 progress monitoring measures were rated as "Recognition and reproduction (1)" or "Skill and concept (2)" across all focal points on all five forms for Standard depth of knowledge. Rater K had several standards, ranging from 12.5 to 37.5% of items rated as "Strategic thinking (3)" across all focal points and forms. Rater J and L reached the complete consensus for the focal point of Data analysis across all forms, rating all standards as "Skill and concept (2)" while Rater K rated most standards as "Strategic thinking (3)."

Most items (in average of 97%) of all focal points were rated as "Recognition and reproduction (1)" or "Skill and concept (2)" across all five forms for Item depth of knowledge. Rater K had several items (ranging from 12.5 to 31.3%) for focal points of Algebra and Data analysis as "Strategic thinking (3)." For Geometry measurement items, Rater J rated all items of this focal point as "Recognition and reproduction (1)." Especially all Geometry measurement items in form 9 was rated as "Recognition and reproduction (1)" by both Rater J and L. The rating pattern between Standards and Items depth of knowledge was similar for grade 8.

**Reliability of raters' ratings.** The reliability of the raters' rating on the alignment of items to the standards was generally high. ICCs for all grades ranged between .80 and 1.0, with the exception of grade 5 with an ICC of .78 (see Table 81). The reliability of the DOK levels of the item was moderate to moderately high, with ICCs ranging from .70s to .80s (see Table 82). Finally, ICCs for the DOK levels ratings of standards ranged from .50 to .80 (see Table 83). Teachers were not requested to rate the DOK levels of items and standards.

<center>**Discussion**</center>

Across grades, focal points, and test forms, the teacher ratings of easyCBM mathematics items aligned to national content standards were generally strong. Excluding a single focal point in grade 8, percent of items aligned to the content standards ranged from 65% to 100%. Across grades and focal points, the teacher depth of knowledge (DOK) ratings of easyCBM mathematics items were generally and consistently scores of 1 (Recognition and Reproduction) and 2 (Skill and Concept). The reliability of the raters' standard alignment ratings were high, with ICCs ranging between .80 and 1.0, and the raters' item and standard DOK ratings were moderately high, ranging between .50 to .80.

Webb's alignment model (1997, 2002) was designed to evaluate large-scale, summative tests. Here we used Webb's methodology to evaluate the alignment of a formative measure, which presents many challenging issues.

First, like many formative assessment systems, easyCBM® has an expansive item bank of over 11,000 items. The system has assessments in both reading and math for students in kindergarten through eighth grade, which includes up to 20 alternate, parallel forms of assessments that contain 16 to 20 items each. The sheer volume of this item bank makes the systematic review of test items a challenge of logistics and cost. Also, in the Webb model (2002), panel consensus is intentionally included into the reviewing process so that the group of raters can discuss the rating criteria and consequently, and have a common calibration of understanding of the DOK level rating process (Webb, 2002). Given the number of items, our methods allowed for the panel to make ratings independent of peers, which worked logistically but may not have been ideal.

This study examined the alignment between the easyCBM® mathematics benchmark and progress monitoring measures and the adapted NCTM curriculum focal points, marking the first attempt to align a CBM system with modified state curriculum standards. The findings here suggest that, despite some of the inherent challenges, the Webb model can provide meaningful information when applied to formative assessments. The strong alignment results from this study serve as evidence for the content validity of the easyCBM® math assessment system.

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Table 1

*National Council of Teachers of Mathematics (NCTM) Curriculum Focal Points and Objectives for Kindergarten, Grade 1, and Grades 3 through Grade 8 Mathematics*

|  | **Kindergarten** | **Kindergarten** | **Kindergarten** |
|---|---|---|---|
| Focal Points | Number and Operations: Representing, comparing, and ordering whole numbers and joining and separating sets. | Geometry: Describing shapes and space. | Measurement: Ordering objects by measurable attributes. |
| Objectives | n/a | n/a | n/a |
|  | **Grade 1** | **Grade 1** | **Grade 1** |
| Focal Points | Number and Operations: Developing an understanding of whole number relationships, including grouping in tens and ones. | Geometry: Composing and decomposing geometric shapes. | Number and Operations and Algebra: Developing understandings of addition and strategies for basic addition facts and related subtraction facts. |
| Objectives | n/a | n/a | n/a |

| | **Grade 3** | **Grade 3** | **Grade 3** |
|---|---|---|---|
| Focal Points | Number and Operations: Developing an understanding of fractions and fraction equivalence. | Geometry: Describing and analyzing properties of two-dimensional shapes. | Number and Operations and Algebra: Developing understandings of multiplication and division and strategies for basic multiplication facts and related division facts. |
| Objectives | Understand that the size of a fractional part is relative to the size of the whole. | Build, draw, and analyze two-dimensional shapes to understand attributes and properties of two-dimensional space. | Understand representations of multiplication and division of whole numbers (e.g., equal-sized groups, arrays, area models, and equal "jumps" on number lines for multiplication, as well as successive subtraction, partitioning, and sharing for division). |
| Objectives | Use fractions to represent numbers that are equal to, less than, or greater than one. | Investigate, describe, and reason about decomposing, combining, and transforming polygons to make other polygons. | Use properties of addition and multiplication (e.g., commutativity, associativity, and the distributive property) to multiply whole numbers and apply increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving basic facts. |

| | | | |
|---|---|---|---|
| Objectives | Develop an understanding of the meanings and uses of fractions to represent parts of a whole, parts of a set, or points or distances on a number line. | Describe, analyze, compare, and classify two-dimensional shapes by their sides and angles and connect these attributes to definitions of shapes. | Relate multiplication and division as inverse operations (e.g., the relationship between multiples and factors). |
| Objectives | Understand and use models, including the number line, to identify equivalent fractions. | Use attributes and properties of two-dimensional shapes to solve problems including applications involving congruence and symmetry. | |
| Objectives | Solve problems that involve comparing and ordering fractions by using models, benchmark fractions, or common numerators or denominators. | | |

|  | **Grade 4** | **Grade 4** | **Grade 4** |
|---|---|---|---|
| Focal Points | Number and Operations: Developing an understanding of decimals, including the connections between fractions and decimals. | Measurement: Developing an understanding of area and determining the areas of two-dimensional shapes. | Number and Operations and Algebra: Developing quick recall of multiplication facts and related division facts and fluency with whole number multiplication. |
| Objectives | Understand decimal notation as an extension of the base-ten system of writing whole numbers that is useful for representing more numbers, including numbers between 0 and 1, between 1 and 2,and so on. | Understand a square that is one unit on a side is the standard unit for measuring area. | Apply understanding of models for multiplication (i.e., equal-sized groups, arrays, area models, equal intervals on the number line), place value, and properties of operations (in particular, the distributive property). |
| Objectives | (Make change for amounts up to $10.00.) | Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle. | Develop fluency with efficient procedures, including the standard algorithm, for multiplying whole numbers, understand why the procedures work (on the basis of place value and properties of operations), and use them to solve problems. |
| Objectives | Connect equivalent fractions and decimals by comparing models to symbols and locating equivalent symbols on the number line. | Recognize area as an attribute of two-dimensional regions. | Develop, discuss, and use accurate, efficient, and generalizable methods to multiply multi-digit whole numbers. |

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|---|---|---|---|
| Objectives | Identify equivalent decimals, compare and order decimals, and estimate decimal or fractional amounts in problem solving. | [Make frequency tables, bar graphs, picture graphs, and line plots.] | Select appropriate methods and apply them accurately to estimate products or calculate them mentally, depending on the context and numbers involved. |
| Objectives | | Select appropriate units, strategies, and tools for solving problems that involve estimating or measuring area. | Students use understandings of multiplication to develop quick recall of the basic multiplication facts and related division facts. |
| Objectives | | Quantify area by finding the total number of same-sized units of area that cover a shape without gaps or overlaps. | |

|  | Grade 5 | Grade 5 | Grade 5 |
|---|---|---|---|
| Focal Points | Number and Operations: Developing an understanding of and fluency with addition andsubtraction of fractions and decimals. | Geometry and Measurement and Algebra: Describing three-dimensional shapes and analyzing their properties, including volume and surface area. | Number and Operations and Algebra: Developing an understanding of and fluency with division of whole numbers. |
| Objectives | Add and subtract fractions and decimals to solve problems, including problems involving measurement. | Decompose three-dimensional shapes and find surface areas and volumes of prisms. | Apply understanding of models for division, place value, properties, and the relationship of division to multiplication. |
| Objectives | Apply understandings of decimal models, place value, and properties to add and subtract decimals. | Find and justify relationships among the formulas for the areas of different polygons when determining surface area. | Consider the context in which a problem is situated to select the most useful form of the quotient for the solution, and they interpret it appropriately. |
| Objectives | Apply understandings of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. | Measure necessary attributes of shapes to use area formulas to solve problems. | Develop fluency with efficient procedures, including the standard algorithm, for dividing whole numbers, understand why the procedures work (on the basis of place value and properties of operations) and use them to solve problems. |
| Objectives | Develop fluency with standard procedures for adding and subtracting fractions and decimals. | Quantify volume by finding the total number of same-sized units of volume that fill a three-dimensional shape without gaps or overlaps. | Develop, discuss, and use accurate, efficient, and generalizable methods to find quotients involving multi-digit dividends. |

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|---|---|---|---|
| Objectives | Estimate fractions and decimals sums and differences. | Recognize volume as an attribute of three-dimensional space. | Select appropriate methods and apply them accurately to estimate quotients or calculate them mentally, depending on the context and numbers involved. |
| Objectives | | Relate two-dimensional shapes to three-dimensional shapes and analyze properties of polyhedral solids, describing them by the number of edges, faces, vertices, as well as the types of faces. | |
| Objectives | | Select appropriate units, strategies, and tools for solving problems that involve estimating or measuring volume. | |
| Objectives | | Understand a cube that is one unit on an edge is the standard unit for measuring volume. | |

|  | **Grade 6** | **Grade 6** | **Grade 6** |
|---|---|---|---|
| Focal Points | Number and Operations: Developing an understanding of and fluency with multiplicaton and division of fractions and decimals. | Algebra: Writing, interpreting, and using mathematical expressions and equations. | Number and Operations and Rate and Ratio: Connecting ratio and rate to multiplication and division. |
| Objectives | (Develop and use strategies to estimate the result of decimal and fraction computations & judge the reasonableness of results.) | (Use order of operations to simplify expressions, including exponents and grouping symbols.) | (Determine simple probabilities, both experimental and theoretical.) |
| Objectives | (Order, model, and compare fraction and decimals.) | Construct and analyze tables (e.g., to show quantities that are in equivalent ratios), and they use equations to describe simple relationships (such as $3x = y$) shown in a table. | Extend whole number multiplication and division to ratios and rates. |
| Objectives | [Use the commutative, associative, and distributive properties to show that two expressions are equivalent.] | Identify and represent equivalent expressions. | Solve a wide variety of problems involving ratios and rates. |
| Objectives | Multiply and divide fractions and decimals to solve problems, including multistep problems and problems involving measurement. | Know that the solutions of an equation are the values of the variables that make the equation true. | Use simple reasoning about multiplication and division to solve ratio and rate problems. |

| Objectives | Use common procedures to multiply and divide fractions and decimals efficiently and accurately. | Solve simple one-step equations by using number sense, properties of operations and the idea of maintaining equality on both sides of an equation. | Expand the repertoire of problems that they can solve by using multiplication and division, and build on understanding of fractions to understand ratios. |
|---|---|---|---|
| Objectives | Use the meanings of fractions, multiplication and division, and the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions and explain why they work. | Understand that variables represent numbers whose exact values are not yet specified, and use variables appropriately. | |
| Objectives | Use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain the procedures for multiplying and dividing decimals. | Write mathematical expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. | |
| Objectives | | Understand that expressions in different forms can be equivalent, and rewrite an expression to represent a quantity in a different way. | |

|  | **Grade 7** | **Grade 7** | **Grade 7** |
|---|---|---|---|
| Focal Points | Number and Operations and Algebra and Geometry: Developing an understanding of and applying proportionality, including similarity. | Measurement and Geometry and Algebra: Developing an understanding of and using formulas to determine surface areas and volumes of three-dimensional shapes. | Number and Operations and Algebra: Developing an understanding of operations on all rational numbers and solving linear equations. |
| Objectives | [Apply work on proportionality to measurement in different contexts, including converting among different units of measurement to solve problems involving rates such as motion at a constant speed.] | Decompose two- and three-dimensional shapes into smaller, component shapes, students find surface areas and develop and justify formulas for the surface areas and volumes of prisms and cylinders. | (Develop and use strategies to estimate the result of rational number computations and judge the reasonableness of results.) |
| Objectives | Distinguish proportional relationships (y/x = k, or y = kx) from other relationships, including inverse proportionality (xy = k, or y = k/x). | Solve a variety of problems involving areas and circumferences of circles. | Extend understandings of addition, subtraction, multiplication, and division, together with their properties, to all rational numbers, including negative integers. |
| Objectives | Extend work with ratios to develop an understanding of proportionality that they apply to solve single and multistep problems in numerous contexts. | Solve a variety of problems involving surface areas, areas and circumferences of circles, and volumes of prisms and cylinders. | Use the arithmetic of rational numbers as they formulate and solve linear equations in one variable and use these equations to solve problems. |

| | | |
|---|---|---|
| Objectives | Graph proportional relationships and identify the unit rate as the slope of the related line. | Decompose prisms and cylinders by slicing them, to develop and understand formulas for their volumes. | Apply properties of arithmetic and consider negative numbers in everyday contexts (e.g., situations of owing money or measuring elevations above and below sea level), to explain why the rules for adding, subtracting, multiplying, and dividing with negative numbers make sense. |
| Objectives | Solve problems about similar objects (including figures) by using scale factors that relate corresponding lengths of the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. | Apply these formulas in problem solving to determine volumes of prisms and cylinders. | Make strategic choices of procedures to solve linear equations in one variable and implement them efficiently, understanding that when they use the properties of equality to express an equation in a new way, solutions that they obtain for the new equation also solve the original equation. |
| Objectives | Use ratio and proportionality to solve a wide variety of percent problems, including problems involving discounts, interest, taxes, tips, and percent increase or decrease. | See that the formula for the area of a circle is plausible by decomposing a circle into a number of wedges and rearranging them into a shape that approximates a parallelogram. | |
| Objectives | | Select appropriate two- and three-dimensional shapes to model real-world situations. | |

|  | **Grade 8** | **Grade 8** | **Grade 8** |
|---|---|---|---|
| Focal Points | Algebra: Analyzing and representing linear functions and solving linear equations and systems of linear equations. | Geometry and Measurement: Analyzing two- and three-dimensional space and figures by using distance and angle. | Data Analysis and Number and Operations and Algebra: Analyzing and summarizing data sets. |
| Objectives | Describe how such aspects of a function as slope and y-intercept appear in different representations. | Apply reasoning about similar triangles to solve a variety of problems, including those that ask them to find heights and distances. | (Interpret and analyze graphical displays of data and descriptive statistics.) |
| Objectives | Relate systems of linear equations to pairs of lines that intersect, are parallel, or are the same line, in the plane. | Apply the Pythagorean theorem to find distances between points in the Cartesian coordinate plane to measure lengths and analyze polygons and polyhedra. | Compare the information provided by the mean and the median and investigate the different effects that changes in data values have on these measures of center. |
| Objectives | Translate among verbal, tabular, graphical, and algebraic representations of functions. | Explain why the Pythagorean theorem is valid by using a variety of methods. | Organize and display data to pose and answer questions. |
| Objectives | Understand that the slope (m) of a line is a constant rate of change, so if the input, or x-coordinate, changes by a specific amount, (a), the output, or y-coordinate, changes by the amount (ma). | Explain why the sum of the measures of the angles in a triangle is 180 degrees, and they apply this fact about triangles to find unknown measures of angles. | Select the mean or the median as the appropriate measure of center for a given purpose. |

| | | | |
|---|---|---|---|
| Objectives | Use linear functions, linear equations, and systems of linear equations to represent, analyze, and solve a variety of problems. | Prove that particular configurations of lines give rise to similar triangles because of the congruent angles created when a transversal cuts parallel lines and apply this reasoning about similar triangles to solve a variety of problems. | Use descriptive statistics, including mean, median, and range, to summarize and compare data sets. |
| Objectives | Recognize a proportion (y/x = k, or y = kx) as a special case of a linear equation of the form y = mx + b, understanding that the constant of proportionality (k) is the slope and the resulting graph is a line through the origin. | Use fundamental facts about distance and angles to describe and analyze figures and situations in two- and three-dimensional space and to solve problems, including those with multiple steps. | Understand that a measure of center alone does not thoroughly describe a data set because very different data sets can share the same measure of center. |
| Objectives | Solve systems of two linear equations in two variables. | | |

*Note.* The gray objectives are NCTM Focal Points that did not overlap with any objectives from the Oregon standards, so no items were written to these gray objectives. Those objectives in parentheses are exclusive to the state of Oregon. Those objectives in brackets are "Connections to Focal Points," as described by NCTM.

