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The Alignment of the easyCBM Grades K-2

Math Measures to the Common Core Standards

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Abstract

Within a response to intervention system of teaching and learning, important instructional decision-making (e.g., implementation of targeted intervention) is regularly tied to the results of formative assessments administered to students throughout the academic year. The validity of these instructional decisions depends to an extent on the alignment between formative measures and the content standards on which classroom instruction is based. Specifically, formative assessments must be aligned to adopted content standards in order for teachers to make valid instructional decisions around individual student learning needs. In this technical report, we report on the alignment between easyCBM® grades K-2 seasonal mathematics benchmark items and the Common Core State Standards (CCSS). Results suggest reasonable alignment to the standards overall, with areas of relatively stronger and weaker alignment across grade level domains and standards. These results serve as the basis for assessment development in school year 2012-2013 to address gaps in alignment between easyCBM® and the CCSS.

The Alignment of the easyCBM Grades K-2 Math Measures to the Common Core State Standards

The Common Core State Standards were introduced in 2010 to provide a unified set of standards to guide instruction and assessment nationwide (National Governors Association Center for Best Practices - Council of Chief State School Officers, 2010). The movement of educators toward the Common Core State Standards (CCSS) is evident. Currently, 47 states and the District of Columbia (also three U.S. territories) have formally adopted the CCSS through one or both of two assessment consortia working with states as they prepare to implement the standards, with the release of associated Common Assessments set for the 2014-2015 academic year for participating states.

The easyCBM® mathematics formative assessment system (Alonzo, Tindal, Ulmer, & Glasgow, 2006) is comprised of seasonal benchmark and progress-monitoring assessments in grades K-8. Existing easyCBM® mathematics items found in the benchmark and progress monitoring assessments were originally written to align with the National Council of Teachers of Mathematics (NCTM) Curriculum Focal Points. A study by Nese, Lai, Anderson, Park, Tindal, and Alonzo (2010) indicated generally strong alignment across grade level Focal Points and test forms. In the current study, we focus on the alignment between mathematics items on the easyCBM® seasonal benchmarking assessments and the CCSS for grades K-8, here reporting results for grades K-2. Results are intended to serve as a basis for developing new items and assessment measures that will result in moving the easyCBM® math measures into closer alignment with the CCSS.

Methods

This study was conducted in two phases. During Phase 1, we worked with one educator per grade on an initial review of easyCBM® benchmark math items and their relation to the CCSS. Phase 2 expanded the review to four additional educators per grade.

Participants

Phase 1. In the fall of 2011, one participant in each of grades K-8 was recruited to participate in Phase 1 of the alignment study (see *Study Design* below). A short questionnaire (see Appendix A) was used to gauge the expertise of potential participants in the areas of mathematics teaching and learning and their familiarity with the CCSS. When possible, general education and special education teachers with expertise in mathematics and the CCSS were recruited across grades K-8. Teacher reviewers included three general education teachers, two special education teachers, two teachers who taught both general and special education coursework, and two district-level math specialists. Reviewers had 12.1 years of teaching experience in mathematics on average, ranging from 3-31 years across the nine participants, and were from seven states: Washington (2), Ohio (2), South Carolina, New Jersey, Indiana, Kansas and Arizona. Most reviewers had experience using easyCBM® math measures before the study. Each was assigned to review grade-level mathematics items appropriate to his/her expertise and experience.

Phase 2. In January-February 2012, additional teachers recruited to review items in each of grades K-8, participated in Phase 2 of the study (see *Study Design* below). Four reviewers were recruited in each of these nine grades. The same questionnaire used in Phase 1 was used in Phase 2 of the study to gauge reviewer expertise in math and the CCSS. Additionally, when possible, both general education and special education teachers with expertise in mathematics

and the CCSS were recruited to participate at each grade level. Reviewers had a broad range of teaching experience in mathematics including general education, special education, and district-level math coaching experience. The average teaching experience of all 35 reviewers in Phase 2 of the study was 9.97 years (M = 10.5 for grades K-2, M = 10.71 for grades 3-5, and M = 8.58 for grades 6-8). Years of teaching experience ranged from 1-31 years across the 35 reviewers (2-23 years for grades K-2, 3-31 years for grades 3-5, and 1-21 years for grades 6-8). Reviewers participating in Phase 2 also came from a broad geographic range of 17 states: Oregon (6), Washington (4), Ohio (4), Montana (3), Arizona (2), Illinois (1), North Carolina (2), Texas (2), Connecticut (2), and South Carolina, Maryland, Kansas, New Jersey, California, Georgia, Kentucky and Wisconsin, each with one study participant.

As in Phase 1, most teacher participants had used the easyCBM® formative assessment system before the study, and they were again assigned to review grade-level mathematics items appropriate to their expertise and experience. All nine participants from Phase 1 also participated in Phase 2. These reviewers were assigned to a neighboring grade so that they did not review the same math items they had reviewed in Phase 1, but also so that they could utilize familiarity with the CCSS gained in the earlier phase of the study. One reviewer, a district math coach in Oregon, reviewed math items for two grades in Phase 2, kindergarten and grade eight.

Item Selection

Included in the study were all items from the three easyCBM® seasonal benchmark mathematics assessments in grades K-8. Each of the three seasonal benchmark assessments contains 45 math items, for a total of 135 math items at each grade. Each item alignment review, for both phases of the study, consisted of the 135 math items from the grade-level benchmark assessments.

Study Design

The alignment study was split into two phases, *Phase 1* and *Phase 2*. Phase 1 was designed as a preliminary gauging of alignment of easyCBM® benchmark mathematics items to the CCSS in preparation for more in-depth study of alignment planned for Phase 2 of the research study.

Phase 1. In Phase 1, reviewers were given hard copies of the 135 benchmark items from one grade (K-8) and hard copies of on- and prior-grade CCSS. Prior to gauging item alignment, reviewers were asked to thoroughly review both the math items and the CCSS. Reviewers were then asked to group math items based on the knowledge and skills required of students to complete an item correctly. It was hoped that grouping items would aid in the next step, where reviewers actually gauged the alignment of items to the CCSS.