Table 2

*Item Aligned with Objectives, Kindergarten, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 2 | | Form 3 | | Form 4 | | Form 5 | | Form 6 | | Form 7 | | Form 8 | | Form 10 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 3 | (1) | 0 | (0) | 9 | (3) | 0 | (0) | 6 | (2) | 3 | (1) | 3 | (1) | 0 | (0) | 6 | (2) | 0 | (0) | 6 | (2) | 6 | (2) |
| Vaguely Linked (1) | 6 | (2) | 0 | (0) | 13 | (4) | 0 | (0) | 6 | (2) | 9 | (3) | 6 | (2) | 0 | (0) | 6 | (2) | 0 | (0) | 6 | (2) | 6 | (2) |
| Somewhat Linked (2) | 3 | (1) | 3 | (1) | 6 | (2) | 0 | (0) | 6 | (2) | 6 | (2) | 6 | (2) | 0 | (0) | 3 | (1) | 9 | (3) | 3 | (1) | 3 | (1) |
| Directly Linked (3) | 88 | (28) | 97 | (31) | 72 | (23) | 100 | (32) | 81 | (26) | 81 | (26) | 84 | (27) | 100 | (32) | 84 | (27) | 91 | (29) | 84 | (27) | 84 | (27) |
| Link | 91 | (29) | 100 | (32) | 78 | (25) | 100 | (32) | 88 | (28) | 88 | (28) | 91 | (29) | 100 | (32) | 88 | (28) | 100 | (32) | 88 | (28) | 88 | (28) |
| Items Linked to Standards | 88 | (14) | 100 | (16) | 75 | (12) | 100 | (16) | 88 | (14) | 88 | (14) | 88 | (14) | 100 | (16) | 88 | (14) | 100 | (16) | 88 | (14) | 88 | (14) |
| Group Total | | | 88 | (42) | | | | | | | | | | | 92 | (132) | | | | | | | | |

Table 3

*Item Aligned with Objectives, Kindergarten, Geometry*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 6 | | Form 7 | | Form 8 | | Form 10 | |
| Number of raters | 2 | | 2 | | 1 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 0 | (0) | 0 | (0) | 6 | (1) | 0 | (0) | 3 | (1) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) |
| Somewhat Linked (2) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 3 | (1) | 0 | (0) | 6 | (2) | 0 | (0) |
| Directly Linked (3) | 100 | (32) | 100 | (32) | 94 | (15) | 100 | (32) | 97 | (31) | 97 | (31) | 97 | (31) | 100 | (32) | 91 | (29) | 100 | (32) |
| Link | 100 | (32) | 100 | (32) | 94 | (15) | 100 | (32) | 97 | (31) | 100 | (32) | 100 | (32) | 100 | (32) | 97 | (31) | 100 | (32) |
| Items Linked to Standards | 100 | (16) | 100 | (16) | 94 | (15) | 100 | (16) | 94 | (15) | 100 | (16) | 100 | (16) | 100 | (16) | 94 | (15) | 100 | (16) |
| Group Total | | | 98 | (47) | | | | | | | | | 98 | (110) | | | | | | |

Table 4

*Item Aligned with Objectives, Kindergarten, Measurement*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 6 | | Form 7 | | Form 8 | | Form 10 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 9 | (3) | 13 | (4) | 6 | (2) | 9 | (3) | 6 | (2) | 16 | (5) | 25 | (8) | 13 | (4) | 16 | (5) | 13 | (4) | 6 | (2) |
| Vaguely Linked (1) | 9 | (3) | 19 | (6) | 16 | (5) | 16 | (5) | 13 | (4) | 13 | (4) | 25 | (8) | 6 | (2) | 16 | (5) | 9 | (3) | 13 | (4) |
| Somewhat Linked (2) | 19 | (6) | 16 | (5) | 19 | (6) | 22 | (7) | 19 | (6) | 16 | (5) | 16 | (5) | 25 | (8) | 13 | (4) | 16 | (5) | 19 | (6) |
| Directly Linked (3) | 63 | (20) | 53 | (17) | 59 | (19) | 53 | (17) | 63 | (20) | 56 | (18) | 34 | (11) | 56 | (18) | 56 | (18) | 63 | (20) | 63 | (20) |
| Link | 81 | (26) | 69 | (22) | 78 | (25) | 75 | (24) | 81 | (26) | 72 | (23) | 50 | (16) | 81 | (26) | 69 | (22) | 78 | (25) | 81 | (26) |
| Items Linked to Standards | 75 | (12) | 56 | (9) | 69 | (11) | 69 | (11) | 75 | (12) | 63 | (10) | 25 | (4) | 75 | (12) | 63 | (10) | 75 | (12) | 75 | (12) |
| Group Total | | | 67 | (32) | | | | | | | | | | | 65 | (83) | | | | | | |

Table 5

*Item Aligned with Objectives, Grade 1, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 2 | | Form 3 | | Form 4 | | Form 6 | | Form 7 | | Form 8 | | Form 10 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 13 | (4) | 0 | (0) | 6 | (2) | 0 | (0) | 6 | (2) | 6 | (2) | 6 | (2) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) | 3 | (1) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) |
| Somewhat Linked (2) | 6 | (2) | 3 | (1) | 6 | (2) | 44 | (14) | 22 | (7) | 19 | (6) | 38 | (12) | 3 | (1) | 16 | (5) | 25 | (8) | 16 | (5) |
| Directly Linked (3) | 81 | (26) | 97 | (31) | 88 | (28) | 56 | (18) | 69 | (22) | 75 | (24) | 53 | (17) | 97 | (31) | 84 | (27) | 72 | (23) | 84 | (27) |
| Link | 88 | (28) | 100 | (32) | 94 | (30) | 100 | (32) | 91 | (29) | 94 | (30) | 91 | (29) | 100 | (32) | 100 | (32) | 97 | (31) | 100 | (32) |
| Items Linked to Standards | 88 | (14) | 100 | (16) | 94 | (15) | 100 | (16) | 88 | (14) | 94 | (15) | 88 | (14) | 100 | (16) | 100 | (16) | 94 | (15) | 100 | (16) |
| Group Total | | | 94 | (45) | | | | | | | | | | | 95 | (122) | | | | | | |

Table 6

*Item Aligned with Objectives, Grade 1, Geometry*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 2 | | Form 3 | | Form 4 | | Form 6 | | Form 7 | | Form 8 | | Form 10 | |
| Number of raters | 2 | | 2 | | 1 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 6 | (2) | 0 | (0) | 0 | (0) | 3 | (1) | 3 | (1) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 9 | (3) | 6 | (2) | 13 | (2) | 6 | (2) | 19 | (6) | 3 | (1) | 3 | (1) | 3 | (1) | 0 | (0) | 6 | (2) | 6 | (2) |
| Somewhat Linked (2) | 22 | (7) | 28 | (9) | 31 | (5) | 38 | (12) | 3 | (1) | 34 | (11) | 38 | (12) | 38 | (12) | 22 | (7) | 6 | (2) | 9 | (3) |
| Directly Linked (3) | 69 | (22) | 59 | (19) | 156 | (25) | 56 | (18) | 75 | (24) | 59 | (19) | 59 | (19) | 59 | (19) | 78 | (25) | 88 | (28) | 84 | (27) |
| Link | 91 | (29) | 88 | (28) | 188 | (30) | 94 | (30) | 78 | (25) | 94 | (30) | 97 | (31) | 97 | (31) | 100 | (32) | 94 | (30) | 94 | (30) |
| Items Linked to Standards | 81 | (13) | 81 | (13) | 88 | (14) | 88 | (14) | 75 | (12) | 94 | (15) | 94 | (15) | 94 | (15) | 100 | (16) | 94 | (15) | 88 | (14) |
| Group Total | | | 83 | (40) | | | | | | | | | | | 91 | (116) | | | | | | |

Table 7

*Item Aligned with Objectives, Grade 1, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 6 | | Form 7 | | Form 8 | | Form 9 | | Form 10 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 6 | (2) | 6 | (2) | 3 | (1) | 0 | (0) | 6 | (2) | 25 | (8) | 9 | (3) | 9 | (3) | 6 | (2) | 16 | (5) | 13 | (4) |
| Somewhat Linked (2) | 3 | (1) | 13 | (4) | 16 | (5) | 9 | (3) | 3 | (1) | 9 | (3) | 3 | (1) | 0 | (0) | 6 | (2) | 0 | (0) | 9 | (3) |
| Directly Linked (3) | 91 | (29) | 81 | (26) | 81 | (26) | 91 | (29) | 91 | (29) | 66 | (21) | 88 | (28) | 91 | (29) | 88 | (28) | 84 | (27) | 78 | (25) |
| Link | 94 | (30) | 94 | (30) | 97 | (31) | 100 | (32) | 94 | (30) | 75 | (24) | 91 | (29) | 91 | (29) | 94 | (30) | 84 | (27) | 88 | (28) |
| Items Linked to Standards | 94 | (15) | 94 | (15) | 94 | (15) | 100 | (16) | 94 | (15) | 69 | (11) | 88 | (14) | 81 | (13) | 94 | (15) | 69 | (11) | 81 | (13) |
| Group Total | | | 94 | (45) | | | | | | | | | | | 84 | (108) | | | | | | |

Table 8

*Item Aligned with Objectives, Grade 3, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of Raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Vaguely Linked (1) | 6 | (3) | 8 | (4) | 2 | (1) | 4 | (2) | - | - | - | - | 3 | (1) | 3 | (1) | - | - |
| Somewhat Linked (2) | 21 | (10) | 23 | (11) | 10 | (5) | 10 | (5) | 22 | (7) | 9 | (3) | 16 | (5) | 3 | (1) | 6 | (2) |
| Directly Linked (3) | 73 | (35) | 69 | (33) | 88 | (42) | 85 | (41) | 78 | (25) | 91 | (29) | 81 | (26) | 94 | (30) | 94 | (30) |
| Total Ratings Linked to Standard | 94 | (45) | 92 | (44) | 98 | (47) | 96 | (46) | 100 | (32) | 100 | (32) | 97 | (31) | 97 | (31) | 100 | (32) |
| Items Linked to Standard | 81 | (13) | 75 | (12) | 94 | (15) | 88 | (14) | 100 | (16) | 100 | (16) | 94 | (15) | 94 | (15) | 100 | (16) |
| Total | | | 83 | (40) | | | | | | | | | 96 | (92) | | | | |

Table 9

*Item Aligned with Objectives, Grade 3, Geometry*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of Raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | - | - | - | - | 4 | (2) | - | - | - | - | 13 | (4) | - | - | - | - | - | - |
| Vaguely Linked (1) | 15 | (7) | 4 | (2) | 6 | (3) | 17 | (8) | 13 | (4) | 6 | (2) | 13 | (4) | 6 | (2) | 16 | (5) |
| Somewhat Linked (2) | 15 | (7) | 23 | (11) | 13 | (6) | 13 | (6) | 13 | (4) | 25 | (8) | 16 | (5) | 16 | (5) | 13 | (4) |
| Directly Linked (3) | 71 | (34) | 73 | (35) | 77 | (37) | 71 | (34) | 50 | (24) | 56 | (18) | 72 | (23) | 78 | (25) | 72 | (23) |
| Total Ratings Linked to Standard | 85 | (41) | 96 | (46) | 90 | (43) | 83 | (40) | 88 | (28) | 81 | (26) | 88 | (28) | 94 | (30) | 84 | (27) |
| Items Linked to Standard | 69 | (11) | 88 | (14) | 81 | (13) | 50 | (8) | 75 | (12) | 75 | (12) | 75 | (12) | 88 | (14) | 69 | (11) |
| Total | | | 79 | (38) | | | | | | | | | 72 | (69) | | | | |

Table 10

*Item Aligned with Objectives, Grade 3, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | Progress Monitoring % (Frequency) | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Fall | Winter | Spring | Form 1 | Form 3[a] | Form 5[a] | Form 7 | Form 9 |
| Number of raters | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| Not Linked (0) | 4 (2) | 2 (1) | 2 (1) | - - | - - | - - | - - | - - |
| Vaguely Linked (1) | 8 (4) | 6 (3) | 4 (2) | - - | - - | - - | - - | 25 (8) |
| Somewhat Linked (2) | 4 (2) | 6 (3) | 4 (2) | 10 (5) | 6 (2) | 6 (2) | 3 (1) | 25 (8) |
| Directly Linked (3) | 83 (40) | 85 (41) | 90 (43) | 90 (43) | 94 (29) | 94 (29) | 97 (31) | 50 (16) |
| Total Ratings Linked to Standard | 88 (42) | 92 (44) | 94 (45) | 100 (48) | 100 (31) | 100 (31) | 100 (32) | 75 (24) |
| Items Linked to Standard | 69 (11) | 75 (12) | 94 (15) | 100 (16) | 100 (15) | 100 (15) | 100 (16) | 50 (8) |
| Total | 79 (38) | | | 90 (70) | | | | |

[a] There was one out of range value in Forms 3 and 5.

Table 11

*Item Aligned with Objectives, Grade 4, Numbers & Operations*

| | Benchmarks % (Frequency) | | | Progress Monitoring % (Frequency) | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Fall | Winter | Spring | Form 1 | Form 3 | Form 4 | Form 5 | Form 7 | Form 9 |
| Number of raters | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 |
| Not Linked (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| Vaguely Linked (1) | 4 (2) | 4 (2) | 0 (0) | 6 (3) | 6 (2) | 0 (0) | 0 (0) | 13 (4) | 3 (1) |
| Somewhat Linked (2) | 27 (13) | 21 (10) | 17 (8) | 27 (13) | 28 (9) | 25 (8) | 16 (5) | 6 (2) | 16 (5) |
| Directly Linked (3) | 69 (33) | 75 (36) | 83 (40) | 67 (32) | 66 (21) | 75 (24) | 84 (27) | 81 (26) | 81 (26) |
| Link | 96 (46) | 96 (46) | 100 (48) | 94 (45) | 94 (30) | 100 (32) | 100 (32) | 88 (28) | 97 (31) |
| Items Linked to Standards | 88 (14) | 88 (14) | 100 (16) | 81 (130 | 94 (15) | 100 (16) | 100 (16) | 81 (13) | 94 (15) |
| Group Total | 92 (44) | | | 92 (88) | | | | | |

Table 12

*Item Aligned with Objectives, Grade 4, Measurement*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring[a] | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 9 | (4) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 0 | (0) | 2 | (1) | 11 | (5) | 0 | (0) | 6 | (2) | 0 | (0) | 3 | (1) | 3 | (1) | 0 | (0) |
| Somewhat Linked (2) | 4 | (2) | 13 | (6) | 11 | (5) | 6 | (3) | 22 | (7) | 28 | (9) | 16 | (5) | 19 | (6) | 13 | (4) |
| Directly Linked (3) | 96 | (46) | 85 | (41) | 70 | (33) | 94 | (45) | 72 | (23) | 72 | (23) | 81 | (26) | 78 | (25) | 88 | (28) |
| Link | 100 | (48) | 98 | (47) | 81 | (38) | 100 | (48) | 94 | (30) | 100 | (32) | 97 | (31) | 97 | (31) | 100 | (32) |
| Items Linked to Standards | 100 | (16) | 94 | (15) | 69 | (11) | 100 | (16) | 88 | (14) | 100 | (16) | 94 | (15) | 94 | (15) | 100 | (16) |
| Group Total | | | 88 | (42) | | | | | | | | | 97 | (92) | | | | |

[a] There was one missing rating in the Spring Form.

Table 13

*Item Aligned with Objectives, Grade 4, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1[a] | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 2 | (1) | 6 | (3) | 2 | (1) | 4 | (2) | 3 | (1) | 0 | (0) | 0 | (0) | 3 | (1) |
| Somewhat Linked (2) | 10 | (5) | 27 | (13) | 13 | (6) | 17 | (8) | 25 | (8) | 19 | (6) | 31 | (10) | 47 | (15) |
| Directly Linked (3) | 88 | (42) | 67 | (32) | 85 | (41) | 79 | (37) | 72 | (23) | 81 | (26) | 69 | (22) | 50 | (16) |
| Link | 98 | (47) | 94 | (45) | 98 | (47) | 96 | (45) | 97 | (31) | 100 | (32) | 100 | (32) | 97 | (31) |
| Items Linked to Standards | 94 | (15) | 81 | (13) | 94 | (15) | 88 | (14) | 94 | (15) | 100 | (16) | 100 | (16) | 94 | (15) |
| Group Total | | | 90 | (43) | | | | | | | 96 | (76) | | | | |

[a] There was one missing rating in Form 1.

Table 14

*Item Aligned with Objectives, Grade 5, Geometry/Measurement/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (1) | 0 | (1) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 2 | (1) | 8 | (4) | 10 | (5) | 10 | (5) | 13 | (4) | 6 | (2) | 13 | (4) | 6 | (2) | 3 | (1) |
| Somewhat Linked (2) | 8 | (4) | 19 | (9) | 19 | (9) | 19 | (9) | 16 | (5) | 19 | (6) | 28 | (9) | 34 | (11) | 25 | (8) |
| Directly Linked (3) | 88 | (42) | 71 | (34) | 71 | (34) | 71 | (34) | 72 | (23) | 75 | (24) | 59 | (19) | 59 | (19) | 72 | (23) |
| Link | 96 | (46) | 90 | (43) | 90 | (43) | 90 | (43) | 88 | (28) | 94 | (30) | 88 | (28) | 94 | (30) | 97 | (31) |
| Items Linked to Standards | 88 | (14) | 75 | (12) | 69 | (11) | 69 | (11) | 75 | (12) | 88 | (14) | 75 | (12) | 88 | (14) | 94 | (15) |
| Group Total | | | 77 | (37) | | | | | | | | | 81 | (78) | | | | |

Table 15

*Item Aligned with Objectives, Grade 5, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 2 | (1) | 6 | (3) | 2 | (1) | 0 | (0) | 0 | (0) | 3 | (1) | 3 | (1) | 0 | (0) |
| Somewhat Linked (2) | 8 | (4) | 2 | (1) | 4 | (2) | 2 | (1) | 6 | (2) | 0 | (0) | 0 | (0) | 0 | (0) |
| Directly Linked (3) | 90 | (43) | 92 | (44) | 94 | (45) | 98 | (47) | 94 | (30) | 97 | (31) | 97 | (31) | 100 | (32) |
| Link | 98 | (47) | 94 | (45) | 98 | (47) | 100 | (48) | 100 | (32) | 97 | (31) | 97 | (31) | 100 | (32) |
| Items Linked to Standards | 94 | (15) | 88 | (14) | 94 | (15) | 100 | (16) | 100 | (16) | 100 | (16) | 94 | (15) | 100 | (16) |
| Group Total | | | 92 | (44) | | | | | | | 99 | (79) | | | | |

Table 16

*Item Aligned with Objectives, Grade 5, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 1 | | 1 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Vaguely Linked (1) | 6 | (3) | 2 | (1) | 2 | (1) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 53 | (17) |
| Somewhat Linked (2) | 23 | (11) | 48 | (23) | 42 | (20) | 10 | (5) | 0 | (0) | 31 | (5) | 47 | (15) | 44 | (14) |
| Directly Linked (3) | 71 | (34) | 50 | (24) | 56 | (27) | 90 | (43) | 100 | (16) | 69 | (11) | 50 | (16) | 3 | (1) |
| Link | 94 | (45) | 98 | (47) | 98 | (47) | 100 | (48) | 100 | (16) | 100 | (16) | 97 | (31) | 47 | (15) |
| Items Linked to Standards | 81 | (13) | 94 | (15) | 94 | (15) | 100 | (16) | 100 | (16) | 100 | (16) | 94 | (15) | 0 | (0) |
| Group Total | | | 90 | (43) | | | | | | | 79 | (63) | | | | |

Table 17

*Item Aligned with Objectives, Grade 6, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
| | Fall | | Winter | | Spring[a] | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0)) | 16 | (5) | 3 | (1) | 16 | (5) | 13 | (4) | 9 | (3) | 19 | (6) | 0 | (0) |
| Vaguely Linked (1) | 3 | (1) | 0 | (0) | 3 | (1) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Somewhat Linked (2) | 9 | (3) | 3 | (1) | 0 | (0) | 3 | (1) | 0 | (0) | 9 | (3) | 0 | (0) | 3 | (1) |
| Directly Linked (3) | 88 | (28) | 81 | (26) | 97 | (31) | 81 | (26) | 88 | (28) | 81 | (26) | 81 | (26) | 97 | (31) |
| Link | 97 | (31) | 84 | (27) | 97 | (31) | 84 | (27) | 88 | (28) | 91 | (29) | 81 | (26) | 100 | (32) |
| Items Linked to Standards | 94 | (15) | 81 | (13) | 88 | (14) | 81 | (13) | 88 | (14) | 88 | (14) | 81 | (13) | 100 | (16) |
| Group Total | | | 88 | (42) | | | | | | | 88 | (70) | | | | |