Reviewers compared groups of items and individual items where appropriate first to on-grade CCSS and then to prior-grade CCSS, noting any items they believed were aligned to these standards in a spreadsheet provided to them. Reviewers in this phase were asked to gauge item alignment to prior-grade CCSS because easyCBM® mathematics items were designed to assess a range of mathematics knowledge and skills, and in particular as a means to assess lower-performing students, including those with disabilities, and evaluate their progress over time (see Alonzo & Tindal, 2009). For this reason, we expected that some math items might not align to on-grade standards but rather to prior-grade CCSS. Additionally, because Phase 1 was designed as a preliminary review of the alignment between benchmark math items and the CCSS, teachers were *not* asked to give a strength of alignment rating for those items they deemed aligned to a standard. Reviewers were also permitted to indicate that a given item aligned to more than one on- and/or prior grade CCSS. Results from Phase 1 informed the design of Phase 2.

Phase 2. There were notable differences in the study design for Phase 2. Four review participants reviewed math items at each grade level in Phase 2. In order to participate in Phase 2, reviewers were required to attend and participate in a 45-minute training webinar between March and April 2012. See appendix A for a copy of the PowerPoint presentation from the K-2 training webinar. Subsequent to the webinar training, reviewers were required to complete a short, three-item alignment review designed to evaluate each reviewer's proficiency in gauging the alignment of items to the CCSS.

Proficiency evaluation of reviewers and main item reviews for Phase 2 were conducted online using the Distributed Item Review (DIR), a secure web-based system designed to present test items and test forms to experts across a broad geographic region so they can review them for important dimensions of bias, sensitivity, and in the case of this study, alignment to standards. Within the DIR and for the main reviews, items at each grade were organized into two different tracks, front-ordered (1-135) and back-ordered (135-1), based on how they appear on the benchmark assessments. In this manner, items were counterbalanced to diminish order effects.

In each review, reviewers were shown one grade-level benchmark item at a time and asked to gauge its alignment to on- and prior-grade CCSS. When reviewers deemed an item *was not aligned* with on- or prior-grade CCSS, they were prompted to indicate a strength of alignment of 0, and were asked to indicate whether the item assessed a *prerequisite* skill to on-grade mastery. Our reasoning for asking about alignment to prerequisite skills was similar to that for evaluating prior-grade standard alignment. Because items in the easyCBM® formative assessment system are designed to sensitively assess and monitor low-performing students, including those with disabilities, certain items might better align to prerequisite skills to on-grade mastery as opposed to an on- or prior-grade standards. If reviewers deemed that an item *was*

aligned to an on- or prior-grade CCSS, they were asked to type the unique CCSS identification code of the aligning standard into a textbox in the DIR. In these cases, reviewers were also asked to indicate the strength of alignment (1 = *somewhat linked*, or 2 = *direct link*) to the aligning standard.

Data Preparation and Analysis

Data from both Phase 1 and 2 were combined for data cleaning and analysis. Within the CCSS, standards are sometimes broken down into substandards. In our first data cleaning step, such substandards were collapsed into their parent standard; for example, substandards 1.NBT.2a and 1.NBT.2b were collapsed into parent standard 1.NBT.2. Next, two types of errors that we found characteristic to the Phase 2 data were corrected before conducting any analysis. First, if a reviewer chose a standard for a given item but the strength of alignment between the item and the standard was indicated as 0, we deleted the standard given for the item and treated it as an item that was not aligned to any particular CCSS. Second, if a rater did not choose any standard for a given item but the strength of alignment between the item and the standard was indicated as greater than 0, we edited the strength of alignment to 0. On average, approximately three strength ratings were edited to 0 (0.02%) across all grade-level seasonal benchmarks used in the study. We acknowledge that these error checks and resulting editing of data are a conservative approach given that it is likely that many of these errors were the result of raters' unintentional typing mistakes. However, based on the study design, any math item that was identified as being aligned to a standard should have had a strength rating greater than 0, and any item with a strength rating greater than 0 should have been paired with a standard. Thus, we deemed it inappropriate to presume if or where a rater's error had been made, so the data were treated as missing.

After completing data cleaning, first, we counted the frequency of standards chosen for each item. The most frequently provided standard was identified as the "primary standard" for a given item. If there were two competing standards for a given item with no clear majority (e.g. two raters chose one standard and two other two raters chose another standard), then both standards were identified as "primary standards". Any standard that was not identified as a primary standard, but was identified by at least one rater as being aligned, was listed as a secondary standard. If there was no primary standard for a given item, meaning all raters chose different standards at the same frequency, all standards were listed as secondary standards for that item.

In most cases, a total of five, not always different, standards were provided by raters and used to calculate primary and secondary standards (i.e., one standard provided per item in Phase 1, and four in Phase 2), but because Phase 1 raters were allowed to choose more than one standard for a single item, in a small percentage of cases, 6-7 standards were used in these frequency calculations. In these cases, all standards provided for a given item from both Phase 1 and 2 were considered when identifying primary and secondary standards for a given item. However, in calculating the average strength of alignment rating between a particular standard and item, we only included the strength ratings of the raters from Phase 2 because the raters in Phase 1 were not asked to give strength of alignment ratings. Thus, the total number of standards chosen by raters for a particular item may be different from the number of strength of alignment ratings used to calculate the average strength of alignment for an item. Lastly, for items that one or more reviewer indicated did not align to on- or prior-grade CCSS (a strength of alignment rating of 0) we counted the frequency of reviewers who indicated that the item aligned to a prerequisite skill to on-grade standard mastery.

Results

Alignment results for grades K-2 are presented below, with results displayed by item in Appendix B and by CCSS standard and domain in Appendix C. It should be noted that table notes associated with each benchmark and item table are extensive and should be read carefully, as they detail the abbreviations used to present alignment results and provide a context for the grade-level results outlined below.

Grade K

Fall benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 32 of 45 math items on the fall benchmark assessment (71%) had a CCSS linked to them as primary, with an average strength of alignment rating of 1.56 across these items (Table 1, Appendix B). Of the 13 items that did not have a standard identified as primary, meaning that the majority of reviewers indicated these items were *not aligned* to any on-grade CCSS, only two items were not linked to a standard identified as secondary. In sum, 43 of 45 items on the kindergarten fall benchmark assessment (96%) were rated as aligned to on-grade CCSS. Additionally, of these 13 items that did not have a CCSS identified as primary, 5 items had at least half of the reviewers indicate that they were aligned to a prerequisite skill necessary for on-grade mastery. In sum, 43 of 45 items on the kindergarten spring benchmark assessment (96%) were rated as aligned to *on-grade* CCSS by at least one reviewer.

The kindergarten CCSS are organized into five domains. Of the seven standards comprising the *Counting and Cardinality* domain (Tables 1-2, Appendix C), four were linked as a primary standard to items from the fall benchmark (n = 8 items), while six of the seven standards in this domain were linked to items as secondary standards (n = 14 items). Of the six standards comprising the *Geometry* domain, three were linked as a primary to items from the fall

benchmark (*n* = 16 items), while five of the six standards in this domain were linked to items as secondary (*n* = 12 items). One standard of three from the *Measurement and Data* domain was linked as primary to fall benchmark items (*n* = 5 items), whereas all three of the standards were linked to items as secondary (*n* = 13 items). One standard represents the *Numbers and Operations in Base Ten* domain. It was not linked to the fall benchmark as primary, but was linked to one item secondarily. Of the five standards representing the domain of *Operations and Algebraic Thinking*, two were linked as primary to items on the fall benchmark (*n* = 3 items), while four of the five standards in this domain were linked to items as secondary (*n* = 7 items).

Winter benchmark assessment. Across the five reviewers from Phase 1 and Phase 2 of the study, 34 of 45 math items on the winter benchmark assessment (76%) had a CCSS linked to them as primary, with an average strength of alignment rating of 1.63 across these items (Table 2, Appendix B). There was one item that had two standards identified as co-primary (PS1 and PS2 in Table 2). Of the 11 items that did not have a standard identified as primary, five of the ten were associated with at least one standard identified as secondary, although the majority of reviewers indicated that ten were not linked to the CCSS. In sum, 39 of 45 items on the kindergarten winter benchmark assessment (87%) were rated as aligned to on-grade CCSS. Additionally, none of these ten items had half or more of the reviewers indicate that they were aligned to a prerequisite skill necessary for on-grade mastery. The remaining item of the 11 that did not have a primary standard identified (item 11 in Table 2, Appendix B) had four standards linked to it, each as secondary. In sum, 40 of 45 items on the kindergarten winter benchmark assessment (89%) were rated as aligned to *on-grade* CCSS by at least one reviewer.

Of the seven standards comprising the *Counting and Cardinality* domain (Tables 3-4, Appendix C), only two were linked as primary standards to items from the winter benchmark (*n*

= 8 items), while five of the seven standards in this domain were linked to items as secondary standards (*n* = 13 items). Of the six standards comprising the *Geometry* domain, three were linked as primary standards to items from the winter benchmark (*n* = 16 items), while five of the six standards in this domain were linked to items as secondary standards (*n* = 7 items). One standard of three from the *Measurement and Data* domain linked as a primary standard to winter benchmark items (*n* = 7 items), while two of the standards were linked to items as secondary standards (*n* = 6 items). The one standard representing the *Numbers and Operations in Base Ten* domain was not linked to the winter benchmark as a primary or secondary standard. Of the five standards representing the domain of *Operations and Algebraic Thinking*, two were linked as primary to items on the winter benchmark (*n* = 4 items), and three were linked to items as secondary standards (*n* = 8 items).

Spring benchmark assessment. Across the five reviewers, 30 of 45 math items on the spring benchmark assessment (67%) had a CCSS linked to them as primary, with an average strength of alignment rating of 1.64 across these items (Table 3, Appendix B). There were four items that each had two standards identified as co-primary (PS1 and PS2 in Table 3). Of the 15 items that did not have a standard identified as primary, 14 were identified by at least one reviewer as associated with at least one standard secondarily. None of these 14 items had half or more of the reviewers indicate that they were aligned to a prerequisite skill necessary for on-grade mastery. The remaining item of the 15 that did not have a primary standard identified (item 7 in Table 3, Appendix B) had four standards linked to it, each as secondary. In sum, 44 of 45 items on the kindergarten spring benchmark (98%) assessment were rated as aligned to *on-grade* CCSS by at least one reviewer.

Of the seven standards comprising the *Counting and Cardinality* domain (Tables 5-6, Appendix C), four were linked as a primary standard to items from the spring benchmark (*n* = 7 items), while six of the seven standards in this domain were linked to items as secondary standards (*n* = 12 items). Of the six standards comprising the *Geometry* domain, four were linked as a standard identified as primary to items from the spring benchmark (*n* = 15 items), while five of the six standards in this domain were linked to items as secondary standards (*n* = 7 items). Two of three standards from the *Measurement and Data* domain were linked as a primary standard to spring benchmark items (*n* = 7 items), while all three of the standards were linked to items as secondary standards (*n* = 13 items). The one standard representing the *Numbers and Operations in Base Ten* domain was not linked to the spring benchmark as a primary or secondary standard. Of the five standards representing the domain of *Operations and Algebraic Thinking*, three were linked as primary standards to items on the spring benchmark (*n* = 6 items), while four were linked to items as secondary standards (*n* = 11 items).

Grade 1

Fall benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 25 of 45 math items on the fall benchmark assessment (55%) had an *on-grade* (grade 1) CCSS linked to them as primary, with an average strength of alignment rating of 1.84 across these items (Table 4, Appendix B). Of the 20 items that did not have an on-grade standard identified as primary, 12 items were linked to a *prior-grade* (grade K) standard that was identified as primary, with an average strength of alignment rating of 1.77 across these items. Eight items were identified as not linked to the CCSS, meaning that the majority of reviewers indicated these items were *not aligned* to either *on- or prior-grade* CCSS. Each of these eight items was identified as having a CCSS linked to them as a secondary standard, while none of the

eight items had at least half the reviewers indicate they were aligned to a prerequisite skill necessary for on-grade mastery. In sum, 45 of 45 items on the Grade 1 fall benchmark assessment (100%) were rated as aligned to *on- or prior-grade* CCSS by at least one reviewer.