Table 18

*Item Aligned with Objectives, Grade 6, Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 9 | (3) | 13 | (4) | 25 | (8) |
| Vaguely Linked (1) | 3 | (1) | 0 | (0) | 3 | (1) | 9 | (3) | 3 | (1) | 19 | (6) | 0 | (0) | 9 | (3) |
| Somewhat Linked (2) | 9 | (3) | 6 | (2) | 3 | (1) | 0 | (0) | 3 | (1) | 9 | (3) | 0 | (0) | 3 | (1) |
| Directly Linked (3) | 88 | (28) | 94 | (30) | 94 | (30) | 91 | (29) | 94 | (30) | 63 | (20) | 88 | (28) | 63 | (20) |
| Link | 97 | (31) | 100 | (32) | 97 | (31) | 91 | (29) | 97 | (31) | 72 | (23) | 88 | (28) | 66 | (21) |
| Items Linked to Standards | 94 | (15) | 100 | (16) | 94 | (15) | 81 | (13) | 94 | (15) | 50 | (8) | 88 | (14) | 56 | (9) |
| Group Total | | | 96 | (46) | | | | | | | 74 | (59) | | | | |

Table 19

*Item Aligned with Objectives, Grade 6, Numbers/Operations/Ratios*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) | 3 | (1) | 6 | (2) |
| Vaguely Linked (1) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 6 | (2) | 0 | (0) | 0 | (0) | 0 | (0) |
| Somewhat Linked (2) | 9 | (3) | 9 | (3) | 16 | (5) | 3 | (1) | 3 | (1) | 6 | (2) | 9 | (3) | 3 | (1) |
| Directly Linked (3) | 91 | (29) | 91 | (29) | 84 | (27) | 97 | (31) | 88 | (28) | 94 | (30) | 88 | (28) | 91 | (29) |
| Link | 100 | (32) | 100 | (32) | 100 | (32) | 100 | (32) | 91 | (29) | 100 | (32) | 97 | (31) | 94 | (30) |
| Items Linked to Standards | 100 | (16) | 100 | (16) | 100 | (16) | 100 | (16) | 88 | (14) | 100 | (16) | 94 | (15) | 88 | (14) |
| Group Total | | | 100 | (48) | | | | | | | 94 | (75) | | | | |

Table 20

*Item Aligned with Objectives, Grade 7, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 9 | (3) | 22 | (7) | 13 | (4) | 6 | (2) | 13 | (4) | 9 | (3) | 3 | (1) | 9 | (3) |
| Vaguely Linked (1) | 9 | (3) | 0 | (0) | 3 | (1) | 3 | (1) | 3 | (1) | 6 | (2) | 6 | (2) | 6 | (2) |
| Somewhat Linked (2) | 0 | (0) | 16 | (5) | 6 | (2) | 3 | (1) | 9 | (3) | 9 | (3) | 6 | (2) | 6 | (2) |
| Directly Linked (3) | 81 | (26) | 63 | (20) | 78 | (25) | 88 | (28) | 75 | (24) | 75 | (24) | 84 | (27) | 78 | (25) |
| Link | 81 | (26) | 78 | (25) | 84 | (27) | 91 | (29) | 84 | (27) | 84 | (27) | 91 | (29) | 84 | (27) |
| Items Linked to Standards | 75 | (12) | 75 | (12) | 75 | (12) | 88 | (14) | 75 | (12) | 75 | (12) | 81 | (13) | 81 | (13) |
| Group Total | | | 75 | (36) | | | | | | | 80 | (64) | | | | |

Table 21

*Item Aligned with Objectives, Grade 7, Measurement/Geometry/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 6 | (2) | 9 | (3) | 0 | (0) | 6 | (2) | 0 | (0) | 3 | (1) | 6 | (2) | 3 | (1) |
| Vaguely Linked (1) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 3 | (1) | 3 | (1) | 3 | (1) | 3 | (1) |
| Somewhat Linked (2) | 3 | (1) | 0 | (0) | 0 | (0) | 13 | (4) | 19 | (6) | 19 | (6) | 3 | (1) | 9 | (3) |
| Directly Linked (3) | 91 | (29) | 91 | (29) | 100 | (32) | 78 | (25) | 78 | (25) | 75 | (24) | 88 | (28) | 84 | (27) |
| Link | 94 | (30) | 91 | (29) | 100 | (32) | 91 | (29) | 97 | (31) | 94 | (30) | 91 | (29) | 94 | (30) |
| Items Linked to Standards | 88 | (14) | 88 | (14) | 100 | (16) | 81 | (13) | 94 | (15) | 88 | (14) | 88 | (14) | 88 | (14) |
| Group Total | | | 92 | (44) | | | | | | | 88 | (70) | | | | |

Table 22

*Item Aligned with Objectives, Grade 7, Numbers/Operations/Algebra/Geometry*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 3 | (1) | 0 | (0) | 6 | (2) | 13 | (4) | 3 | (1) | 0 | (0) | 0 | (0) | 9 | (3) |
| Vaguely Linked (1) | 3 | (1) | 3 | (1) | 9 | (3) | 0 | (0) | 0 | (0) | 6 | (2) | 0 | (0) | 6 | (2) |
| Somewhat Linked (2) | 19 | (6) | 13 | (4) | 19 | (6) | 16 | (5) | 9 | (3) | 9 | (3) | 9 | (3) | 6 | (2) |
| Directly Linked (3) | 75 | (24) | 84 | (27) | 66 | (21) | 72 | (23) | 88 | (28) | 84 | (27) | 91 | (29) | 78 | (25) |
| Link | 94 | (30) | 97 | (31) | 84 | (27) | 88 | (28) | 97 | (31) | 94 | (30) | 100 | (32) | 84 | (27) |
| Items Linked to Standards | 88 | (14) | 81 | (13) | 94 | (15) | 75 | (12) | 94 | (15) | 88 | (14) | 100 | (16) | 81 | (13) |
| Group Total | | | 88 | (42) | | | | | | | 88 | (70) | | | | |

Table 23

*Item Aligned with Objectives, Grade 8, Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 6 | (2) | 9 | (3) | 0 | (0) | 9 | (3) | 22 | (7) | 19 | (6) | 6 | (2) | 9 | (3) |
| Vaguely Linked (1) | 9 | (3) | 28 | (9) | 16 | (5) | 6 | (2) | 9 | (3) | 0 | (0) | 13 | (4) | 13 | (4) |
| Somewhat Linked (2) | 0 | (0) | 16 | (5) | 22 | (7) | 22 | (7) | 16 | (5) | 6 | (2) | 22 | (7) | 13 | (4) |
| Directly Linked (3) | 84 | (27) | 47 | (15) | 63 | (20) | 63 | (20) | 53 | (17) | 75 | (24) | 59 | (19) | 66 | (21) |
| Link | 84 | (27) | 63 | (20) | 84 | (27) | 84 | (27) | 69 | (22) | 81 | (26) | 81 | (26) | 78 | (25) |
| Items Linked to Standards | 69 | (11) | 44 | (7) | 81 | (13) | 75 | (12) | 50 | (8) | 75 | (12) | 69 | (11) | 63 | (10) |
| Group Total | | | 65 | (31) | | | | | | | 66 | (53) | | | | |

Table 24

*Item Aligned with Objectives, Grade 8, Geometry/Measurement*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1[a] | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 16 | (5) | 9 | (3) | 16 | (5) | 11 | (5) | 13 | (4) | 6 | (2) | 22 | (7) | 16 | (5) |
| Vaguely Linked (1) | 13 | (4) | 31 | (10) | 16 | (5) | 9 | (4) | 9 | (3) | 9 | (3) | 13 | (4) | 9 | (3) |
| Somewhat Linked (2) | 9 | (3) | 9 | (3) | 13 | (4) | 4 | (2) | 9 | (3) | 13 | (4) | 13 | (4) | 16 | (5) |
| Directly Linked (3) | 63 | (20) | 50 | (16) | 56 | (18) | 43 | (20) | 69 | (22) | 72 | (23) | 53 | (17) | 59 | (19) |
| Link | 72 | (23) | 59 | (19) | 69 | (22) | 47 | (22) | 78 | (25) | 84 | (27) | 66 | (21) | 75 | (24) |
| Items Linked to Standards | 50 | (8) | 44 | (7) | 31 | (5) | 44 | (7) | 63 | (10) | 69 | (11) | 50 | (8) | 63 | (10) |
| Group Total | | | 42 | (20) | | | | | | | 58 | (46) | | | | |

[a] There was one missing rating in Form 1.

Table 25

*Item Aligned with Objectives, Grade 8, Data Analysis/Numbers & Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| Not Linked (0) | 16 | (5) | 6 | (2) | 3 | (1) | 16 | (5) | 19 | (6) | 0 | (0) | 6 | (2) | 13 | (4) |
| Vaguely Linked (1) | 9 | (3) | 9 | (3) | 6 | (2) | 3 | (1) | 9 | (3) | 0 | (0) | 19 | (6) | 19 | (6) |
| Somewhat Linked (2) | 13 | (4) | 16 | (5) | 9 | (3) | 16 | (5) | 13 | (4) | 19 | (6) | 16 | (5) | 16 | (5) |
| Directly Linked (3) | 63 | (20) | 69 | (22) | 81 | (26) | 66 | (21) | 59 | (19) | 81 | (26) | 59 | (19) | 53 | (17) |
| Link | 75 | (24) | 84 | (27) | 91 | (29) | 81 | (26) | 72 | (23) | 100 | (32) | 75 | (24) | 69 | (22) |
| Items Linked to Standards | 69 | (11) | 81 | (13) | 81 | (13) | 75 | (12) | 63 | (10) | 100 | (16) | 63 | (10) | 63 | (10) |
| Group Total | | | 77 | (37) | | | | | | | 73 | (58) | | | | |

Table 26

*Item Depth of Knowledge Ratings, Grade 3, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of Raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 50 | (24) | 56 | (27) | 54 | (26) | 60 | (29) | 63 | (20) | 53 | (17) | 72 | (23) | 75 | (24) | 72 | (23) |
| DOK Level 2 (2) | 50 | (24) | 44 | (21) | 40 | (19) | 38 | (18) | 25 | (8) | 34 | (11) | 22 | (7) | 16 | (5) | 28 | (9) |
| DOK Level 3 (3) | 0 | (0) | 0 | (0) | 6 | (3) | 2 | (1) | 13 | (4) | 13 | (4) | 6 | (2) | 9 | (3) | 0 | (0) |
| Consensus DOK 1 | 19 | (3) | 13 | (2) | 25 | (4) | 25 | (4) | 31 | (5) | 13 | (2) | 44 | (7) | 50 | (8) | 50 | (8) |
| Consensus DOK 2 | 19 | (3) | 6 | (1) | 13 | (2) | - | - | - | - | - | - | - | - | 6 | (1) | 6 | (1) |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Table 27

*Item Depth of Knowledge Ratings, Grade 3, Geometry*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of Raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 48 | (23) | 35 | (17) | 31 | (15) | 44 | (21) | 41 | (13) | 44 | (14) | 41 | (13) | 47 | (15) | 47 | (15) |
| DOK Level 2 (2) | 38 | (18) | 50 | (24) | 56 | (27) | 40 | (19) | 41 | (13) | 31 | (10) | 47 | (15) | 31 | (10) | 41 | (13) |
| DOK Level 3 (3) | 15 | (7) | 15 | (7) | 13 | (6) | 17 | (8) | 19 | (6) | 25 | (8) | 13 | (4) | 22 | (7) | 13 | (4) |
| Consensus DOK 1 | 13 | (2) | 6 | (1) | 13 | (2) | 19 | (3) | 25 | (4) | 25 | (4) | 19 | (3) | 25 | (4) | 25 | (4) |
| Consensus DOK 2 | 6 | (1) | 19 | (3) | 13 | (2) | 13 | (2) | 19 | (3) | 6 | (1) | 19 | (3) | 13 | (2) | 13 | (2) |
| Consensus DOK 3 | 19 | (3) | 25 | (4) | 25 | (4) | 6 | (1) | 13 | (2) | 6 | (1) | 6 | (1) | 19 | (3) | 6 | (1) |

Table 28

*Item Depth of Knowledge Ratings, Grade 3, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of Raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 69 | (33) | 71 | (34) | 63 | (30) | 71 | (34) | 75 | (24) | 81 | (26) | 75 | (24) | 66 | (21) |
| DOK Level 2 (2) | 29 | (14) | 29 | (14) | 31 | (15) | 19 | (9) | 22 | (7) | 19 | (6) | 22 | (7) | 33 | (11) |
| DOK Level 3 (3) | 2 | (1) | 0 | (0) | 6 | (3) | 10 | (5) | 3 | (1) | 0 | (0) | 3 | (1) | 0 | (0) |
| Consensus DOK 1 | 38 | (6) | 44 | (7) | 38 | (6) | 50 | (8) | 50 | (8) | 63 | (10) | 50 | (8) | 31 | (5) |
| Consensus DOK 2 | 6 | (1) | - | | - | | - | | - | | - | | - | | - | |
| Consensus DOK 3 | - | | - | | - | | - | | - | | - | | - | | - | |

Table 29

*Item Depth of Knowledge Ratings, Grade 4, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 42 | (20) | 27 | (13) | 27 | (13) | 31 | (15) | 31 | (10) | 66 | (21) | 25 | (8) | 41 | (13) | 28 | (9) |
| DOK Level 2 (2) | 50 | (24) | 69 | (33) | 71 | (34) | 69 | (33) | 50 | (16) | 19 | (6) | 59 | (19) | 56 | (18) | 63 | (20) |
| DOK Level 3 (3) | 8 | (4) | 4 | (2) | 2 | (1) | 0 | (0) | 19 | (6) | 16 | (5) | 16 | (5) | 3 | (1) | 9 | (3) |
| Consensus DOK 1 | 13 | (2) | - | - | 6 | (1) | - | - | - | - | 38 | (6) | 6 | (1) | 13 | (2) | - | - |
| Consensus DOK 2 | 6 | (1) | 25 | (4) | 31 | (5) | 31 | (5) | 19 | (3) | 6 | (1) | 38 | (6) | 31 | (5) | 31 | (5) |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | 13 | (2) | - | - | - | - |

Table 30

*Item Depth of Knowledge Ratings, Grade 4, Measurement*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring[a] | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 65 | (31) | 79 | (38) | 70 | (33) | 75 | (36) | 75 | (24) | 56 | (18) | 72 | (23) | 78 | (25) | 75 | (24) |
| DOK Level 2 (2) | 29 | (14) | 19 | (9) | 30 | (14) | 21 | (10) | 25 | (8) | 103 | (33) | 22 | (7) | 22 | (7) | 25 | (8) |
| DOK Level 3 (3) | 6 | (3) | 2 | (1) | 0 | (0) | 4 | (2) | 0 | (0) | 3 | (1) | 6 | (2) | 0 | (0) | 0 | (0) |
| Consensus DOK 1 | 38 | (6) | 50 | (8) | 44 | (7) | 44 | (7) | 56 | (9) | 25 | (4) | 44 | (7) | 56 | (9) | 50 | (8) |
| Consensus DOK 2 | 13 | (2) | - | - | - | - | - | - | 6 | (1) | 13 | (2) | - | - | - | - | - | - |

| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

[a] There was one missing rating in the Spring Form.

Table 31

*Item Depth of Knowledge Ratings, Grade 4, Numbers/Operations/Algebra*

| | Benchmarks | | | | | | Progress Monitoring | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | % (Frequency) | | | | | | % (Frequency) | | | | | | | | | |
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 25 | (12) | 48 | (23) | 31 | (15) | 38 | (18) | 56 | (18) | 34 | (11) | 19 | (6) | 47 | (15) |
| DOK Level 2 (2) | 60 | (29) | 42 | (20) | 54 | (26) | 46 | (22) | 31 | (10) | 59 | (19) | 75 | (24) | 47 | (15) |
| DOK Level 3 (3) | 15 | (7) | 10 | (5) | 15 | (7) | 17 | (8) | 13 | (4) | 6 | (2) | 6 | (2) | 6 | (2) |
| Consensus DOK 1 | 13 | (2) | 19 | (3) | 13 | (2) | 6 | (1) | 44 | (7) | 13 | (2) | 6 | (1) | 38 | (6) |
| Consensus DOK 2 | 13 | (2) | 6 | (1) | 19 | (3) | 13 | (2) | 19 | (3) | 38 | (6) | 56 | (9) | 31 | (5) |
| Consensus DOK 3 | - | - | - | - | 6 | (1) | - | - | - | - | - | - | - | - | - | - |

Table 32

*Item Depth of Knowledge Ratings, Grade 5, Geometry/Measurement/Algebra*

| | Benchmarks | | | | | | Progress Monitoring | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | % (Frequency) | | | | | | % (Frequency) | | | | | | | | | | | |
| | Fall[a] | | Winter | | Spring | | Form 1 | | Form 3 | | Form 4 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 83 | (40) | 65 | (31) | 73 | (35) | 56 | (27) | 56 | (18) | 47 | (15) | 66 | (21) | 50 | (16) | 56 | (18) |
| DOK Level 2 (2) | 13 | (6) | 33 | (16) | 25 | (12) | 35 | (17) | 34 | (11) | 47 | (15) | 31 | (10) | 34 | (11) | 31 | (10) |
| DOK Level 3 (3) | 2 | (1) | 2 | (1) | 2 | (1) | 8 | (4) | 9 | (3) | 6 | (2) | 3 | (1) | 16 | (5) | 13 | (4) |
| Consensus DOK 1 | 69 | (11) | 50 | (8) | 25 | (4) | 31 | (5) | 38 | (6) | 25 | (4) | 50 | (8) | 19 | (3) | 31 | (5) |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Consensus DOK 2 | - | - | - | - | - | - | - | - | 6 | (1) | 19 | (3) | 13 | (2) | - | - | 6 | (1) |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

[a] There was one out of range rating in the Fall Form (0) that was recoded as missing.