Of the four standards comprising the *Geometry* domain from the *on-grade* (grade 1) CCSS (Tables 7-8, Appendix C), just one was linked as a primary standard to items on the fall benchmark (n = 3 items), while all four standards were linked as secondary standards (n = 8 items). Of the four standards representing the *Measurement and Data* domain, only one was identified as a primary standard (n = 1 item), and the same standard was linked as a secondary standard (n = 2 items) to the fall benchmark. Of the six standards comprising the *Numbers and Operations in Base Ten* domain, four were linked as a primary standard to items from the fall benchmark (n = 11 items), whereas three of the six standards were linked to items as secondary standards (n = 9 items). Lastly, of the eight standards representing the *Operations and Algebraic Thinking* domain for first grade CCSS, four standards were identified as primary standards (n = 10 items) to the fall benchmark, while seven of eight standards were linked to the fall benchmark as secondary standards (n = 15 items).

Of the seven standards comprising the *Counting and Cardinality* domain from the *prior-grade* (grade K) CCSS (Tables 7-8, Appendix C), only one was linked as a primary standard to items from the fall benchmark (n = 1 item), and just two of the seven standards in this domain were linked to items as secondary standards (n = 2 items). Of the six standards comprising the *Geometry* domain, three were linked as a primary standard to items from the fall benchmark (n = 11 items), and three of the six standards were linked to items as secondary standards (n = 5 items). No standards from the *Measurement and Data*, *Numbers and Operations in Base Ten* or

the *Operations and Algebraic Thinking* domains were linked as primary or secondary standards to items on the fall benchmark.

Winter benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 26 of 45 math items on the winter benchmark assessment (58%) had an *on-grade* (grade 1) CCSS linked to them as primary, with an average strength of alignment rating of 1.89 across these items (Table 5 Appendix B). Three items each had two standards identified as co-primary (PS1 and PS2 in Table 5). Of the 19 items that did not have an on-grade standard identified as primary, nine items were linked to a *prior-grade* (grade K) standard that was identified as primary, with an average strength of alignment rating of 2.00 across these items. Eight of the remaining ten items were identified as not linked to the CCSS, meaning that the majority of reviewers indicated these items were *not aligned* to either *on- or prior-grade* CCSS; all but one of these eight items were identified as having a CCSS linked to them as a secondary standard, and two of these eight had at least half the reviewers indicate they were aligned to a prerequisite skill necessary for on-grade mastery. The remaining two items (items 31 and 37 in Table 5, Appendix B) on the winter benchmark had four and five standards linked to them, respectively, each as secondary standards. In sum, 44 of 45 items on the Grade 1 winter benchmark assessment (98%) were rated as aligned to *on- or prior-grade* CCSS by at least one reviewer.

Of the four standards comprising the *Geometry* domain from the *on-grade* (grade 1) CCSS (Tables 9-10, Appendix C), three were linked as a primary standard to items on the winter benchmark (n = 4 items), while two were linked as secondary standards (n = 9 items). Of the four standards representing the *Measurement and Data* domain, only one was identified as a primary standard (n = 1 item), and none of the standards were linked as a secondary standard to the winter benchmark. Of the six standards comprising the *Numbers and Operations in Base Ten*

domain, three were linked as a primary standard to items from the winter benchmark (*n* = 13 items), while just two of the six standards were linked to items as secondary standards (*n* = 6 items). Finally, of the eight standards representing the *Operations and Algebraic Thinking* domain for first grade CCSS, four standards were identified as primary standards (*n* = 10 items) to the winter benchmark, while all eight standards were linked to the winter benchmark as secondary standards (*n* = 18 items).

Of the seven standards comprising the *Counting and Cardinality* domain from the *prior-grade* (kindergarten) CCSS (Tables 9-10, Appendix C), only one was linked as a primary standard to items from the winter benchmark (*n* = 1 item), whereas four of the seven standards in this domain were linked to items as secondary standards (*n* = 11 items). Of the six standards comprising the *Geometry* domain, four were linked as a primary standard to items from the winter benchmark (*n* = 6 items), and four of the six standards were linked to items as secondary standards (*n* = 12 items). None of the three standards from the *Measurement and Data* domain were identified as being aligned to the winter items. The one standard representing the *Numbers and Operations in Base Ten* domain was not linked to the winter benchmark as a primary standard, but was linked as a secondary standard (*n* = 1 item). Of the five standards comprising the *Operations and Algebraic Thinking* domain, only one was aligned to items on the winter benchmark (*n* = 2 items), while two standards were linked secondary standards (*n* = 2 items).

Spring benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 26 of 45 math items on the spring benchmark assessment (58%) had an *on-grade* (grade 1) CCSS linked to them as primary, with an average strength of alignment rating of 1.82 across these items (Table 6 Appendix B). Three items each had two standards identified as co-primary (PS1 and PS2 in Table 6). Of the 19 items that did not have an on-grade standard identified as

primary, 12 items were linked to a *prior-grade* (grade K) standard identified as primary, with an average strength of alignment rating of 1.82 across these items. Three of the remaining seven items were identified as not linked to the CCSS, meaning that the majority of reviewers indicated these items were *not aligned* to either *on- or prior-grade* CCSS; all three of these items were identified as having at least one CCSS linked to them as a secondary standard, and one of these three had at least half the reviewers indicate they were aligned to a prerequisite skill necessary for on-grade mastery. The remaining four items (items 27, 36, 39 and 40, Table 6, Appendix B) on the spring benchmark had four or five standards linked to them as secondary standards. In sum, 45 of 45 items on the Grade 1 winter benchmark assessment (100%) were rated as aligned to *on- or prior-grade* CCSS by at least one reviewer.

Of the four standards comprising the *Geometry* domain from the *on-grade* (grade 1) CCSS (Tables 11-12, Appendix C), one was linked as a primary standard to items on the spring benchmark (n = 3 items), whereas all four standards were linked as secondary standards (n = 8 items). Of the four standards representing the *Measurement and Data* domain, only one was identified as a primary standard (n = 1 item), and the same standard was linked as secondary (n = 2 items) to the spring benchmark. Of the six standards comprising the *Numbers and Operations in Base Ten* domain, four were linked as a primary standard to items from the spring benchmark (n = 11 items), while three were linked to items as secondary standards (n = 9 items). Lastly, four of the eight standards representing the *Operations and Algebraic Thinking* domain for first grade CCSS were identified as primary standards (n = 10 items) to the spring benchmark, while seven of eight standards were linked to the spring benchmark as secondary standards (n = 15 items).