Table 33

*Item Depth of Knowledge Ratings, Grade 5, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 67 | (32) | 65 | (31) | 69 | (33) | 65 | (31) | 66 | (21) | 75 | (24) | 72 | (23) | 59 | (19) |
| DOK Level 2 (2) | 33 | (16) | 35 | (17) | 31 | (15) | 35 | (17) | 34 | (11) | 22 | (7) | 28 | (9) | 41 | (13) |
| DOK Level 3 (3) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) | 0 | (0) |
| Consensus DOK 1 | 31 | (5) | 44 | (7) | 38 | (6) | 31 | (5) | 31 | (5) | 50 | (8) | 44 | (7) | 19 | (3) |
| Consensus DOK 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Table 34

*Item Depth of Knowledge Ratings, Grade 5, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 3 | | 3 | | 3 | | 3 | | 1 | | 1 | | 2 | | 2 | |
| DOK Level 1 (1) | 56 | (27) | 54 | (26) | 65 | (31) | 73 | (35) | 88 | (14) | 88 | (14) | 44 | (14) | 50 | (16) |
| DOK Level 2 (2) | 40 | (19) | 44 | (21) | 33 | (16) | 23 | (11) | 13 | (2) | 13 | (2) | 50 | (16) | 47 | (15) |
| DOK Level 3 (3) | 4 | (2) | 2 | (1) | 2 | (1) | 4 | (2) | 0 | (0) | 0 | (0) | 6 | (2) | 3 | (1) |
| Consensus DOK 1 | 19 | (3) | 13 | (2) | 19 | (3) | 44 | (7) | 88 | (14) | 88 | (14) | - | - | - | - |
| Consensus DOK 2 | 13 | (2) | - | - | 6 | (1) | - | - | 13 | (2) | 13 | (2) | 13 | (2) | - | - |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Table 35

*Item Depth of Knowledge Ratings, Grade 6, Numbers & Operations*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| DOK Level 1 (1) | 19 | (6) | 28 | (9) | 19 | (6) | 34 | (11) | 28 | (9) | 22 | (7) | 34 | (11) | 31 (10 |
| DOK Level 2 (2) | 69 | (22) | 56 | (18) | 50 | (16) | 56 | (18) | 69 | (22) | 66 | (21) | 59 | (19) | 66 (21) |
| DOK Level 3 (3) | 13 | (4) | 16 | (5) | 31 | (10) | 9 | (3) | 3 | (1) | 13 | (4) | 6 | (2) | 3 (1) |
| Consensus DOK 1 | - | - | 6 | (1) | - | - | 6 | (1) | 6 | (1) | - | - | 6 | (1) | 6 (1) |
| Consensus DOK 2 | 44 | (7) | 31 | (5) | 25 | (4) | 25 | (4) | 44 | (7) | 38 | (6) | 25 | (4) | 38 (6) |
| Consensus DOK 3 | - | - | 13 | (2) | 13 | (2) | - | - | - | - | - | - | - | - | - - |

Table 36

*Item Depth of Knowledge Ratings, Grade 6, Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 |
| DOK Level 1 (1) | 56 | (18) | 59 | (19) | 50 | (16) | 63 | (20) | 63 | (20) | 63 | (20) | 56 | (18) | 56 (18) |
| DOK Level 2 (2) | 28 | (9) | 41 | (13) | 47 | (15) | 34 | (11) | 38 | (12) | 34 | (11) | 38 | (12) | 34 (11) |
| DOK Level 3 (3) | 16 | (5) | 0 | (0) | 3 | (1) | 3 | (1) | 0 | (0) | 3 | (1) | 6 | (2) | 9 (3) |
| Consensus DOK 1 | 38 | (6) | 25 | (4) | 31 | (5) | 38 | (6) | 38 | (6) | 38 | (6) | 25 | (4) | 38 (6) |
| Consensus DOK 2 | - | - | 19 | (3) | 13 | (2) | 6 | (1) | 13 | (2) | 6 | (1) | 6 | (1) | 13 (2) |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - - |

Table 37

*Item Depth of Knowledge Ratings, Grade 6, Numbers/Operations/Ratios*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 22 | (7) | 25 | (8) | 6 | (2) | 22 | (7) | 25 | (8) | 38 | (12) | 28 | (9) | 38 | (12) |
| DOK Level 2 (2) | 59 | (19) | 59 | (19) | 69 | (22) | 72 | (23) | 59 | (19) | 53 | (17) | 56 | (18) | 53 | (17) |
| DOK Level 3 (3) | 19 | (6) | 16 | (5) | 25 | (8) | 6 | (2) | 16 | (5) | 9 | (3) | 16 | (5) | 9 | (3) |
| Consensus DOK 1 | 13 | (2) | - | - | - | - | 6 | (1) | - | - | 6 | (1) | 6 | (1) | 6 | (1) |
| Consensus DOK 2 | 50 | (8) | 31 | (5) | 56 | (9) | 50 | (8) | 31 | (5) | 19 | (3) | 25 | (4) | 19 | (3) |
| Consensus DOK 3 | 19 | (3) | 6 | (1) | 19 | (3) | - | - | - | - | 6 | (1) | - | - | 6 | (1) |

Table 38

*Item Depth of Knowledge Ratings, Grade 7, Numbers/Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 72 | (23) | 78 | (25) | 88 | (28) | 78 | (25) | 88 | (28) | 81 | (26) | 72 | (23) | 91 | (29) |
| DOK Level 2 (2) | 28 | (9) | 22 | (7) | 13 | (4) | 19 | (6) | 13 | (4) | 19 | (6) | 25 | (8) | 9 | (3) |
| DOK Level 3 (3) | 0 | (0) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) | 0 | (0) | 3 | (1) | 0 | (0) |
| Consensus DOK 1 | 44 | (7) | 75 | (12) | 56 | (9) | 56 | (9) | 75 | (12) | 63 | (10) | 44 | (7) | 81 | (13) |
| Consensus DOK 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Table 39

*Item Depth of Knowledge Ratings, Grade 7, Measurement/Geometry/Algebra*

| | Benchmarks | | | | | | Progress Monitoring | | | | | | | | |
| | % (Frequency) | | | | | | % (Frequency) | | | | | | | | |
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 28 | (9) | 75 | (24) | 75 | (24) | 28 | (9) | 22 | (7) | 38 | (12) | 78 | (25) | 81 | (26) |
| DOK Level 2 (2) | 50 | (16) | 25 | (8) | 16 | (5) | 56 | (18) | 56 | (18) | 53 | (17) | 19 | (6) | 16 | (5) |
| DOK Level 3 (3) | 22 | (7) | 0 | (0) | 9 | (3) | 16 | (5) | 9 | (3) | 9 | (3) | 3 | (1) | 3 | (1) |
| Consensus DOK 1 | 6 | (1) | 50 | (8) | 50 | (8) | 6 | (1) | - | - | 13 | (2) | 63 | (10) | 63 | (10) |
| Consensus DOK 2 | 19 | (3) | - | - | - | - | 31 | (5) | 25 | (4) | 31 | (5) | - | - | - | - |
| Consensus DOK 3 | 13 | (2) | - | - | - | - | 13 | (2) | 6 | (1) | 6 | (1) | - | - | - | - |

Table 40

*Item Depth of Knowledge Ratings, Grade 7, Numbers/Operations/Algebra/Geometry*

| | Benchmarks | | | | | | Progress Monitoring | | | | | | | | |
| | % (Frequency) | | | | | | % (Frequency) | | | | | | | | |
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 59 | (19) | 69 | (22) | 47 | (15) | 69 | (22) | 34 | (11) | 47 | (15) | 44 | (14) | 44 | (14) |
| DOK Level 2 (2) | 38 | (12) | 31 | (10) | 44 | (14) | 25 | (8) | 59 | (19) | 47 | (15) | 53 | (17) | 53 | (17) |
| DOK Level 3 (3) | 3 | (1) | 0 | (0) | 9 | (3) | 6 | (2) | 6 | (2) | 6 | (2) | 3 | (1) | 3 | (1) |
| Consensus DOK 1 | 44 | (7) | 44 | (7) | 19 | (3) | 38 | (6) | 13 | (2) | 19 | (3) | 6 | (1) | - | - |
| Consensus DOK 2 | 25 | (4) | 6 | (1) | 19 | (3) | - | - | 31 | (5) | 13 | (2) | 13 | (2) | 13 | (2) |
| Consensus DOK 3 | - | - | - | - | 6 | (1) | - | - | - | - | - | - | - | - | - | - |

Table 41

*Item Depth of Knowledge Ratings, Grade 8, Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 59 | (19) | 78 | (25) | 59 | (19) | 72 | (23) | 69 | (22) | 66 | (21) | 59 | (19) | 78 | (25) |
| DOK Level 2 (2) | 22 | (7) | 16 | (5) | 22 | (7) | 13 | (4) | 19 | (6) | 28 | (9) | 31 | (10) | 16 | (5) |
| DOK Level 3 (3) | 19 | (6) | 6 | (2) | 19 | (6) | 16 | (5) | 13 | (4) | 6 | (2) | 9 | (3) | 6 | (2) |
| Consensus DOK 1 | 19 | (3) | 56 | (9) | 19 | (3) | 44 | (7) | 38 | (6) | 31 | (5) | 19 | (3) | 56 | (9) |
| Consensus DOK 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Table 42

*Item Depth of Knowledge Ratings, Grade 8, Geometry/Measurement*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1[a] | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 88 | (28) | 91 | (29) | 94 | (30) | 90 | (28) | 91 | (29) | 94 | (30) | 91 | (29) | 100 | (32) |
| DOK Level 2 (2) | 13 | (4) | 3 | (1) | 3 | (1) | 10 | (3) | 9 | (3) | 6 | (2) | 9 | (3) | 0 | (0) |
| DOK Level 3 (3) | 0 | (0) | 6 | (2) | 3 | (1) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) | 0 | (0) |
| Consensus DOK 1 | 75 | (12) | 81 | (13) | 88 | (14) | 81 | (13) | 81 | (13) | 75 | (12) | 8 | (13) | 100 | (16) |
| Consensus DOK 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

[a] There was one missing rating in Form 1.

Table 43

*Item Depth of Knowledge Ratings, Grade 8, Data Analysis/Numbers & Operations/Algebra*

| | Benchmarks % (Frequency) | | | | | | Progress Monitoring % (Frequency) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | | Winter | | Spring | | Form 1 | | Form 3 | | Form 5 | | Form 7 | | Form 9 | |
| Number of raters | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| DOK Level 1 (1) | 28 | (9) | 59 | (19) | 50 | (16) | 19 | (6) | 31 | (10) | 28 | (9) | 34 | (11) | 38 | (12) |
| DOK Level 2 (2) | 56 | (18) | 41 | (13) | 50 | (16) | 75 | (24) | 63 | (20) | 66 | (21) | 66 | (21) | 63 | (20) |
| DOK Level 3 (3) | 16 | (5) | 0 | (0) | 0 | (0) | 6 | (2) | 6 | (2) | 6 | (2) | 0 | (0) | 0 | (0) |
| Consensus DOK 1 | 19 | (3) | 38 | (6) | 19 | (3) | 6 | (1) | 13 | (2) | 19 | (3) | 13 | (2) | 6 | (1) |
| Consensus DOK 2 | 31 | (5) | 19 | (3) | 19 | (3) | 56 | (9) | 38 | (6) | 50 | (8) | 44 | (7) | 31 | (5) |
| Consensus DOK 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Table 44

*Standards Depth of Knowledge Descriptive Statistics*

| Grade | Number of standards | Number of raters* | Number of possible ratings | Depth of knowledge rating | | |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 3 | 12 | 3-5 | 53 | 10 (19%) | 27 (51%) | 16 (30%) |
| 4 | 14 | 3-6 | 68 | 21 (31%) | 25 (37%) | 22 (32%) |
| 5 | 18 | 3-6 | 92 | 39 (42%) | 37 (40%) | 16 (17%) |
| 6 | 16 | 2-3 | 33 | 13 (39%) | 16 (48%) | 4 (12%) |
| 7 | 12 | 2-3 | 27 | 6 (22%) | 10 (37%) | 11 (41%) |
| 8 | 15 | 2-3 | 35 | 10 (29%) | 19 (54%) | 6 (17%) |
| Total | 87 | 2-6 | 308 | 99 (32%) | 134 (44%) | 75 (24%) |

Table 45

*Grade 3 Focal Point: Number and Operation*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Understand that the size of a fractional part is relative to the size of the whole. | 2 | 1 | 2 | 1 | 1 | |
| Use fractions to represent numbers that are equal to, less than, or greater than one. | 2 | 1 | 1 | 1 | 2 | |
| Develop an understanding of the meanings and uses of fractions to represent parts of a whole, parts of a set, or points or distances on a number line. | 2 | 1 | 3 | 2 | 2 | |
| Understand and use models, including the number line, to identify equivalent fractions. | 2 | 2 | 2 | 2 | 3 | |
| Solve problems that involve comparing and ordering fractions by using models, benchmark fractions, or common numerators or denominators. | 2 | 2 | 2 | 2 | 3 | |

Table 46

*Grade 3 Focal Point: Number and Operations, Algebra, and Data Analysis*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Build, draw, and analyze two-dimensional shapes to understand attributes and properties of two-dimensional space. | 3 | 2 | 3 | | 2 | |
| Investigate, describe, and reason about decomposing, combining, and transforming polygons to make other polygons. | 3 | 3 | 3 | 3 | 3 | |
| Describe, analyze, compare, and classify two-dimensional shapes by their sides and angles and connect these attributes to definitions of shapes. | 2 | 2 | 2 | 3 | 2 | |
| Use attributes and properties of two-dimensional shapes to solve problems including applications involving congruence and symmetry. | 2 | 2 | 2 | 3 | 3 | |

Table 47

*Grade 3 Focal Point: Geometry and Measurement*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Understand representations of multiplication and division of whole numbers (e.g., equal-sized groups, arrays, area models, and equal jumps on number lines for multiplication, as well as successive subtraction, partitioning, and sharing for division). | 3 | 1 | 1 | | | |
| Use properties of addition and multiplication (e.g., commutativity, associativity, and the distributive property) to multiply whole numbers and apply increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving basic facts. | 1 | 2 | 3 | | | |
| Relate multiplication and division as inverse operations (e.g., the relationship between multiples and factors). | 2 | 2 | 3 | | | |

Table 48

*Grade 4 Focal Point: Number and Operations*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Understand decimal notation as an extension of the base-ten system of writing whole numbers that is useful for representing more numbers, including numbers between 0 and 1, between 1 and 2,and so on. | 2 | 1 | 3 | 2 | 2 | |
| Make change for amounts up to $10.00. | 1 | 1 | 1 | 3 | 2 | |
| Connect equivalent fractions and decimals by comparing models to symbols and locating equivalent symbols on the number line. | 2 | 2 | 2 | 3 | 2 | |
| Identify equivalent decimals, compare and order decimals, and estimate decimal or fractional amounts in problem solving. | 3 | 2 | 3 | 3 | 3 | |

Table 49

*Grade 4 Focal Point: Number and Operations and Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Understand a square that is one unit on a side is the standard unit for measuring area. | 1 | 1 | 1 | 2 | 1 | |
| Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle. | 2 | 2 | 3 | 2 | 3 | 1 |
| Recognize area as an attribute of two-dimensional regions. | 1 | 1 | 1 | 1 | 2 | 3 |
| [Make frequency tables, bar graphs, picture graphs, and line plots.] | 2 | 2 | 3 | 1 | 3 | 1 |
| Select appropriate units, strategies, and tools for solving problems that involve estimating or measuring area. | 3 | 1 | 2 | 2 | 3 | 3 |
| Quantify area by finding the total number of same-sized units of area that cover a shape without gaps or overlaps. | 2 | 2 | 3 | 1 | 2 | 1 |

Table 50

*Grade 4 Focal Point: Measurement*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Apply understanding of models for multiplication (i.e., equal-sized groups, arrays, area models, equal intervals on the number line), place value, and properties of operations (in particular, the distributive property). | 3 | 1 | 2 | | | 1 |
| Develop fluency with efficient procedures, including the standard algorithm, for multiplying whole numbers, understand why the procedures work (on the basis of place value and properties of operations), and use them to solve problems. | 3 | 2 | 2 | | | |
| Develop, discuss, and use accurate, efficient, and generalizable methods to multiply multi-digit whole numbers. | 3 | 3 | 1 | | | |
| Select appropriate methods and apply them accurately to estimate products or calculate them mentally, depending on the context and numbers involved. | 3 | 2 | 3 | | | |

Table 51

*Grade 5 Focal Point: Number and Operations and Data Analysis*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Add and subtract fractions and decimals to solve problems, including problems involving measurement. | 1 | 1 | 2 | | | |
| Apply understandings of decimal models, place value, and properties to add and subtract decimals. | 1 | 1 | 2 | | | |
| Apply understandings of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. | 1 | 1 | 3 | | | |
| Develop fluency with standard procedures for adding and subtracting fractions and decimals. | 1 | 1 | 2 | | | |
| Estimate fractions and decimals sums and differences. | 1 | 2 | 2 | | | |

Table 52

*Grade 5 Focal Point: Number and Operations and Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Apply understanding of models for division, place value, properties, and the relationship of division to multiplication. | 2 | 2 | 1 | 3 | 1 | |
| Consider the context in which a problem is situated to select the most useful form of the quotient for the solution, and they interpret it appropriately. | 3 | 2 | 1 | 3 | 2 | 1 |
| Develop fluency with efficient procedures, including the standard algorithm, for dividing whole numbers, understand why the procedures work (on the basis of place value and properties of operations) and use them to solve problems. | 3 | 2 | 1 | 3 | 1 | 2 |
| Develop, discuss, and use accurate, efficient, and generalizable methods to find quotients involving multi-digit dividends. | 2 | 1 | 2 | 3 | 2 | 1 |
| Select appropriate methods and apply them accurately to estimate quotients or calculate them mentally, depending on the context and numbers involved. | 3 | 1 | 2 | 3 | 2 | 2 |

Table 53

*Grade 5 Focal Point: Geometry, Measurement, and Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Decompose three-dimensional shapes and find surface areas and volumes of prisms. | 2 | 1 | 1 | 2 | 2 | 2 |
| Find and justify relationships among the formulas for the areas of different polygons when determining surface area. | 2 | 3 | 2 | 3 | 2 | 1 |
| Measure necessary attributes of shapes to use area formulas to solve problems. | 2 | 1 | 1 | 2 | 3 | 3 |
| Quantify volume by finding the total number of same-sized units of volume that fill a three-dimensional shape without gaps or overlaps. | 2 | 1 | 1 | 2 | 2 | 1 |
| Recognize volume as an attribute of three-dimensional space. | 1 | 1 | 1 | 1 | 2 | 2 |
| Relate two-dimensional shapes to three-dimensional shapes and analyze properties of polyhedral solids, describing them by the number of edges, faces, or vertices as well as the types of faces. | 2 | 2 | 1 | 2 | 2 | 1 |
| Select appropriate units, strategies, and tools for solving problems that involve estimating or measuring volume. | 3 | 1 | 1 | 3 | 3 | 1 |
| Understand a cube that is one unit on an edge is the standard unit for measuring volume. | 1 | 2 | 1 | 1 | 2 | 1 |

Table 54

*Grade 6 Focal Point: Number and Operations*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Develop and use strategies to estimate the result of decimal and fraction computations & judge the reasonableness of results. | 2 | 2 | | | | 1 |
| Order, model, and compare fraction and decimals. | 2 | 2 | | | | |
| Use the commutative, associative, and distributive properties to show that two expressions are equivalent. | 1 | 2 | | | | |
| Multiply and divide fractions and decimals to solve problems, including multistep problems and problems involving measurement. | 3 | 3 | | | | |
| Use common procedures to multiply and divide fractions and decimals efficiently and accurately. | 2 | 1 | | | | |
| Use the meanings of fractions, multiplication and division, and the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions and explain why they work. | 2 | 2 | | | | |

Table 55

*Grade 6 Focal Point: Number and Operations and Probability*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Use order of operations to simplify expressions, including exponents and grouping symbols. | 1 | 2 | | | | |
| Construct and analyze tables (e.g., to show quantities that are in equivalent ratios), and they use equations to describe simple relationships (such as 3x = y) shown in a table. | 1 | 2 | | | | |
| Identify and represent equivalent expressions. | 1 | 1 | | | | |
| Know that the solutions of an equation are the values of the variables that make the equation true. | 2 | 1 | | | | |
| Solve simple one-step equations by using number sense, properties of operations and the idea of maintaining equality on both sides of an equation. | 2 | 1 | | | | |
| Understand that variables represent numbers whose exact values are not yet specified, and use variables appropriately. | 1 | 1 | | | | |
| Write mathematical expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. | 1 | 3 | | | | |

Table 56

*Grade 6 Focal Point: Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Determine simple probabilities, both experimental and theoretical. | 2 | 1 | | | | |
| Extend whole number multiplication and division to ratios and rates. | 2 | 2 | | | | |
| Solve a wide variety of problems involving ratios and rates. | 2 | 3 | | | | |

Table 57

*Grade 7 Focal Point: Number and Operations and Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Apply work on proportionality to measurement in different contexts, including converting among different units of measurement to solve problems involving rates such as motion at a constant speed. | 3 | 2 | | | | |
| Distinguish proportional relationships (y/x = k, or y = kx) from other relationships, including inverse proportionality (xy = k, or y = k/x). | 3 | 2 | | | | |
| Extend work with ratios to develop an understanding of proportionality that they apply to solve single and multistep problems in numerous contexts. | 3 | 3 | | | | |
| Graph proportional relationships and identify the unit rate as the slope of the related line. | 3 | 2 | | | | |
| Solve problems about similar objects (including figures) by using scale factors that relate corresponding lengths of the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. | 3 | 2 | | | | |
| Use ratio and proportionality to solve a wide variety of percent problems, including problems involving discounts, interest, taxes, tips, and percent increase or decrease. | 3 | 2 | | | | |

Table 58

*Grade 7 Focal Point: Number and Operations, Algebra, and Geometry*

|  | Raters | | | | | |
| Standard | 1 | 2 | 3 | 4 | 5 | 6 |
| --- | --- | --- | --- | --- | --- | --- |
| Decompose two- and three-dimensional shapes into smaller, component shapes, students find surface areas and develop and justify formulas for the surface areas and volumes of prisms and cylinders. | 3 | 2 | 1 | | | |
| Solve a variety of problems involving areas and circumferences of circles. | 3 | 1 | 2 | | | |
| Solve a variety of problems involving surface areas, areas and circumferences of circles, and volumes of prisms and cylinders. | 3 | 1 | 2 | | | |

Table 59

*Grade 7 Focal Point: Measurement and Geometry*

|  | Raters | | | | | |
| Standard | 1 | 2 | 3 | 4 | 5 | 6 |
| --- | --- | --- | --- | --- | --- | --- |
| Develop and use strategies to estimate the result of rational number computations and judge the reasonableness of results. | 2 | 3 | | | | |
| Extend understandings of addition, subtraction, multiplication, and division, together with their properties, to all rational numbers, including negative integers. | 1 | 2 | | | | |
| Use the arithmetic of rational numbers as they formulate and solve linear equations in one variable and use these equations to solve problems. | 1 | 1 | | | | |

Table 60

*Grade 8 Focal Point: Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Describe how such aspects of a function as slope and y-intercept appear in different representations. | 1 | 1 | | | | |
| Relate systems of linear equations to pairs of lines that intersect, are parallel, or are the same line, in the plane. | 1 | 2 | | | | |
| Translate among verbal, tabular, graphical, and algebraic representations of functions. | 1 | 2 | | | | |
| Understand that the slope (m) of a line is a constant rate of change, so if the input, or x-coordinate, changes by a specific amount, (a), the output, or y-coordinate, changes by the amount (ma). | 1 | 2 | | | | |
| Use linear functions, linear equations, and systems of linear equations to represent, analyze, and solve a variety of problems. | 2 | 3 | | | | |

Table 61

*Grade 8 Focal Point: Data Analysis and Algebra*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Apply reasoning about similar triangles to solve a variety of problems, including those that ask them to find heights and distances. | 1 | 3 | | | | |
| Apply the Pythagorean theorem to find distances between points in the Cartesian coordinate plane to measure lengths and analyze polygons and polyhedra. | 2 | 2 | | | | |
| Explain why the Pythagorean theorem is valid by using a variety of methods. | 1 | 1 | | | | |
| Explain why the sum of the measures of the angles in a triangle is 180 degrees, and they apply this fact about triangles to find unknown measures of angles. | 1 | 2 | | | | |
| Prove that particular configurations of lines give rise to similar triangles because of the congruent angles created when a transversal cuts parallel lines and apply this reasoning about similar triangles to solve a variety of problems. | 1 | 2 | | | | |

Table 62

*Grade 8 Focal Point: Geometry and Measurement*

| Standard | Raters | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Interpret and analyze graphical displays of data and descriptive statistics. | 2 | 3 | 2 | | | |
| Compare the information provided by the mean and the median and investigate the different effects that changes in data values have on these measures of center. | 2 | 3 | 2 | | | |
| Organize and display data to pose and answer questions. | 2 | 2 | 2 | | | |
| Select the mean or the median as the appropriate measure of center for a given purpose. | 2 | 3 | 2 | | | |
| Use descriptive statistics, including mean, median, and range, to summarize and compare data sets. | 2 | 3 | 2 | | | |

Table 63

*Grade 3 Benchmark Measures: Individual Rater's Ratings on Strength of Link Between Items and*

*Standards*

| Focal point | Term | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | E | G | T |
| Number and operations | Fall | Not Linked (0) | 0 | 0 | 0 |
| | | Vaguely Linked (1) | 18.8 | 0 | 0 |
| | | Somewhat linked (2) | 31.2 | 25.0 | 6.2 |
| | | Direct Linked (3) | 50.0 | 75.0 | 93.8 |
| | Winter | Not Linked (0) | 0 | 0 | 0 |
| | | Vaguely Linked (1) | 18.8 | 6.1 | 0 |
| | | Somewhat linked (2) | 37.5 | 31.2 | 0 |
| | | Direct Linked (3) | 43.8 | 62.5 | 100 |
| | Spring | Not Linked (0) | 0 | 0 | 0 |
| | | Vaguely Linked (1) | 0 | 0 | 6.2 |
| | | Somewhat linked (2) | 25.0 | 6.2 | 0 |
| | | Direct Linked (3) | 75.0 | 93.8 | 93.8 |
| Geometry | Fall | Not Linked (0) | 0 | 0 | 0 |
| | | Vaguely Linked (1) | 25.0 | 12.5 | 6.3 |
| | | Somewhat linked (2) | 18.8 | 6.3 | 18.8 |
| | | Direct Linked (3) | 56.3 | 81.3 | 75.0 |
| | Winter | Not Linked (0) | 0 | 0 | 0 |
| | | Vaguely Linked (1) | 6.3 | 0 | 6.3 |
| | | Somewhat linked (2) | 37.5 | 31.3 | 0 |
| | | Direct Linked (3) | 56.3 | 68.8 | 93.8 |
| | Spring | Not Linked (0) | 6.3 | 0 | 6.3 |
| | | Vaguely Linked (1) | 12.5 | 6.3 | 0 |
| | | Somewhat linked (2) | 31.3 | 6.3 | 0 |
| | | Direct Linked (3) | 50.0 | 87.5 | 93.8 |
| Number and | Fall | Not Linked (0) | 0 | 0 | 12.5 |

| | | | | | |
|---|---|---|---|---|---|
| operations and algebra | | Vaguely Linked (1) | 18.8 | 6.3 | 0 |
| | | Somewhat linked (2) | 12.5 | 0 | 0 |
| | | Direct Linked (3) | 68.8 | 93.8 | 87.5 |
| | Winter | Not Linked (0) | 0 | 0 | 6.3 |
| | | Vaguely Linked (1) | 0 | 18.8 | 0 |
| | | Somewhat linked (2) | 18.8 | 0 | 0 |
| | | Direct Linked (3) | 81.3 | 81.3 | 93.8 |
| | Spring | Not Linked (0) | 0 | 0 | 6.3 |
| | | Vaguely Linked (1) | 6.3 | 6.3 | 0 |
| | | Somewhat linked (2) | 12.5 | 0 | 0 |
| | | Direct Linked (3) | 81.3 | 93.8 | 93.8 |

Table 64

*Grade 3 Benchmark Measures Benchmark Measures: Individual Raters' Ratings on Standard Depth of*

*Knowledge*

| Focal point | Term | Ratings | Raters | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | D | E | G | T |
| Number and operations | Fall | Recognition and Reproduction (1) | 0 | 56.2 | 12.5 | 31.2 | 18.8 |
| | | Skill and Concept (2) | 100.0 | 43.8 | 62.5 | 68.8 | 37.5 |
| | | Strategic Thinking (3) | 0 | 0 | 25.0 | 0 | 43.8 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 0 | 62.5 | 18.8 | 31.2 | 12.5 |
| | | Skill and Concept (2) | 100.0 | 37.5 | 50.0 | 68.8 | 50.0 |
| | | Strategic Thinking (3) | 0 | 0 | 31.2 | 0 | 37.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 0 | 62.5 | 37.5 | 50.0 | 12.5 |
| | | Skill and Concept (2) | 100.0 | 37.5 | 50.0 | 50.0 | 50.0 |
| | | Strategic Thinking (3) | 0 | 0 | 12.5 | 0 | 37.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 |
| Geometry | Fall | Recognition and Reproduction (1) | 0 | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | 50.0 | 81.3 | 50.0 | 0 | 56.3 |
| | | Strategic Thinking (3) | 50.0 | 18.8 | 50.0 | 68.8* | 43.8 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 0 | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | 56.3 | 81.3 | 56.3 | 0 | 43.8 |
| | | Strategic Thinking (3) | 43.8 | 18.8 | 43.8 | 75.0* | 56.2 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 0 | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | 50.0 | 75.0 | 50.0 | 0 | 62.5 |
| | | Strategic Thinking (3) | 50.0 | 25.0 | 50.0 | 75.0 | 37.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0* | 0 |

| Number and operations and algebra | Fall | Recognition and Reproduction (1) | -- | -- | 37.5 | 18.8 | 18.8 |
|---|---|---|---|---|---|---|---|
| | | Skill and Concept (2) | -- | -- | 43.8 | 81.3 | 81.3 |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 0 | 0 |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | -- | -- | 31.3 | 18.8 | 18.8 |
| | | Skill and Concept (2) | -- | -- | 43.8 | 75.0 | 0 |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 0 | 75.0 |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | -- | -- | 31.3 | 62.5 | 62.5 |
| | | Skill and Concept (2) | -- | -- | 6.3 | 37.5 | 0 |
| | | Strategic Thinking (3) | -- | -- | 62.5 | 0 | 37.5 |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | 0 |

*Not all items were rated.

Table 65

*Grade 3 Benchmark Measures Benchmark Measures: Individual Raters' Ratings on Item Depth of*

*Knowledge*

| Focal point | Term | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | E | G | T |
| Number and operations | Fall | Recognition and Reproduction (1) | 37.5 | 81.2 | 31.2 |
| | | Skill and Concept (2) | 62.5 | 18.8 | 68.8 |
| | | Strategic Thinking (3) | 0 | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 37.5 | 87.5 | 43.8 |
| | | Skill and Concept (2) | 62.5 | 12.5 | 56.2 |
| | | Strategic Thinking (3) | 0 | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 50.0 | 81.2 | 31.2 |
| | | Skill and Concept (2) | 43.8 | 18.8 | 56.2 |
| | | Strategic Thinking (3) | 6.2 | 0 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| Geometry | Fall | Recognition and Reproduction (1) | 50.0 | 31.3 | 62.5 |
| | | Skill and Concept (2) | 37.5 | 43.8 | 31.3 |
| | | Strategic Thinking (3) | 12.5 | 25.0 | 6.3 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 43.8 | 25.0 | 37.5 |
| | | Skill and Concept (2) | 37.5 | 50.0 | 62.5 |
| | | Strategic Thinking (3) | 18.8 | 25.0 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 37.5 | 12.5 | 43.8 |
| | | Skill and Concept (2) | 43.8 | 75.0 | 50.0 |
| | | Strategic Thinking (3) | 18.8 | 12.5 | 6.3 |
| | | Extended Thinking (4) | 0 | 0 | 0 |

| Number and operations and algebra | Fall | Recognition and Reproduction (1) | 56.3 | 87.5 | 62.5 |
| --- | --- | --- | --- | --- | --- |
| | | Skill and Concept (2) | 37.5 | 12.5 | 37.5 |
| | | Strategic Thinking (3) | 6.3 | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 56.3 | 100.0 | 56.3 |
| | | Skill and Concept (2) | 43.8 | 0 | 43.8 |
| | | Strategic Thinking (3) | 0 | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 43.8 | 93.8 | 50.0 |
| | | Skill and Concept (2) | 43.8 | 6.3 | 43.8 |
| | | Strategic Thinking (3) | 12.5 | 0 | 6.3 |
| | | Extended Thinking (4) | 0 | 0 | 0 |

Table 66a

*Grade 3 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal point | Form | Ratings | Raters | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | D | E | G | T |
| Number and operations | 1 | Not Linked (0) | -- | -- | 0 | 0 | 0 |
| | | Vaguely Linked (1) | -- | -- | 12.5 | 12.5 | 0 |
| | | Somewhat linked (2) | -- | -- | 12.5 | 87.5 | 6.2 |
| | | Direct Linked (3) | -- | -- | 50.0 | 0 | 93.8 |
| | 3 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 0 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 37.5 | 6.2 | -- |
| | | Direct Linked (3) | -- | -- | 62.5 | 93.8 | -- |
| | 4 | Not Linked (0) | 0 | 0 | -- | -- | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- | -- | -- |
| | | Somewhat linked (2) | 0 | 18.8 | -- | -- | -- |
| | | Direct Linked (3) | 100.0 | 81.2 | -- | -- | -- |
| | 5 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 6.2 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 18.8 | 12.5 | -- |
| | | Direct Linked (3) | -- | -- | 75.0 | 87.5 | -- |
| | 7 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 6.2 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 6.2 | 0 | -- |
| | | Direct Linked (3) | -- | -- | 87.5 | 100.0 | -- |
| | 9 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 0 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 12.5 | 0 | -- |
| | | Direct Linked (3) | -- | -- | 87.5 | 100.0 | -- |

Table 66b

*Grade 3 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal point | Form | Ratings | Raters | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | | B | C | E | H | T |
| Geometry | 1 | Not Linked (0) | -- | -- | 0 | 0 | 0 |
| | | Vaguely Linked (1) | -- | -- | 50.0 | 0 | 0 |
| | | Somewhat linked (2) | -- | -- | 12.5 | 6.3 | 18.8 |
| | | Direct Linked (3) | -- | -- | 37.5 | 93.8 | 81.3 |
| | 3 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 25.0 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 25.0 | 0 | -- |
| | | Direct Linked (3) | -- | -- | 50.0 | 100.0 | -- |
| | 4 | Not Linked (0) | 6.3 | 18.8 | -- | -- | -- |
| | | Vaguely Linked (1) | 6.3 | 6.3 | -- | -- | -- |
| | | Somewhat linked (2) | 18.8 | 31.3 | -- | -- | -- |
| | | Direct Linked (3) | 68.8 | 43.8 | -- | -- | -- |
| | 5 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 25.0 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 31.3 | 0 | -- |
| | | Direct Linked (3) | -- | -- | 43.8 | 100.0 | -- |
| | 7 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 12.5 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 25.0 | 6.3 | -- |
| | | Direct Linked (3) | -- | -- | 62.5 | 93.8 | -- |
| | 9 | Not Linked (0) | -- | -- | 0 | 0 | -- |
| | | Vaguely Linked (1) | -- | -- | 31.3 | 0 | -- |
| | | Somewhat linked (2) | -- | -- | 18.8 | 6.3 | -- |
| | | Direct Linked (3) | -- | -- | 50.0 | 93.8 | -- |

Table 66c

*Grade 3 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal point | Form | Ratings | Raters | | |
| --- | --- | --- | --- | --- | --- |
| | | | E | G | T |
| Number and operations and algebra | 1 | Not Linked (0) | 0 | 0 | 0 |
| | | Vaguely Linked (1) | 0 | 0 | 0 |
| | | Somewhat linked (2) | 25.0 | 0 | 6.3 |
| | | Direct Linked (3) | 75.0 | 100.0 | 93.8 |
| | 3 | Not Linked (0) | | 0 | -- |
| | | Vaguely Linked (1) | 6.3 | 0 | -- |
| | | Somewhat linked (2) | 87.5* | 6.3 | -- |
| | | Direct Linked (3) | 0 | 93.8 | -- |
| | 5 | Not Linked (0) | 0 | 0 | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- |
| | | Somewhat linked (2) | 93.8 | 12.5 | -- |
| | | Direct Linked (3) | 6.3 | 87.5 | -- |
| | 7 | Not Linked (0) | 0 | 0 | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- |
| | | Somewhat linked (2) | 6.3 | 0 | -- |
| | | Direct Linked (3) | 93.8 | 100.0 | -- |
| | 9 | Not Linked (0) | 0 | 0 | -- |
| | | Vaguely Linked (1) | 50.0 | 0 | -- |
| | | Somewhat linked (2) | 50.0 | 0 | -- |
| | | Direct Linked (3) | 0 | 100.0 | -- |

Table 67a

*Grade 3 Progress Monitoring Measures: Progress Monitoring Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal point | Form | Ratings | Raters | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | D | E | G | T |
| Number and operations | 1 | Recognition and Reproduction (1) | 37.5 | 56.2 | 31.2 | 43.8 | 12.5 |
| | | Skill and Concept (2) | 56.2 | 43.8 | 56.2 | 56.2 | 43.8 |
| | | Strategic Thinking (3) | 6.2 | 0 | 12.5 | 0 | 43.8 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | -- | 56.2 | 12.5 | 31.2 | 18.8 |
| | | Skill and Concept (2) | -- | 37.5* | 56.2 | 62.5* | 37.5 |
| | | Strategic Thinking (3) | -- | 0 | 25.0* | 0 | 37.5* |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 4 | Recognition and Reproduction (1) | -- | 37.5 | 12.5 | 31.2 | 18.8 |
| | | Skill and Concept (2) | -- | 62.5 | 81.2 | 68.8 | 18.8 |
| | | Strategic Thinking (3) | -- | 0 | 6.2 | 0 | 62.5 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | -- | 50.0 | 18.8 | 43.8 | 25.0 |
| | | Skill and Concept (2) | -- | 50.0 | 75.0 | 56.2 | 25.0 |
| | | Strategic Thinking (3) | -- | 0 | 6.2 | 0 | 50.0 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | -- | 68.8 | 25.0 | 43.8 | 18.8 |
| | | Skill and Concept (2) | -- | 31.2 | 50.0 | 56.2 | 50.0 |
| | | Strategic Thinking (3) | -- | 0 | 25.0 | 0 | 31.2 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | -- | 50.0 | 25.0 | 43.8 | 18.8 |
| | | Skill and Concept (2) | -- | 50.0 | 68.8 | 56.2 | 31.2 |
| | | Strategic Thinking (3) | -- | 0 | 6.2 | 0 | 50.0 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |

* Not all items were rated.