Of the seven standards comprising the *Counting and Cardinality* domain from the *prior-grade* (kindergarten) CCSS (Tables 11-12, Appendix C), only one was linked as a primary standard to items from the spring benchmark (n = 1 item), while two of the seven standards in this domain were linked to items as secondary standards (n = 2 items). Of the six standards comprising the *Geometry* domain, three were linked as a primary standard to items from the spring benchmark (n = 11 items), and three of the six standards were linked to items as secondary standards (n = 5 items). No standards from the *Measurement and Data*, *Numbers and Operations in Base Ten*, or the *Operations and Algebraic Thinking* domains were linked as primary or secondary standards to items on the spring benchmark.

Grade 2

Fall benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 35 of 45 math items on the fall benchmark assessment (78%) had an *on-grade* (grade 2) CCSS linked to them as primary, with an average strength of alignment rating of 1.64 across these items (Table 7, Appendix B). Two items each had two standards identified as co-primary (PS1 and PS2 in Table 7). Of the 10 items that did not have an on-grade standard identified as primary, five items were linked to a *prior-grade* (grade 1) standard that was identified as primary, with an average strength of alignment rating of 1.87 across these items. Four of the remaining five items on the fall benchmark were identified as not linked to the CCSS, meaning that the majority of reviewers indicated these items were *not aligned* to either *on- or prior-grade* CCSS; three of these four items were identified as having at least one CCSS linked to them as a secondary standard, and two of these four had at least half the reviewers indicate they were aligned to a prerequisite skill necessary for on-grade mastery. The remaining item (item 41, Table 7, Appendix B) on the fall benchmark had four standards linked to it as secondary

standards. In sum, 44 of 45 items on the Grade 2 fall benchmark assessment (98%) were rated as aligned to *on- or prior-grade* CCSS by at least one reviewer.

Of the three standards comprising the *Geometry* domain from the *on-grade* (grade 2) CCSS (Tables 13-14, Appendix C), none were linked as a primary standard to items on the fall benchmark, while one was linked as a secondary standard (n = 3 items). Of the ten standards representing the *Measurement and Data* domain, four were identified as a primary standard (n = 13 items), and two were linked as a secondary standard (n = 4 items) to the fall benchmark. Of the nine standards comprising the *Numbers and Operations in Base Ten* domain, four were linked as a primary standard to items from the fall benchmark (n = 18 items), and four of the nine were linked to items as secondary standards (n = 8 items). Lastly, of the four standards representing the *Operations and Algebraic Thinking* domain for second grade, three were identified as primary standards (n = 5 items) to the fall benchmark, while one was linked to the fall benchmark as secondary standard (n = 6 items).

None of the four standards comprising the *Geometry* domain from the *prior-grade* (grade 1) CCSS (Tables 13-14, Appendix C) were linked as a primary or a secondary standard to items on the fall benchmark. Of the four standards representing the *Measurement and Data* domain, two were identified as a primary standard (n = 4 items), while one of these standards was linked as a secondary standard (n = 3 items) to the fall benchmark. Of the six standards comprising the *Numbers and Operations in Base Ten* domain, one was linked as a primary standard to items from the fall benchmark (n = 1 item), while two of the six standards were linked to items as secondary standards (n = 6 items). Lastly, just one of the eight standards representing the *Operations and Algebraic Thinking* domain for first grade CCSS was identified as a primary

standard (*n* = 1 item) to the fall benchmark, while three of eight standards were linked to the fall benchmark as secondary standards (*n* = 5 items).

Winter benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 34 of 45 math items on the benchmark assessment (76%) had an *on-grade* (grade 2) CCSS linked to them as a primary standard, with an average strength of alignment rating of 1.73 across these items (Table 8, Appendix B). One item that had two standards identified as co-primary (PS1 and PS2 in Table 8). Of the 11 items that did not have an on-grade standard identified as primary, seven items were linked to a *prior-grade* (grade 1) standard that was identified as primary, with an average strength of alignment rating of 1.52 across these items. The four remaining items were identified as not linked to the CCSS. All five reviewers indicated these four items were not aligned to any *on- or prior-grade* CCSS, and only one had a majority of reviewers indicate that it addressed a prerequisite skill necessary for on-grade mastery. In sum, 41 of 45 items on the Grade 2 winter benchmark assessment (91%) were rated as aligned to *on- or prior-grade* CCSS by at least one reviewer.

Of the three standards comprising the *Geometry* domain from the *on-grade* (grade 2) CCSS (Tables 15-16, Appendix C), none were linked as a primary standard to items on the winter benchmark, while one was linked as a secondary standard (*n* = 2 items). Of the ten standards representing the *Measurement and Data* domain, four were identified as a primary standard (*n* = 11 items), while only one was linked as a secondary standard (*n* = 3 items) to the winter benchmark. Of the nine standards comprising the *Numbers and Operations in Base Ten* domain, five were linked as a primary standard to items from the winter benchmark (*n* = 19 items), while just two of the nine were linked to items as secondary standards (*n* = 8 items). Lastly, of the four standards representing the *Operations and Algebraic Thinking* domain for

second grade, two were identified as primary standards (*n* = 4 items) to the winter benchmark, and three were linked to the winter benchmark as a secondary standard (*n* = 6 items).

None of the four standards comprising the *Geometry* domain from the *prior-grade* (grade 1) CCSS (Tables 15-16, Appendix C) were linked as a primary or a secondary standard to items on the winter benchmark. Of the four standards representing the *Measurement and Data* domain, only one was identified as a primary standard (*n* = 2 items), and none of these standards were linked as secondary standards to the winter benchmark. Of the six standards comprising the *Numbers and Operations in Base Ten* domain, three were linked as primary standards to items from the winter benchmark (*n* = 5 items), while just one of the six standards was linked to items as a secondary standard (*n* = 5 items). Lastly, just one of the eight standards representing the *Operations and Algebraic Thinking* domain for first grade CCSS was identified as a primary standard (*n* = 1 item) to the winter benchmark, and just two of the eight standards were linked to the winter benchmark as secondary standards (*n* = 2 items).