Table 67b

*Grade 3 Progress Monitoring Measures: Progress Monitoring Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal point | Form | Ratings | Raters | | | | |
|---|---|---|---|---|---|---|---|
| | | | B | C | E | H | T |
| Geometry | 1 | Recognition and Reproduction (1) | -- | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | -- | 81.3 | 50.0 | 0 | 43.8 |
| | | Strategic Thinking (3) | -- | 18.8 | 50.0 | 69.8* | 56.3 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | -- | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | -- | 87.5 | 62.5 | 0 | 50.0 |
| | | Strategic Thinking (3) | -- | 12.5 | 37.5 | 75.0* | 50.0 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 4 | Recognition and Reproduction (1) | 0 | 0 | -- | 0 | 0 |
| | | Skill and Concept (2) | 37.5 | 68.8 | -- | 0 | 56.3 |
| | | Strategic Thinking (3) | 62.5 | 31.3 | -- | 69.8* | 43.8 |
| | | Extended Thinking (4) | 0 | 0 | -- | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | -- | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | -- | 81.3 | 56.3 | 0 | 43.8 |
| | | Strategic Thinking (3) | -- | 18.8 | 43.8 | 75.0* | 56.3 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | -- | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | -- | 75.0 | 37.5 | 0 | 62.5 |
| | | Strategic Thinking (3) | -- | 25.0 | 62.5 | 62.5* | 37.5 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | -- | 0 | 0 | 0 | 0 |
| | | Skill and Concept (2) | -- | 68.8 | 50.0 | 0 | 43.8 |
| | | Strategic Thinking (3) | -- | 31.3 | 50.0 | 81.3* | 56.3 |
| | | Extended Thinking (4) | -- | 0 | 0 | 0 | 0 |

*Not all items were rated.

Table 67c

*Grade 3 Progress Monitoring Measures: Progress Monitoring Measures: Individual Raters' Ratings on*

*Standard Depth of Knowledge*

| Focal point | Form | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | E | G | T |
| Number and operations and algebra | 1 | Recognition and Reproduction (1) | 37.5 | 25.0 | 25.0 |
| | | Skill and Concept (2) | 37.5 | 75.0 | 0 |
| | | Strategic Thinking (3) | 25.0 | 0 | 75.0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 25.0 | 25.0 | 25.0 |
| | | Skill and Concept (2) | 50.0 | 75.0 | 0 |
| | | Strategic Thinking (3) | 25.0 | 0 | 75.0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 62.5 | 0 | 0 |
| | | Skill and Concept (2) | 37.5 | 100.0 | 0 |
| | | Strategic Thinking (3) | 0 | 0 | 100 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 25.0 | 37.5 | 37.5 |
| | | Skill and Concept (2) | 37.5 | 62.5 | 0 |
| | | Strategic Thinking (3) | 37.5 | 0 | 62.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | 37.5 | 31.3 | 31.3 |
| | | Skill and Concept (2) | 31.3 | 68.8 | 0 |
| | | Strategic Thinking (3) | 31.3 | 0 | 68.8 |
| | | Extended Thinking (4) | 0 | 0 | 0 |

Table 68a

*Grade 3 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal point | Form | Ratings | Raters | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | | A | D | E | G | T |
| Number and operations | 1 | Recognition and Reproduction (1) | -- | -- | 50.0 | 93.8 | 37.5 |
| | | Skill and Concept (2) | -- | -- | 50.0 | 6.2 | 56.2 |
| | | Strategic Thinking (3) | -- | -- | 0 | 0 | 6.2 |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | -- | -- | 31.2 | 93.8 | -- |
| | | Skill and Concept (2) | -- | -- | 43.8 | 6.2 | -- |
| | | Strategic Thinking (3) | -- | -- | 25.0 | 0 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |
| | 4 | Recognition and Reproduction (1) | 12.5 | 93.8 | -- | -- | -- |
| | | Skill and Concept (2) | 62.5 | 6.2 | -- | -- | -- |
| | | Strategic Thinking (3) | 25.0 | 0 | -- | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | -- | -- | -- |
| | 5 | Recognition and Reproduction (1) | -- | -- | 43.8 | 100.0 | -- |
| | | Skill and Concept (2) | -- | -- | 43.8 | 0 | -- |
| | | Strategic Thinking (3) | -- | -- | 0 | 0 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |
| | 7 | Recognition and Reproduction (1) | -- | -- | 50.0 | 100.0 | -- |
| | | Skill and Concept (2) | -- | -- | 31.2 | 0 | -- |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 0 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |
| | 9 | Recognition and Reproduction (1) | -- | -- | 50.0 | 93.8 | -- |
| | | Skill and Concept (2) | -- | -- | 50.0 | 6.2 | -- |
| | | Strategic Thinking (3) | -- | -- | 0 | 0 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |

Table 68b

*Grade 3 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal point | Form | Ratings | Raters | | | | |
|---|---|---|---|---|---|---|---|
| | | | B | C | E | H | T |
| Geometry | 1 | Recognition and Reproduction (1) | -- | -- | 56.3 | 25.0 | 50.0 |
| | | Skill and Concept (2) | -- | -- | 25.0 | 56.3 | 37.5 |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 18.8 | 12.5 |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | -- | -- | 56.3 | 25.0 | -- |
| | | Skill and Concept (2) | -- | -- | 25.0 | 56.3 | -- |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 18.8 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |
| | 4 | Recognition and Reproduction (1) | 31.3 | 56.3 | -- | -- | -- |
| | | Skill and Concept (2) | 56.3 | 6.3 | -- | -- | -- |
| | | Strategic Thinking (3) | 62.5 | 37.5 | -- | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | -- | -- | -- |
| | 5 | Recognition and Reproduction (1) | -- | -- | 43.8 | 37.5 | -- |
| | | Skill and Concept (2) | -- | -- | 37.5 | 56.3 | -- |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 6.3 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |
| | 7 | Recognition and Reproduction (1) | -- | -- | 56.3 | 37.5 | -- |
| | | Skill and Concept (2) | -- | -- | 18.8 | 43.8 | -- |
| | | Strategic Thinking (3) | -- | -- | 25.0 | 18.8 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |
| | 9 | Recognition and Reproduction (1) | -- | -- | 62.5 | 31.3 | -- |
| | | Skill and Concept (2) | -- | -- | 18.8 | 62.5 | -- |
| | | Strategic Thinking (3) | -- | -- | 18.8 | 6.3 | -- |
| | | Extended Thinking (4) | -- | -- | 0 | 0 | -- |

Table 68c

*Grade 3 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal point | Form | Ratings | Raters | | |
| --- | --- | --- | --- | --- | --- |
| | | | E | G | T |
| Number and operations and algebra | 1 | Recognition and Reproduction (1) | 56.3 | 93.8 | 62.5 |
| | | Skill and Concept (2) | 18.8 | 6.3 | 31.3 |
| | | Strategic Thinking (3) | 25.0 | 0 | 6.3 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 50.0 | 100.0 | -- |
| | | Skill and Concept (2) | 43.8 | 0 | -- |
| | | Strategic Thinking (3) | 6.3 | 0 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | 5 | Recognition and Reproduction (1) | 62.5 | 100.0 | -- |
| | | Skill and Concept (2) | 37.5 | 0 | -- |
| | | Strategic Thinking (3) | 0 | 0 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | 7 | Recognition and Reproduction (1) | 56.3 | 93.8 | -- |
| | | Skill and Concept (2) | 37.5 | 6.3 | -- |
| | | Strategic Thinking (3) | 6.3 | 0 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | 9 | Recognition and Reproduction (1) | 31.3 | 100.0 | -- |
| | | Skill and Concept (2) | 68.8 | 0 | -- |
| | | Strategic Thinking (3) | 0 | 0 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |

Table 69

*Grade 5 Benchmark Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Term | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Data Analysis | Fall | Not Linked (0) | 0 | 0 | -- | 0 |
| | | Vaguely Linked (1) | 6.2 | 0 | -- | 0 |
| | | Somewhat linked (2) | 18.8 | 0 | -- | 6.2 |
| | | Direct Linked (3) | 75.0 | 100 | -- | 93.8 |
| | Winter | Not Linked (0) | 0 | 0 | -- | 0 |
| | | Vaguely Linked (1) | 12.5 | 0 | -- | 6.2 |
| | | Somewhat linked (2) | 0 | 6.2 | -- | 0 |
| | | Direct Linked (3) | 87.5 | 93.8 | -- | 93.8 |
| | Spring | Not Linked (0) | 0 | 0 | -- | 0 |
| | | Vaguely Linked (1) | 0 | 0 | -- | 6.2 |
| | | Somewhat linked (2) | 12.5 | 0 | -- | 0 |
| | | Direct Linked (3) | 87.5 | 100 | -- | 93.8 |
| Geometry, Measurement, and Algebra | Fall | Not Linked (0) | 0 | 0 | -- | 6.2 |
| | | Vaguely Linked (1) | 6.2 | 0 | -- | 0 |
| | | Somewhat linked (2) | 25.0 | 0 | -- | 0 |
| | | Direct Linked (3) | 68.8 | 100 | -- | 93.8 |
| | Winter | Not Linked (0) | 0 | -- | -- | 0 |
| | | Vaguely Linked (1) | 6.2 | -- | -- | 0 |
| | | Somewhat linked (2) | 18.8 | -- | -- | 0 |
| | | Direct Linked (3) | 75.0 | -- | -- | 100 |
| | Spring | Not Linked (0) | 0 | -- | -- | 0 |
| | | Vaguely Linked (1) | 6.2 | -- | -- | 0 |
| | | Somewhat linked (2) | 18.8 | -- | -- | 0 |
| | | Direct Linked (3) | 75.0 | -- | -- | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Number and Operations and Algebra | Fall | Not Linked (0) | 0 | -- | 0 | 0 |
| | | Vaguely Linked (1) | 0 | -- | 18.8 | 0 |
| | | Somewhat linked (2) | 6.2 | -- | 62.5 | 0 |
| | | Direct Linked (3) | 93.8 | -- | 18.8 | 100 |
| | Winter | Not Linked (0) | 0 | -- | 0 | 0 |
| | | Vaguely Linked (1) | 0 | -- | 0 | 6.2 |
| | | Somewhat linked (2) | 62.5 | -- | 75 | 6.2 |
| | | Direct Linked (3) | 37.5 | -- | 25 | 87.5 |
| | Spring | Not Linked (0) | 0 | -- | 0 | 0 |
| | | Vaguely Linked (1) | 0 | -- | 6.2 | 0 |
| | | Somewhat linked (2) | 50 | -- | 75.0 | 0 |
| | | Direct Linked (3) | 50 | -- | 18.8 | 100 |

Table 70

*Grade 5 Benchmark Measures: Standard Depth of Knowledge*

| Focal Point | Term | Ratings | Raters | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | F | G | H | T | B | C |
| Number and Operations and Data Analysis | Fall | Recognition and Reproduction (1) | 81.2 | 100 | -- | 81.2 | -- | -- |
| | | Skill and Concept (2) | 18.8 | 0 | -- | 18.8 | -- | -- |
| | | Strategic Thinking (3) | 0 | 0 | -- | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | -- | 0 | -- | -- |
| | Winter | Recognition and Reproduction (1) | 81.2 | 100 | -- | 75 | -- | -- |
| | | Skill and Concept (2) | 18.8 | 0 | -- | 25 | -- | -- |
| | | Strategic Thinking (3) | 0 | 0 | -- | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | -- | 0 | -- | -- |
| | Spring | Recognition and Reproduction (1) | 87.5 | 100 | -- | 62.5 | -- | -- |
| | | Skill and Concept (2) | 12.5 | 0 | -- | 37.5 | -- | -- |
| | | Strategic Thinking (3) | 0 | 0 | -- | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | -- | 0 | -- | -- |
| Geometry, Measurement, and Algebra | Fall | Recognition and Reproduction (1) | 68.8 | 87.5 | 18.8 | 0 | 18.8 | 75.0 |
| | | Skill and Concept (2) | 18.8 | 12.5 | 56.2 | 68.8 | 68.8 | 12.5 |
| | | Strategic Thinking (3) | 12.5 | 0 | 25.0 | 31.2 | 12.5 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 68.8 | 87.5 | 31.2 | 0 | 31.2 | 50.0 |
| | | Skill and Concept (2) | 18.8 | 12.5 | 43.8 | 87.5 | 56.2 | 37.5 |
| | | Strategic Thinking (3) | 12.5 | 0 | 25.0 | 12.5 | 12.5 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 75.0 | 87.5 | 25.0 | 0 | 25.0 | 68.8 |
| | | Skill and Concept (2) | 12.5 | 12.5 | 43.8 | 68.8 | 56.2 | 18.8 |
| | | Strategic Thinking (3) | 12.5 | 0 | 31.2 | 31.2 | 18.8 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Number and Operations and Algebra | Fall | Recognition and Reproduction (1) | 18.8 | 43.8 | 0 | 18.8 | -- | -- |
| | | Skill and Concept (2) | 81.2 | 56.2 | 0 | 81.2 | -- | -- |
| | | Strategic Thinking (3) | 0 | 0 | 100 | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | -- | -- |
| | Winter | Recognition and Reproduction (1) | 25 | 37.5 | 0 | 25 | -- | -- |
| | | Skill and Concept (2) | 75 | 62.5 | 0 | 75 | -- | -- |
| | | Strategic Thinking (3) | 0 | 0 | 100 | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | -- | -- |
| | Spring | Recognition and Reproduction (1) | 37.5 | 37.5 | 0 | 37.5 | -- | -- |
| | | Skill and Concept (2) | 62.5 | 62.5 | 0 | 62.5 | -- | -- |
| | | Strategic Thinking (3) | 0 | 0 | 100 | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | -- | -- |

Table 71

*Grade 5 Benchmark Measures: Item Depth of Knowledge*

| Focal Point | Term | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Data Analysis | Fall | Not Linked (0) | 37.5 | 100 | -- | 62.5 |
| | | Vaguely Linked (1) | 62.5 | 0 | -- | 37.5 |
| | | Somewhat linked (2) | 0 | 0 | -- | 0 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | Winter | Not Linked (0) | 43.8 | 100 | -- | 50 |
| | | Vaguely Linked (1) | 56.2 | 0 | -- | 50 |
| | | Somewhat linked (2) | 0 | 0 | -- | 0 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | Spring | Not Linked (0) | 50 | 100 | -- | 56.2 |
| | | Vaguely Linked (1) | 50 | 0 | -- | 43.8 |
| | | Somewhat linked (2) | 0 | 0 | -- | 0 |
| | | Direct Linked (3) | 0 | | -- | 0 |
| Geometry, Measurement, and Algebra | Fall | Not Linked (0) | 0 | 0 | -- | 6.2* |
| | | Vaguely Linked (1) | 87.5 | 87.5 | -- | 68.8 |
| | | Somewhat linked (2) | 12.5 | 12.5 | -- | 18.8 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | Winter | Not Linked (0) | 100 | 0 | 43.8 | 0 |
| | | Vaguely Linked (1) | 0 | 87.5 | 50.0 | 87.5 |
| | | Somewhat linked (2) | 0 | 12.5 | 6.2 | 12.5 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Spring | Not Linked (0) | 0 | 0 | 56.2 | 0 |
| | | Vaguely Linked (1) | 87.5 | 87.5 | 37.5 | 68.8 |
| | | Somewhat linked (2) | 12.5 | 12.5 | 6.2 | 31.2 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |
| Number and Operations and Algebra | Fall | Not Linked (0) | 81.2 | -- | 25.0 | 62.5 |
| | | Vaguely Linked (1) | 18.8 | -- | 62.5 | 37.5 |
| | | Somewhat linked (2) | 0 | -- | 12.5 | 0 |
| | | Direct Linked (3) | 0 | -- | 0 | 0 |
| | Winter | Not Linked (0) | 87.5 | -- | 12.5 | 62.5 |
| | | Vaguely Linked (1) | 12.5 | -- | 81.2 | 37.5 |
| | | Somewhat linked (2) | 0 | -- | 6.2 | 0 |
| | | Direct Linked (3) | 0 | -- | 0 | 0 |
| | Spring | Not Linked (0) | 93.8 | -- | 18.8 | 81.2 |
| | | Vaguely Linked (1) | 6.2 | -- | 75.0 | 18.8 |
| | | Somewhat linked (2) | 0 | -- | 6.2 | 0 |
| | | Direct Linked (3) | 0 | -- | 0 | 0 |

* Rater T had out-of-range value of "0."