Spring benchmark assessment. Across the five reviewers in Phase 1 and Phase 2 of the study, 35 of 45 math items on the spring benchmark assessment (78%) had an *on-grade* (grade 2) CCSS linked to them as primary, with an average strength of alignment rating of 1.63 across these items (Table 9, Appendix B). There was one item that had two standards identified as co-primary (PS1 and PS2 in Table 9). Of the 10 items that did not have an on-grade standard identified as primary, eight items were linked to a *prior-grade* (grade 1) standard that was identified as primary, with an average strength of alignment rating of 1.79 across these items. One of the remaining two items on the spring benchmark was identified as not linked to the CCSS. All five reviewers indicated this item was *not aligned* to either *on- or prior-grade* CCSS, and only two of five reviewers indicated that the item addressed a prerequisite skill necessary for

on-grade mastery. The remaining item (item 34, Table 9, Appendix B) on the spring benchmark had four standards linked to it as secondary standards. In sum, 44 of 45 items on the Grade 2 spring benchmark assessment (98%) were rated as aligned to *on- or prior-grade* CCSS by at least one reviewer.

Of the three standards comprising the *Geometry* domain from the *on-grade* (grade 2) CCSS (Tables 17-18, Appendix C), none were linked as a primary standard to items on the spring benchmark, while one standard was linked as a secondary standard (n = 2 items). Of the ten standards representing the *Measurement and Data* domain, four were identified as a primary standard (n = 15 items), while only two were linked as secondary standards (n = 9 items) to the spring benchmark. Of the nine standards comprising the *Numbers and Operations in Base Ten* domain, five were linked as a primary standard to items from the spring benchmark (n = 15 items), while three of the nine were linked to items as secondary standards (n = 19 items). Lastly, two of the four standards representing the *Operations and Algebraic Thinking* domain for second grade were identified as primary standards (n = 6 items) to the spring benchmark, and these same two standards were linked to the spring benchmark as secondary (n = 4 items).

None of the four standards comprising the *Geometry* domain from the *prior-grade* (grade 1) CCSS (Tables 17-18, Appendix C) were linked as a primary or a secondary standard to items on the spring benchmark. Of the four standards representing the *Measurement and Data* domain, two were identified as primary standards (n = 4 items), and none of these standards were linked as secondary standards to the spring benchmark. Of the six standards comprising the *Numbers and Operations in Base Ten* domain, just two were linked as primary standards to items from the spring benchmark (n = 4 items), and these same two standards were linked to items as secondary standards (n = 3 items). Lastly, none of the eight standards representing the *Operations and*

Algebraic Thinking domain were identified as primary standards to items on the spring benchmark, and just two of the eight standards were linked to the spring benchmark as secondary standards (n = 3 items).

Discussion

Alignment of items from the grade K-2 easyCBM® benchmark assessments to the CCSS appears fairly strong given that the items were originally written to the NCTM Curriculum Focal Points, though gaps in alignment are present.

Grade K

Overall, alignment at the CCSS domain level is stronger than at the standard level for the kindergarten benchmark assessments (Tables 1-6, Appendix C). All but one of the five kindergarten CCSS domains have items aligned to them, both as primary and secondary. The *Numbers and Operations in Base Ten* domain appears to be the one domain that is underrepresented, though it should be noted there is only one standard representing this domain. Although alignment at the domain level appears reasonable, there are several CCSS that appear to be underrepresented on the kindergarten benchmark assessments. For instance, standard K.CC.1 has only two items, both deemed secondary (a minority of reviewers having indicated that alignment is present), aligned to it, out of 135 possible items across the three benchmark assessments. Additional standards that seem underrepresented based on simple frequency counts across the kindergarten benchmarks include K.CC.3, K.G.3, K.G.5, K.NBT.1, K.OA.3, and K.OA.4. While some standards appear to be underrepresented on the kindergarten benchmarks, some appear overrepresented. For instance, standard K.MD.2 appears to have 26 items linked to it as either a primary or secondary standard across the three assessments. This means that according to our reviewers almost 20% of the kindergarten benchmark items are either primarily

or secondarily dedicated to assessing this one standard. Standards that might also be overrepresented include K.G.2 and K.G.6. Assessment development will focus on adding additional items to address the following kindergarten CCSS: *Counting and Cardinality* Standards 1 and 3, *Geometry* Standards 3 and 5, *Numbers and Operations in Base Ten Standard* 1, and *Operations and Algebraic Thinking* Standards 3 and 4.

Grade 1

Alignment of the first grade easyCBM® benchmark assessments to the CCSS appears stronger on-grade compared to prior-grade (Tables 7-12, Appendix C). For example, while all four on-grade (grade 1) CCSS domains are linked to items from the benchmark assessments, the *Measurement and Data* and *Numbers and Operations in Base Ten* domains from the prior-grade (grade K) link to no items from the fall and spring benchmarks, and just one secondary standard on the winter assessment. Given that these assessments are intended to assess and monitor the growth of low performing students, addressing prior-grade domains and standards may warrant further consideration. Of the four on-grade domains, *Measurement and Data* appears the most underrepresented on the benchmark assessments, having only one of the four standards that comprise it aligned as a primary standard.

Like the kindergarten assessments, alignment at the domain level for the first grade assessments appears stronger than at the standard level for on-grade CCSS. For instance, though overall the *Operations and Algebraic Thinking* domain appears well represented across the three grade 1 assessments, three of the eight standards in this domain, 1.OA.5, 1.OA.7 and 1.OA.8, are not identified as primary standards to any items on the three benchmarks. Additional on-grade standards that seem underrepresented include 1.G.4, 1.MD.1, 1.MD.2, 1.MD.3 and 1.NBT.6. As was the case with the kindergarten benchmark assessments, some on-grade standards appear

overrepresented across the three first grade assessments based on the frequency they were identified as aligned, including 1.G.2, 1.NBT.1, and 1.OA.1. Assessment development at the grade 1 level will focus on adding additional items to address the following first grade CCSS: *Operations and Algebraic Thinking* Standards 5, 7 and 8, *Geometry* Standard 4, *Measurement and Data* Standards 1-3, and *Numbers and Operations in Base Ten Standard* 6.

Grade 2

Alignment of the second grade easyCBM® benchmark assessments to the CCSS appears stronger on-grade compared to prior-grade (Tables 13-18, Appendix C). For instance, while all four on-grade (grade 2) CCSS domains had standards that aligned to items on the benchmark assessments, the *Geometry* and *Operations and Algebraic Thinking* domains from the prior-grade (grade 1) appear underrepresented. There were no items that aligned to any of the three standards in the *Geometry* domain, while just two items were represented by one standard from the *Operations and Algebraic Thinking* domain as primary. Of the four on-grade domains, *Geometry* appears the most underrepresented on the benchmark assessments, having only one of four, standard 2.G.2, aligned to it, and only as a secondary standard. The remaining three on-grade domains seem proportionally represented by items from the seasonal benchmark assessments in grade 2.

As was the case in kindergarten and first grade, alignment at the domain level for the second grade assessments appears stronger than at the standard level for on-grade CCSS. For example, though the *Measurement and Data* domain appears well-represented overall, items on the benchmark assessments do not address several standards within this domain, including 2.MD.2, 2.MD.4, 2.MD.5, 2.MD.9 and 2.MD.10, which are not represented as a primary standard by any items. This pattern holds true for a number of other on-grade CCSS that are

underrepresented including: 2.NBT.3, 2.NBT.6, 2.NBT.8, 2.NBT.9, 2.OA.3 and 2.OA.4. On the other hand, some on-grade standards appear overrepresented across the second grade assessments based on the frequency with which they were identified as aligned, including 2.MD.1 and 2.NBT.5. Assessment development at the grade 2 level will focus on adding additional items to address the following second grade CCSS: *Measurement and Data* Standards 2, 4-5 and 9-10, *Numbers and Operations in Base Ten Standard* 3, 6 and 8-9, and *Operations and Algebraic Thinking* Standards 3 and 4.

Conclusion

The results presented in this technical report yield a picture of overall alignment of the K-2 easyCBM® benchmark assessments in mathematics to the CCSS at both the domain and standard levels, while also identifying patterns to use as a basis for developing new math items designed to address the current gaps in CCSS alignment. Overall, a fairly stable pattern holds true across all three grades, with approximately 94% of kindergarten items, 99% of first grade items, and 96% of second grade items aligned to either on-grade or prior-grade CCSS. This overall strong pattern of alignment, however, is not without areas of concern. In particular, results of this study suggest that some standards within CCSS are overrepresented on the existing easyCBM® assessments, while others are underrepresented.

Results of this study provide clear guidance into areas within the CCSS for which the current easyCBM® assessments are insufficiently aligned. Not surprisingly, these gaps between the easyCBM® assessments and the CCSS are reflective of the gaps between the CCSS and the NCTM Focal Point Standards, on which the easyCBM® assessments were based. Assessment development within the easyCBM® system for School Year 2012-2013 will focus on writing

additional mathematics items addressing the CCSS that are currently underrepresented within the measures.

References

Alonzo, J., & Tindal, G. (2009). The development of K-8 progress monitoring measures in mathematics for use with the 2% and general education populations: Kindergarten (Techincal Report No. 0921). Eugene, OR: Behavioral Research and Teaching, University of Oregon.

Alonzo, J., Tindal, G., Ulmer, K., & Glasgow, A. (2006). easyCBM online progress monitoring assessment system.

National Governors Association Center for Best Practices - Council of Chief State School Officers. (2010). *Common Core State Standards*. National Governors Association Center for Best Practices and Council of Chief State School Officers, Washington D.C.

Nese, J. F. T., Lai, C. F., Anderson, D., Park, B. J., Tindal, G., & Alonzo, J. (2010). The Alignment of easyCBM Math Measures to Curriculum Standards (Technical Report No. 1002). Eugene, OR: Behavioral Research and Teaching, University of Oregon.

Appendix A

easyCBM Math Measures Alignment Questionnaire
Behavioral Research and Teaching
http://www.brtprojects.org/

Greetings! I am writing to you because through a link on the easycbm.com website, you have expressed interest in participating in an alignment study of easyCBM math measures to the Common Core State Standards (CCSS). Before the study begins, you will need to provide answers to some questions to confirm that you meet the requirements to participate.

As a reminder, you can view the study details at: http://www.brtprojects.org/about/current-research-project?id=10

Please answer the following questions designed to gauge potential participant expertise in alignment studies of K-8 mathematics measures to the CCSS. You may type your answers directly in this document or in an email reply.

1. Detail the following information regarding your expertise in the area of standards-based mathematics curriculum and instruction:
   a. District/School/City, State –
   b. Current position title/grade –
   c. Years teaching in this position –
   d. Degree(s) earned –
   e. Familiarity with Common Core State Standards -
   f. Other relevant background in mathematics standards-based curriculum/instruction –

2. Indicate the grades (K-8) for which you feel strongly qualified to rate the alignment of mathematics assessments to the CCSS.

3. Are you available for a 45-minute webinar in early Spring?

4. In addition to the webinar, are you able to dedicate 3 hours per grade to complete the alignment study? For example, if you are qualified to rate alignment for grades 3 and 4, you would spend up to 6 hours, 3 hours per grade, completing each review.

Thank you for your interest.
P. Shawn Irvin - pirvin@uoregon.edu
Research Assistant BRT

easyCBM® Math Measures Alignment Study

Project Manager
P. Shawn Irvin
Behavioral Research and Teaching, University of Oregon

BRT
behavioral research & teaching

Study Purpose and Context

- Common Core State Standards (CCSS) provide unified expectations for developing math skills in grades K-12.
- Will be officially put into practice by most states in 2014 – many districts are preparing now

➔ Understanding the alignment of easyCBM® math measures to the CCSS is critical for strengthening alignment as a basis for valid score interpretation and instructional decision-making

Three Parts to the Study

1. easyCBM® K-8 Math Items
2. The Common Core State Standards
3. The Distributed Item Review (DIR) Website

easyCBM® K-8 Math Items

- Written to NCTM focal point standards
- 3 benchmark tests in each grade, 45 items each, administered in fall, winter and spring
- Identify low-performing students as an impetus for progress monitoring and intervention (i.e., RTI)
- Widespread access and use → over 220,000 teachers and over two million students!

http://www.brtprojects.org/

Common Core State Standards

"I ask every American to commit to at least one year or more of higher education or career training. This can be community college or a four-year school; vocational training or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma." - President Obama, Address to Joint Session of Congress, February 24, 2009

- College and Career Readiness Movement
- Teacher/state-led effort to establish shared math standards across grades K-12
- 45 states have adopted
- Curricula and assessments coming

http://www.corestandards.org/

Distributed Item Review (DIR)

A web-based system for presenting ***test items*** to ***experts*** across a ***broad geographic region*** so they can ***review*** them for important dimensions of ***bias, sensitivity, and alignment with standards***.