Table 72a

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Form | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Data Analysis | 1 | Not Linked (0) | 0 | 0 | -- | 0 |
| | | Vaguely Linked (1) | 0 | 0 | -- | 0 |
| | | Somewhat linked (2) | 6.2 | 0 | -- | 0 |
| | | Direct Linked (3) | 93.8 | 100 | -- | 100 |
| | 3 | Not Linked (0) | 0 | 0 | -- | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- | -- |
| | | Somewhat linked (2) | 12.5 | 0 | -- | -- |
| | | Direct Linked (3) | 87.5 | 100 | -- | -- |
| | 5 | Not Linked (0) | 0 | 0 | -- | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- | -- |
| | | Somewhat linked (2) | 6.2 | 0 | -- | -- |
| | | Direct Linked (3) | 93.8 | 100 | -- | -- |
| | 7 | Not Linked (0) | 0 | 0 | -- | -- |
| | | Vaguely Linked (1) | 6.2 | 0 | -- | -- |
| | | Somewhat linked (2) | 0 | 0 | -- | -- |
| | | Direct Linked (3) | 93.8 | 100 | -- | -- |
| | 9 | Not Linked (0) | 0 | 0 | -- | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- | -- |
| | | Somewhat linked (2) | 0 | 0 | -- | -- |
| | | Direct Linked (3) | 100 | 100 | -- | -- |

Table 72b

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Form | Ratings | Raters | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | F | G | H | T | B | C |
| Geometry, Measurement, and Algebra | 1 | Recognition and Reproduction (1) | 0 | -- | 0 | 0 | -- | -- |
| | | Skill and Concept (2) | 6.2 | -- | 25 | 0 | -- | -- |
| | | Strategic Thinking (3) | 6.2 | -- | 50 | 0 | -- | -- |
| | | Extended Thinking (4) | 87.5 | -- | 25 | 100 | -- | -- |
| | 3 | Recognition and Reproduction (1) | 0 | -- | 0 | -- | -- | -- |
| | | Skill and Concept (2) | 0 | -- | 25.0 | -- | -- | -- |
| | | Strategic Thinking (3) | 12.5 | -- | 18.8 | -- | -- | -- |
| | | Extended Thinking (4) | 87.5 | -- | 56.2 | -- | -- | -- |
| | 4 | Recognition and Reproduction (1) | -- | -- | -- | -- | 0 | 0 |
| | | Skill and Concept (2) | -- | -- | -- | -- | 12.5 | 0 |
| | | Strategic Thinking (3) | -- | -- | -- | -- | 25.0 | 12.5 |
| | | Extended Thinking (4) | -- | -- | -- | -- | 62.5 | 87.5 |
| | 5 | Recognition and Reproduction (1) | 0 | -- | 0 | -- | -- | -- |
| | | Skill and Concept (2) | 0 | -- | 25.0 | -- | -- | -- |
| | | Strategic Thinking (3) | 25 | -- | 31.2 | -- | -- | -- |
| | | Extended Thinking (4) | 75 | -- | 56.2 | -- | -- | -- |
| | 7 | Recognition and Reproduction (1) | 0 | -- | 0 | -- | -- | -- |
| | | Skill and Concept (2) | 0 | -- | 12.5 | -- | -- | -- |
| | | Strategic Thinking (3) | 37.5 | -- | 31.2 | -- | -- | -- |
| | | Extended Thinking (4) | 62.5 | -- | 56.2 | -- | -- | -- |
| | 9 | Recognition and Reproduction (1) | 0 | -- | 0 | -- | -- | -- |
| | | Skill and Concept (2) | 0 | -- | 6.2 | -- | -- | -- |
| | | Strategic Thinking (3) | 31.2 | -- | 18.8 | -- | -- | -- |
| | | Extended Thinking (4) | 68.8 | -- | 75.0 | -- | -- | -- |

Table 72c

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Form | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Algebra | 1 | Not Linked (0) | 0 | 0 | -- | 0 |
| | | Vaguely Linked (1) | 0 | 0 | -- | 0 |
| | | Somewhat linked (2) | 25 | 0 | -- | 6.2 |
| | | Direct Linked (3) | 75 | 100 | -- | 93.8 |
| | 3 | Not Linked (0) | 0 | -- | -- | -- |
| | | Vaguely Linked (1) | 0 | -- | -- | -- |
| | | Somewhat linked (2) | 0 | -- | -- | -- |
| | | Direct Linked (3) | 100 | -- | -- | -- |
| | 5 | Not Linked (0) | 0 | -- | -- | -- |
| | | Vaguely Linked (1) | 0 | -- | -- | -- |
| | | Somewhat linked (2) | 31.2 | -- | -- | -- |
| | | Direct Linked (3) | 68.8 | -- | -- | -- |
| | 7 | Not Linked (0) | 0 | -- | 0 | -- |
| | | Vaguely Linked (1) | 0 | -- | 6.2 | -- |
| | | Somewhat linked (2) | 12.5 | -- | 81.2 | -- |
| | | Direct Linked (3) | 87.5 | -- | 12.5 | -- |
| | 9 | Not Linked (0) | 0 | -- | 0 | -- |
| | | Vaguely Linked (1) | 100 | -- | 18.8 | -- |
| | | Somewhat linked (2) | 0 | -- | 62.5 | -- |
| | | Direct Linked (3) | 0 | -- | 18.8 | -- |

Table 73a

*Grade 5: Progress Monitoring Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Data Analysis | 1 | Not Linked (0) | 81.2 | 100 | -- | 0 |
| | | Vaguely Linked (1) | 18.8 | 0 | -- | 75 |
| | | Somewhat linked (2) | 0 | 0 | -- | 25 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | 3 | Not Linked (0) | 62.5 | 100 | -- | 0 |
| | | Vaguely Linked (1) | 37.5 | 0 | -- | 81.2 |
| | | Somewhat linked (2) | 0 | 0 | -- | 18.8 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | 5 | Not Linked (0) | 81.2 | 100 | -- | 0 |
| | | Vaguely Linked (1) | 18.8 | 0 | -- | 81.2 |
| | | Somewhat linked (2) | 0 | 0 | -- | 18.8 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | 7 | Not Linked (0) | 75 | 100 | -- | 0 |
| | | Vaguely Linked (1) | 25 | 0 | -- | 81.2 |
| | | Somewhat linked (2) | 0 | 0 | -- | 18.8 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | 9 | Not Linked (0) | 62.5 | 100 | -- | 0 |
| | | Vaguely Linked (1) | 37.5 | 0 | -- | 81.2 |
| | | Somewhat linked (2) | 0 | 0 | -- | 18.8 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |

Table 73b

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | F | G | H | T | B | C |
| Geometry, Measurement, and Algebra | 1 | Recognition and Reproduction (1) | 50 | 75 | 6.2 | 0 | 6.2 | 56.2 |
| | | Skill and Concept (2) | 25 | 25 | 68.8 | 81.2 | 93.8 | 18.8 |
| | | Strategic Thinking (3) | 25 | 0 | 25.0 | 18.8 | 0 | 25.0 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 81.2 | 93.8 | 25.0 | 0 | 25.0 | 75.0 |
| | | Skill and Concept (2) | 12.5 | 6.2 | 62.5 | 56.2 | 68.8 | 18.8 |
| | | Strategic Thinking (3) | 6.2 | 0 | 12.5 | 43.8 | 6.2 | 6.2 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |
| | 4 | Recognition and Reproduction (1) | -- | -- | -- | -- | 12.5 | 68.8 |
| | | Skill and Concept (2) | -- | -- | -- | -- | 62.5 | 25.0 |
| | | Strategic Thinking (3) | -- | -- | -- | -- | 25.0 | 6.2 |
| | | Extended Thinking (4) | -- | -- | -- | -- | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 81.2 | 93.8 | 18.8 | 0 | 18.8 | 75.0 |
| | | Skill and Concept (2) | 12.5 | 6.2 | 56.2 | 75 | 62.5 | 18.8 |
| | | Strategic Thinking (3) | 6.2 | 0 | 25.0 | 25 | 18.8 | 6.2 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 93.8 | 93.8 | 25.0 | 0 | 25 | -- |
| | | Skill and Concept (2) | 0 | 6.2 | 43.8 | 56.2 | 50 | -- |
| | | Strategic Thinking (3) | 6.2 | 0 | 31.2 | 43.8 | 25 | -- |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | -- |
| | 9 | Recognition and Reproduction (1) | 81.2 | 100 | 18.8 | 0 | 18.8 | 62.5 |
| | | Skill and Concept (2) | 18.8 | 0 | 62.5 | 62.5 | 62.5 | 37.5 |
| | | Strategic Thinking (3) | 0 | 0 | 18.8 | 37.5 | 18.8 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 | 0 | 0 | 0 |

Table 73c

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Form | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Algebra | 1 | Not Linked (0) | 37.5 | 68.8 | 0 | 37.5 |
| | | Vaguely Linked (1) | 62.5 | 31.2 | 0 | 62.5 |
| | | Somewhat linked (2) | 0 | 0 | 100 | 0 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |
| | 3 | Not Linked (0) | 50 | 68.8 | 0 | 50 |
| | | Vaguely Linked (1) | 50 | 31.2 | 0 | 50 |
| | | Somewhat linked (2) | 0 | 0 | 100 | 0 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |
| | 5 | Not Linked (0) | 43.8 | 56.2 | 0 | 43.8 |
| | | Vaguely Linked (1) | 56.2 | 43.8 | 0 | 56.2 |
| | | Somewhat linked (2) | 0 | 0 | 100 | 0 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |
| | 7 | Not Linked (0) | 25 | 56.2 | 0 | 25 |
| | | Vaguely Linked (1) | 75 | 43.8 | 0 | 75 |
| | | Somewhat linked (2) | 0 | 0 | 100 | 0 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |
| | 9 | Not Linked (0) | 43.8 | 56.2 | 0 | 43.8 |
| | | Vaguely Linked (1) | 56.2 | 43.8 | 0 | 56.2 |
| | | Somewhat linked (2) | 0 | 0 | 100 | 0 |
| | | Direct Linked (3) | 0 | 0 | 0 | 0 |

Table 74a

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Data Analysis | 1 | Not Linked (0) | 31.2 | 100 | -- | 62.5 |
| | | Vaguely Linked (1) | 68.8 | 0 | -- | 37.5 |
| | | Somewhat linked (2) | 0 | 0 | -- | 0 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | 3 | Not Linked (0) | 31.2 | 100 | -- | -- |
| | | Vaguely Linked (1) | 68.8 | 0 | -- | -- |
| | | Somewhat linked (2) | 0 | 0 | -- | -- |
| | | Direct Linked (3) | 0 | 0 | -- | -- |
| | 5 | Not Linked (0) | 50 | 100 | -- | -- |
| | | Vaguely Linked (1) | 43.8 | 0 | -- | -- |
| | | Somewhat linked (2) | 0 | 0 | -- | -- |
| | | Direct Linked (3) | 0 | 0 | -- | -- |
| | 7 | Not Linked (0) | 43.8 | 100 | -- | -- |
| | | Vaguely Linked (1) | 56.2 | 0 | -- | -- |
| | | Somewhat linked (2) | 0 | 0 | -- | -- |
| | | Direct Linked (3) | 0 | 0 | -- | -- |
| | 9 | Not Linked (0) | 18.8 | 100 | -- | -- |
| | | Vaguely Linked (1) | 81.2 | 0 | -- | -- |
| | | Somewhat linked (2) | 0 | 0 | -- | -- |
| | | Direct Linked (3) | 0 | 0 | -- | -- |

Table 74b

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | F | G | H | T | B | C |
| Geometry, Measurement, and Algebra | 1 | Recognition and Reproduction (1) | 68.8 | -- | 31.2 | 68.8 | -- | -- |
| | | Skill and Concept (2) | 31.2 | -- | 43.8 | 31.2 | -- | -- |
| | | Strategic Thinking (3) | 0 | -- | 25.0 | 0 | -- | -- |
| | | Extended Thinking (4) | 0 | -- | 0 | 0 | -- | -- |
| | 3 | Recognition and Reproduction (1) | 75 | -- | 37.5 | -- | -- | -- |
| | | Skill and Concept (2) | 25 | -- | 43.8 | -- | -- | -- |
| | | Strategic Thinking (3) | 0 | -- | 18.8 | -- | -- | -- |
| | | Extended Thinking (4) | 0 | -- | 0 | -- | -- | -- |
| | 4 | Recognition and Reproduction (1) | -- | -- | -- | -- | 25.0 | 68.8 |
| | | Skill and Concept (2) | -- | -- | -- | -- | 62.5 | 31.2 |
| | | Strategic Thinking (3) | -- | -- | -- | -- | 12.5 | 0 |
| | | Extended Thinking (4) | -- | -- | -- | -- | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 81.2 | -- | 50.0 | -- | -- | -- |
| | | Skill and Concept (2) | 18.8 | -- | 43.8 | -- | -- | -- |
| | | Strategic Thinking (3) | 0 | -- | 6.2 | -- | -- | -- |
| | | Extended Thinking (4) | 0 | -- | 0 | -- | -- | -- |
| | 7 | Recognition and Reproduction (1) | 81.2 | -- | 18.8 | -- | -- | -- |
| | | Skill and Concept (2) | 18.8 | -- | 50.0 | -- | -- | -- |
| | | Strategic Thinking (3) | 0 | -- | 31.2 | -- | -- | -- |
| | | Extended Thinking (4) | 0 | -- | 0 | -- | -- | -- |
| | 9 | Recognition and Reproduction (1) | 81.2 | -- | 31.2 | -- | -- | -- |
| | | Skill and Concept (2) | 18.8 | -- | 43.8 | -- | -- | -- |
| | | Strategic Thinking (3) | 0 | -- | 25.0 | -- | -- | -- |
| | | Extended Thinking (4) | 0 | -- | 0 | -- | -- | -- |

Table 74c

*Grade 5 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | | | |
|---|---|---|---|---|---|---|
| | | | F | G | H | T |
| Number and Operations and Algebra | 1 | Not Linked (0) | 68.8 | 100 | -- | 50.0 |
| | | Vaguely Linked (1) | 31.2 | 0 | -- | 37.5 |
| | | Somewhat linked (2) | 0 | 0 | -- | 12.5 |
| | | Direct Linked (3) | 0 | 0 | -- | 0 |
| | 3 | Not Linked (0) | 87.5 | -- | -- | -- |
| | | Vaguely Linked (1) | 12.5 | -- | -- | -- |
| | | Somewhat linked (2) | 0 | -- | -- | -- |
| | | Direct Linked (3) | 0 | -- | -- | -- |
| | 5 | Not Linked (0) | 87.5 | -- | -- | -- |
| | | Vaguely Linked (1) | 12.5 | -- | -- | -- |
| | | Somewhat linked (2) | 0 | -- | -- | -- |
| | | Direct Linked (3) | 0 | -- | -- | -- |
| | 7 | Not Linked (0) | 87.5 | -- | 0 | -- |
| | | Vaguely Linked (1) | 12.5 | -- | 87.5 | -- |
| | | Somewhat linked (2) | 0 | -- | 12.5 | -- |
| | | Direct Linked (3) | 0 | -- | 0 | -- |
| | 9 | Not Linked (0) | 100 | -- | 0 | -- |
| | | Vaguely Linked (1) | 0 | -- | 93.8 | -- |
| | | Somewhat linked (2) | 0 | -- | 6.2 | -- |
| | | Direct Linked (3) | 0 | -- | 0 | -- |

Table 75

*Grade 8 Benchmark Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal point | Term | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | J | K | L |
| Algebra | Fall | Not Linked (0) | 12.5 | 0 | -- |
| | | Vaguely Linked (1) | 18.8 | 0 | -- |
| | | Somewhat linked (2) | 0 | 0 | -- |
| | | Direct Linked (3) | 68.8 | 100.0 | -- |
| | Winter | Not Linked (0) | 18.8 | 0 | -- |
| | | Vaguely Linked (1) | 31.3 | 25.0 | -- |
| | | Somewhat linked (2) | 18.8 | 12.5 | -- |
| | | Direct Linked (3) | 31.3 | 62.5 | -- |
| | Spring | Not Linked (0) | 0 | 0 | -- |
| | | Vaguely Linked (1) | 18.8 | 12.5 | -- |
| | | Somewhat linked (2) | 31.3 | 12.5 | -- |
| | | Direct Linked (3) | 50.0 | 75.0 | -- |
| Geometry | Fall | Not Linked (0) | 31.3 | -- | 0 |
| | | Vaguely Linked (1) | 18.8 | -- | 6.3 |
| | | Somewhat linked (2) | 18.8 | -- | 0 |
| | | Direct Linked (3) | 31.3 | -- | 93.8 |
| | Winter | Not Linked (0) | 18.8 | -- | 0 |
| | | Vaguely Linked (1) | 43.8 | -- | 18.8 |
| | | Somewhat linked (2) | 0 | -- | 18.8 |
| | | Direct Linked (3) | 37.5 | -- | 62.5 |
| | Spring | Not Linked (0) | 31.3 | -- | 0 |
| | | Vaguely Linked (1) | 25.0 | -- | 6.3 |
| | | Somewhat linked (2) | 18.8 | -- | 6.3 |
| | | Direct Linked (3) | 25.0 | -- | 87.5 |

| | | | | | |
|---|---|---|---|---|---|
| Data analysis | Fall | Not Linked (0) | 12.5 | 18.8 | -- |
| | | Vaguely Linked (1) | 12.5 | 6.3 | -- |
| | | Somewhat linked (2) | 18.8 | 6.3 | -- |
| | | Direct Linked (3) | 56.3 | 68.8 | -- |
| | Winter | Not Linked (0) | 12.5 | -- | 0 |
| | | Vaguely Linked (1) | 0 | -- | 18.8 |
| | | Somewhat linked (2) | 18.8 | -- | 12.5 |
| | | Direct Linked (3) | 68.8 | -- | 68.8 |
| | Spring | Not Linked (0) | 6.3 | -- | 0 |
| | | Vaguely Linked (1) | 6.3 | -- | 6.3 |
| | | Somewhat linked (2) | 0 | -- | 18.8 |
| | | Direct Linked (3) | 87.5 | -- | 75.0 |

*Table 76*

*Grade 8 Benchmark Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal point | Term | Ratings | Raters | | |
| --- | --- | --- | --- | --- | --- |
| | | | J | K | L |
| Algebra | Fall | Recognition and Reproduction (1) | 62.5 | 6.3 | -- |
| | | Skill and Concept (2) | 37.5 | 56.3 | -- |
| | | Strategic Thinking (3) | 0 | 37.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | Winter | Recognition and Reproduction (1) | 81.3 | 18.8 | -- |
| | | Skill and Concept (2) | 18.8 | 62.5 | -- |
| | | Strategic Thinking (3) | 0 | 18.8 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | Spring | Recognition and Reproduction (1) | 62.5 | 12.5 | -- |
| | | Skill and Concept (2) | 37.5 | 50.0 | -- |
| | | Strategic Thinking (3) | 0 | 37.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| Geometry | Fall | Recognition and Reproduction (1) | 87.5 | -- | 18.8 |
| | | Skill and Concept (2) | 12.5 | -- | 56.3 |
| | | Strategic Thinking (3) | 0 | -- | 25.0 |
| | | Extended Thinking (4) | 0 | -- | 0 |
| | Winter | Recognition and Reproduction (1) | 68.8 | -- | 18.8 |
| | | Skill and Concept (2) | 31.3 | -- | 62.5 |
| | | Strategic Thinking (3) | 0 | -- | 18.8 |
| | | Extended Thinking (4) | 0 | -- | 0 |
| | Spring | Recognition and Reproduction (1) | 87.5 | -- | 25.0 |
| | | Skill and Concept (2) | 12.5 | -- | 62.5 |
| | | Strategic Thinking (3) | 0 | -- | 12.5 |
| | | Extended Thinking (4) | 0 | -- | 0 |

| | | | | | |
|---|---|---|---|---|---|
| Data analysis | Fall | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 31.3 | 100.0 |
| | | Strategic Thinking (3) | 0 | 68.8 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Winter | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 18.8 | 100.0 |
| | | Strategic Thinking (3) | 0 | 81.3 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | Spring | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 6.3 | 100.0 |
| | | Strategic Thinking (3) | 0 | 93.8 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |

Table 77

*Grade 8 Benchmark Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal point | Term | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | J | K | L |
| Algebra | Fall | Recognition and Reproduction (1) | 100.0 | 18.8 | -- |
| | | Skill and Concept (2) | 0 | 43.8 | -- |
| | | Strategic Thinking (3) | 0 | 37.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | Winter | Recognition and Reproduction (1) | 100.0 | 56.3 | -- |
| | | Skill and Concept (2) | 0 | 31.3 | -- |
| | | Strategic Thinking (3) | 0 | 12.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | Spring | Recognition and Reproduction (1) | 100.0 | 18.8 | -- |
| | | Skill and Concept (2) | 0 | 43.8 | -- |
| | | Strategic Thinking (3) | 0 | 37.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| Geometry | Fall | Recognition and Reproduction (1) | 100.0 | -- | 75.0 |
| | | Skill and Concept (2) | 0 | -- | 25.0 |
| | | Strategic Thinking (3) | 0 | -- | 0 |
| | | Extended Thinking (4) | 0 | -- | 0 |
| | Winter | Recognition and Reproduction (1) | 100.0 | -- | 81.3 |
| | | Skill and Concept (2) | 0 | -- | 6.3 |
| | | Strategic Thinking (3) | 0 | -- | 12.5 |
| | | Extended Thinking (4) | 0 | -- | 0 |
| | Spring | Recognition and Reproduction (1) | 100.0 | -- | 87.5 |
| | | Skill and Concept (2) | 0 | -- | 6.3 |
| | | Strategic Thinking (3) | 0 | -- | 6.3 |
| | | Extended Thinking (4) | 0 | -- | 0 |

| Data analysis | Fall | Recognition and Reproduction (1) | 31.3 | 25.0 | -- |
|---|---|---|---|---|---|
| | | Skill and Concept (2) | 68.8 | 43.8 | -- |
| | | Strategic Thinking (3) | 0 | 31.3 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | Winter | Recognition and Reproduction (1) | 37.5 | -- | 81.3 |
| | | Skill and Concept (2) | 62.5 | -- | 18.8 |
| | | Strategic Thinking (3) | 0 | -- | 0 |
| | | Extended Thinking (4) | 0 | -- | 0 |
| | Spring | Recognition and Reproduction (1) | 25.0 | -- | 75.0 |
| | | Skill and Concept (2) | 75.0 | -- | 25.0 |
| | | Strategic Thinking (3) | 0 | -- | 0 |
| | | Extended Thinking (4) | 0 | -- | 0 |

Table 78a

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and*

*Standards*

| Focal Point | Form | Ratings | Raters | |
|---|---|---|---|---|
| | | | J | K |
| Number and Operations and Data Analysis | 1 | Not Linked (0) | 12.5 | 6.3 |
| | | Vaguely Linked (1) | 12.5 | 0 |
| | | Somewhat linked (2) | 25.0 | 18.8 |
| | | Direct Linked (3) | 25.0 | 75.0 |
| | 3 | Not Linked (0) | 31.3 | 12.5 |
| | | Vaguely Linked (1) | 18.8 | 0 |
| | | Somewhat linked (2) | 12.5 | 18.8 |
| | | Direct Linked (3) | 37.5 | 68.8 |
| | 5 | Not Linked (0) | 25.0 | 12.5 |
| | | Vaguely Linked (1) | 0 | 0 |
| | | Somewhat linked (2) | 6.3 | 6.3 |
| | | Direct Linked (3) | 68.8 | 81.3 |
| | 7 | Not Linked (0) | 6.3 | 6.3 |
| | | Vaguely Linked (1) | 25.0 | 0 |
| | | Somewhat linked (2) | 18.8 | 25.0 |
| | | Direct Linked (3) | 50.0 | 68.8 |
| | 9 | Not Linked (0) | 12.5 | 6.3 |
| | | Vaguely Linked (1) | 50.0 | 0 |
| | | Somewhat linked (2) | 12.5 | 12.5 |
| | | Direct Linked (3) | 50.0 | 81.3 |

Table 78b

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Form | Ratings | Raters | |
|---|---|---|---|---|
| | | | J | L |
| Geometry | 1 | Not Linked (0) | 31.3 | 0 |
| | | Vaguely Linked (1) | 25.0 | 75.0 |
| | | Somewhat linked (2) | 12.5 | 18.8* |
| | | Direct Linked (3) | 31.3 | 0 |
| | 3 | Not Linked (0) | 25.0 | 0 |
| | | Vaguely Linked (1) | 12.5 | 81.3 |
| | | Somewhat linked (2) | 18.8 | 18.8 |
| | | Direct Linked (3) | 43.8 | 0 |
| | 5 | Not Linked (0) | 12.5 | 0 |
| | | Vaguely Linked (1) | 18.8 | 87.5 |
| | | Somewhat linked (2) | 18.8 | 12.5 |
| | | Direct Linked (3) | 50.0 | 0 |
| | 7 | Not Linked (0) | 31.3 | 0 |
| | | Vaguely Linked (1) | 18.8 | 81.3 |
| | | Somewhat linked (2) | 18.8 | 18.8 |
| | | Direct Linked (3) | 31.3 | 0 |
| | 9 | Not Linked (0) | 25.0 | 0 |
| | | Vaguely Linked (1) | 12.5 | 100.0 |
| | | Somewhat linked (2) | 18.8 | 0 |
| | | Direct Linked (3) | 43.8 | 0 |

* Not all items were rated.

Table 78c

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and*

*Standards*

| Focal Point | Form | Ratings | Raters | | |
| --- | --- | --- | --- | --- | --- |
| | | | J | K | L |
| Data analysis | 1 | Not Linked (0) | 18.8 | 12.5 | -- |
| | | Vaguely Linked (1) | 0 | 6.3 | -- |
| | | Somewhat linked (2) | 12.5 | 18.8 | -- |
| | | Direct Linked (3) | 68.8 | 62.5 | -- |
| | 3 | Not Linked (0) | 31.3 | 6.3 | -- |
| | | Vaguely Linked (1) | 6.3 | 12.5 | -- |
| | | Somewhat linked (2) | 12.5 | 12.5 | -- |
| | | Direct Linked (3) | 50.0 | 68.8 | -- |
| | 5 | Not Linked (0) | 0 | 0 | -- |
| | | Vaguely Linked (1) | 0 | 0 | -- |
| | | Somewhat linked (2) | 18.8 | 18.8 | -- |
| | | Direct Linked (3) | 81.3 | 81.3 | -- |
| | 7 | Not Linked (0) | 12.5 | -- | 0 |
| | | Vaguely Linked (1) | 0 | -- | 37.5 |
| | | Somewhat linked (2) | 25.0 | -- | 6.3 |
| | | Direct Linked (3) | 62.5 | -- | 56.3 |
| | 9 | Not Linked (0) | 25.0 | -- | 0 |
| | | Vaguely Linked (1) | 0 | -- | 37.5 |
| | | Somewhat linked (2) | 25.0 | -- | 6.3 |
| | | Direct Linked (3) | 50.0 | -- | 56.3 |

Table 79a

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | |
| --- | --- | --- | --- | --- |
| | | | J | K |
| Algebra | 1 | Recognition and Reproduction (1) | 62.5 | 18.8 |
| | | Skill and Concept (2) | 37.5 | 43.8 |
| | | Strategic Thinking (3) | 0 | 37.5 |
| | | Extended Thinking (4) | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 75.0 | 25.0 |
| | | Skill and Concept (2) | 25.0 | 50.0 |
| | | Strategic Thinking (3) | 0 | 25.0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 87.5 | 37.5 |
| | | Skill and Concept (2) | 12.5 | 50.0 |
| | | Strategic Thinking (3) | 0 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 62.5 | 6.3 |
| | | Skill and Concept (2) | 37.5 | 56.3 |
| | | Strategic Thinking (3) | 0 | 37.5 |
| | | Extended Thinking (4) | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | 75.0 | 18.8 |
| | | Skill and Concept (2) | 25.0 | 56.3 |
| | | Strategic Thinking (3) | 0 | 37.5 |
| | | Extended Thinking (4) | 0 | 0 |

Table 79b

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Standard Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | |
|---|---|---|---|---|
| | | | J | K |
| Geometry | 1 | Recognition and Reproduction (1) | 81.3 | 18.8 |
| | | Skill and Concept (2) | 18.8 | 56.3 |
| | | Strategic Thinking (3) | 0 | 25.0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 87.5 | 25.0 |
| | | Skill and Concept (2) | 12.5 | 50.0 |
| | | Strategic Thinking (3) | 0 | 25.0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 93.8 | 18.8 |
| | | Skill and Concept (2) | 6.3 | 62.5 |
| | | Strategic Thinking (3) | 0 | 18.8 |
| | | Extended Thinking (4) | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 81.3 | 31.3 |
| | | Skill and Concept (2) | 18.8 | 43.8 |
| | | Strategic Thinking (3) | 0 | 25.0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | 81.3 | 18.8 |
| | | Skill and Concept (2) | 18.8 | 62.5 |
| | | Strategic Thinking (3) | 0 | 18.8 |
| | | Extended Thinking (4) | 0 | 0 |

Table 79c

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and Standards*

| Focal Point | Form | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | J | K | L |
| Data analysis | 1 | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 31.3 | 100.0 |
| | | Strategic Thinking (3) | 0 | 69.8 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 12.5 | 100.0 |
| | | Strategic Thinking (3) | 0 | 87.5 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 18.8 | 100.0 |
| | | Strategic Thinking (3) | 0 | 81.3 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 31.3 | 100.0 |
| | | Strategic Thinking (3) | 0 | 68.8 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | 0 | 0 | 0 |
| | | Skill and Concept (2) | 100.0 | 12.5 | 100.0 |
| | | Strategic Thinking (3) | 0 | 87.5 | 0 |
| | | Extended Thinking (4) | 0 | 0 | 0 |

Table 80a

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | |
|---|---|---|---|---|
| | | | J | K |
| Algebra | 1 | Recognition and Reproduction (1) | 62.5 | 43.8 |
| | | Skill and Concept (2) | 37.5 | 25.0 |
| | | Strategic Thinking (3) | 0 | 31.3 |
| | | Extended Thinking (4) | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 75.0 | 37.5 |
| | | Skill and Concept (2) | 25.0 | 37.5 |
| | | Strategic Thinking (3) | 0 | 25.0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 87.5 | 31.3 |
| | | Skill and Concept (2) | 12.5 | 56.3 |
| | | Strategic Thinking (3) | 0 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 62.5 | 18.8 |
| | | Skill and Concept (2) | 37.5 | 62.5 |
| | | Strategic Thinking (3) | 0 | 18.8 |
| | | Extended Thinking (4) | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | 75.0 | 56.3 |
| | | Skill and Concept (2) | 25.0 | 31.3 |
| | | Strategic Thinking (3) | 0 | 12.5 |
| | | Extended Thinking (4) | 0 | 0 |

Table 80b

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Item Depth of Knowledge*

| Focal Point | Form | Ratings | Raters | |
| --- | --- | --- | --- | --- |
| | | | J | L |
| Geometry | 1 | Recognition and Reproduction (1) | 100.0 | 75.0 |
| | | Skill and Concept (2) | 0 | 18.8* |
| | | Strategic Thinking (3) | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 3 | Recognition and Reproduction (1) | 100.0 | 81.3 |
| | | Skill and Concept (2) | 0 | 18.8 |
| | | Strategic Thinking (3) | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 5 | Recognition and Reproduction (1) | 100.0 | 87.5 |
| | | Skill and Concept (2) | 0 | 12.5 |
| | | Strategic Thinking (3) | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 7 | Recognition and Reproduction (1) | 100.0 | 81.3 |
| | | Skill and Concept (2) | 0 | 18.8 |
| | | Strategic Thinking (3) | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 |
| | 9 | Recognition and Reproduction (1) | 100.0 | 100.0 |
| | | Skill and Concept (2) | 0 | 0 |
| | | Strategic Thinking (3) | 0 | 0 |
| | | Extended Thinking (4) | 0 | 0 |

* Not all items were rated.

Table 80c

*Grade 8 Progress Monitoring Measures: Individual Raters' Ratings on Strength of Link Between Items and*

*Standards*

| Focal Point | Form | Ratings | Raters | | |
|---|---|---|---|---|---|
| | | | J | K | L |
| Data analysis | 1 | Recognition and Reproduction (1) | 31.3 | 6.8 | -- |
| | | Skill and Concept (2) | 68.8 | 81.3 | -- |
| | | Strategic Thinking (3) | 0 | 12.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | 3 | Recognition and Reproduction (1) | 25.0 | 37.5 | -- |
| | | Skill and Concept (2) | 75.0 | 50.0 | -- |
| | | Strategic Thinking (3) | 0 | 12.5 | -- |
| | | Extended Thinking (4) | 0 | 0 | -- |
| | 5 | Recognition and Reproduction (1) | 25.0 | 31.3 | -- |
| | | Skill and Concept (2) | 75.0 | 56.3 | -- |
| | | Strategic Thinking (3) | 0 | 12.5 | -- |
| | | Extended Thinking (4) | 0 | | -- |
| | 7 | Recognition and Reproduction (1) | 12.5 | -- | 56.3 |
| | | Skill and Concept (2) | 87.5 | -- | 43.8 |
| | | Strategic Thinking (3) | 0 | -- | 0 |
| | | Extended Thinking (4) | 0 | -- | 0 |
| | 9 | Recognition and Reproduction (1) | 6.3 | -- | 68.8 |
| | | Skill and Concept (2) | 93.8 | -- | 31.3 |
| | | Strategic Thinking (3) | 0 | -- | 0 |
| | | Extended Thinking (4) | 0 | -- | 0 |

Table 81

*Reliability of Standard Alignment Ratings of Items*

| Grade | # of Reviewers | # of Items | ICC |
|---|---|---|---|
| K | 3 | 528 | 1.000 |
| 1 | 4 | 517 | 0.962 |
| 3 | 8 | 416 | 0.842 |
| 4 | 7 | 416 | 0.973 |
| 5 | 6 | 400 | 0.782 |
| 6 | 3 | 383 | 1.000 |
| 7 | 4 | 384 | 0.997 |
| 8 | 3 | 384 | 0.926 |

Table 82

*Reliability of Depth-of-Knowledge Levels Ratings of Items*

| Grade | # of Reviewers | # of Items | ICC |
|---|---|---|---|
| K | -- | -- | -- |
| 1 | -- | -- | -- |
| 3 | 8 | 416 | 0.740 |
| 4 | 7 | 416 | 0.798 |
| 5 | 6 | 400 | 0.668 |
| 6 | 3 | 383 | 0.811 |
| 7 | 4 | 384 | 0.768 |
| 8 | 3 | 384 | 0.741 |

Table 83

*Reliability of Depth-of-Knowledge Levels Ratings of Standards*

| Grade | # of Reviewers | # of Standards | ICC |
|---|---|---|---|
| K | -- | -- | -- |
| 1 | -- | -- | -- |
| 3 | 8 | 12 | 0.868 |
| 4 | 7 | 14 | 0.780 |
| 5 | 6 | 18 | 0.668 |
| 6 | 3 | 16 | 0.811 |
| 7 | 4 | 12 | 0.549 |
| 8 | 3 | 15 | 0.710 |

Appendix

Example of Rater Materials

Table A1

*Screen Shot of the Part of the Instructions for Alignment Study Expert Panel Raters*

**easyCBM® Alignment Study**
**December 2009**

**Instructions for Alignment Study Participants**

Open your rating form spreadsheet and the corresponding PDF of items for each section of each tab on the spreadsheet. Rate each standard objective for DOK, and each item for content alignment and DOK. Refer to the rating keys on the next page as needed.

At each dark gray bar on your rating form, check that the test form in the next section corresponds with the next test form on your PDF (or the next PDF that you need to open). Make sure the item numbers on the rating form and the PDF correspond as you read and rate each item. Quick checks to make sure you're on track can save you from having to backtrack, and ensure that we collect the your ratings accurately.

Please spend only as much time on each item as you need to rate it, using your best judgment. As you get familiar with the rating form, the standards, and the levels of depth of knowledge, you should not need more than a full minute to rate each item. Also, we do not

Table A2

*Screen Shot of the Some of the Information Given to Alignment Study Expert Panel Raters*

| Abbreviations of Test Forms | | |
| --- | --- | --- |
| *Abbreviation* | *Grades* | *Long Name* |
| NumOps | K, 1, 3, 4, 5, 6 | Number and Operations |
| Geo | K, 1, 3 | Geometry |
| Msmt | K, 4 | Measurement |
| NumOpsAlg | 1, 3, 4, 5, 7 | Number and Operations and Algebra |
| GeoMstAlg | 5 | Geometry and Measurement and Algebra |
| Alg | 6, 8 | Algebra |
| NumOpsRat | 6 | Number and Operations and Ratios |
| NumOpsAlgGeo | 7 | Number and Operations and Algebra and Geometry |
| MstGeoAlg | 7 | Measurement and Geometry and Algebra |
| GeoMst | 8 | Geometry and Measurement |
| DatAnl | 8 | Data Analysis and Number and Operations and Algebra |

**Content Alignment Rating Key**

**0** = No link at all to standard objective
**1** = Vague link to standard objective, very indirect
**2** = Some link to standard objective, but not direct
**3** = Clear, direct link to part of standard objective

**Depth of Knowledge (DOK) Levels**

1. **Recognition and Reproduction**
   - Recognition or reproduction of fact, information, or procedure
   - Key words: identify, recall, recognize, use, measure, calculate, repeat, match, describe and explain

2. **Skill and Concept**
   - Using information or conceptual knowledge
   - Key words: classify, organize, estimate, identify patterns, make observations, collect and display data, compare data (these actions imply more than one step)

3. **Strategic Thinking**
   - Reasoning, developing a plan, some complexity, more than one possible answer
   - Key words: reasoning, planning, differentiate, formulate, using concepts on non-routine problems, drawing conclusions from observations

Table A3

*Screen Shot of easyCBM Test Form to be Rated by Expert Panel Rater*

Table A4

*Screen Shot of a Sample Rating Form to be Completed by Expert Panel Rater*

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Rater E | | | Measurement: Developing an understanding of area and determining the areas of two-dimensional shapes. | | | |
| 2 | Test Form | # on Test | Item ID # | Std Objective | Link to Std (0, 1, 2, 3) | Item Depth of Knowledge (1, 2, 3) | Std. Depth of Knowledge (1, 2, 3) |
| 3 | n/a | n/a | n/a | Understand a square that is one unit on a side is the standard unit for measuring area. | n/a | n/a | |
| 4 | n/a | n/a | n/a | Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle. | n/a | n/a | |
| 5 | n/a | n/a | n/a | Recognize area as an attribute of two-dimensional regions. | n/a | n/a | |
| 6 | n/a | n/a | n/a | [Make frequency tables, bar graphs, picture graphs, and line plots.] | n/a | n/a | |
| 7 | | | | Select appropriate units, strategies, and tools for solving problems that involve estimating or measuring area. | | | |
| 8 | n/a | n/a | n/a | Quantify area by finding the total number of same-sized units of area that cover a shape without gaps or overlaps. | n/a | n/a | |
| 9 | Msmt 4_F | 1 | 40870 | Understand a square that is one unit on a side is the standard unit for measuring area. | | | |
| 10 | Msmt 4_F | 2 | 40887 | Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle. | | | |
| 11 | Msmt 4_F | 3 | 40558 | Recognize area as an attribute of two-dimensional regions. | | | |
| 12 | Msmt 4_F | 4 | 40572 | Understand a square that is one unit on a side is the standard unit for measuring area. | | | |