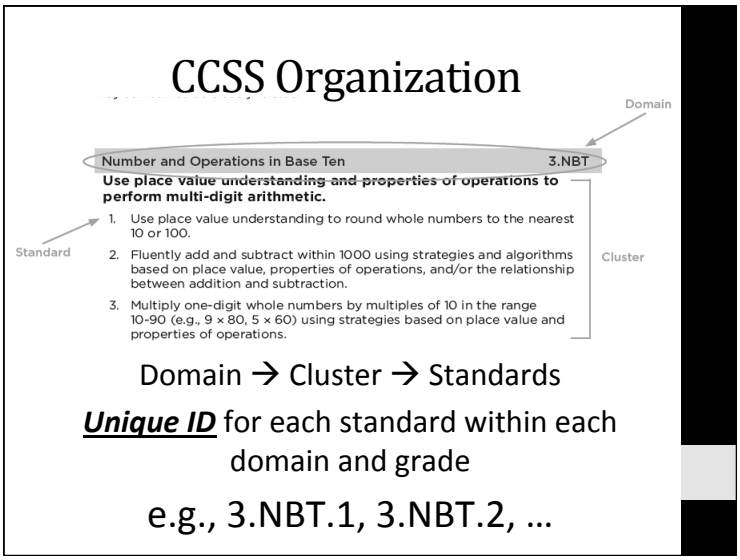
Your Role in the Study

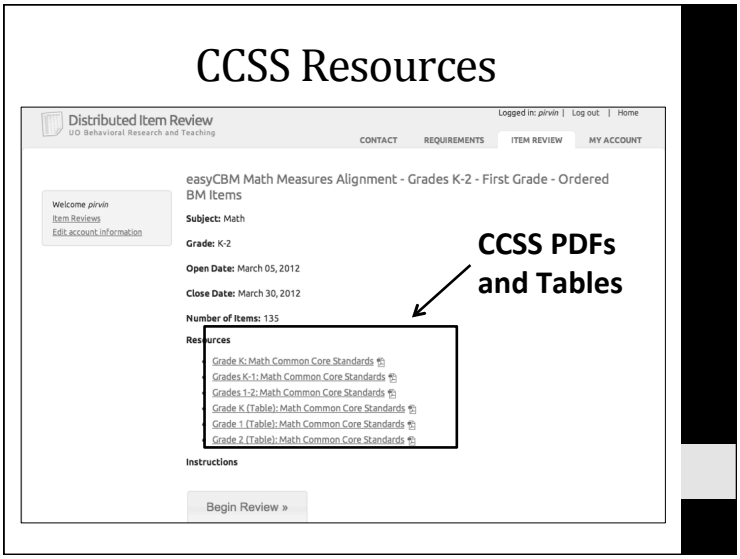
1. Complete a short, 3-item proficiency training DIR Review
2. Using the DIR, complete main review to determine the alignment of 135 grade-level easyCBM® math items to:

- ***On***-grade CCSS
  or
- ***Prior***-grade CCSS
  or
- ***Essential skills*** necessary for on-grade standard mastery

Step One: Review and Become Familiar with On- *and* Prior-grade CCSS Relevant to Your Items

e.g., Grade 2 Items – Review Grade 2 *and* Grade 1 CCSS

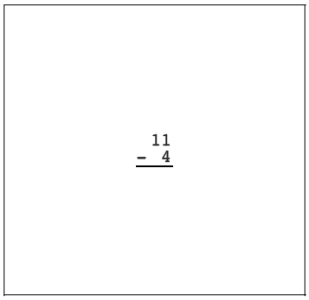

CCSS Organization
Domain
Number and Operations in Base Ten 3.NBT
Use place value understanding and properties of operations to perform multi-digit arithmetic.
1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
Standard
Cluster
Domain → Cluster → Standards
Unique ID for each standard within each domain and grade
e.g., 3.NBT.1, 3.NBT.2, …


CCSS Resources
Distributed Item Review
UO Behavioral Research and Teaching
Logged in: pirvin | Log out | Home
CONTACT
REQUIREMENTS
ITEM REVIEW
MY ACCOUNT
Welcome pirvin
Item Reviews
Edit account information
easyCBM Math Measures Alignment - Grades K-2 - First Grade - Ordered BM Items
Subject: Math
Grade: K-2
Open Date: March 05, 2012
Close Date: March 30, 2012
Number of Items: 135
Resources
Grade K: Math Common Core Standards
Grades K-1: Math Common Core Standards
Grades 1-2: Math Common Core Standards
Grade K (Table): Math Common Core Standards
Grade 1 (Table): Math Common Core Standards
Grade 2 (Table): Math Common Core Standards
Instructions
Begin Review »
CCSS PDFs and Tables

Step Two: Determine Math Item Alignment to On- *or* Prior-grade CCSS *or to* Essential Skills for On-grade Mastery

e.g., a given math item will align on-grade *or* prior-grade (no prior-grade for K) *or to* a skill essential for on-grade mastery

On-grade CCSS Alignment: Directly Linked



A. 6
B. 7
C. 8

Operations and Algebraic Thinking **2.OA**

2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

This grade 2 item is directly aligned to standard *2.OA.2*

On-grade CCSS Alignment: Somewhat Linked

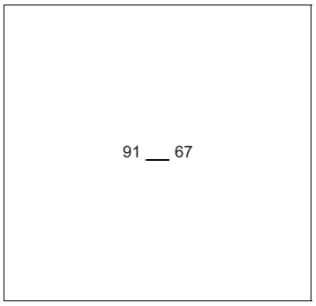
A. 996
B. 356
C. 713

Number and Operations in Base Ten **2.NBT**

4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

This grade 2 item is somewhat aligned to standard *2.NBT.4*

Prior-grade CCSS Alignment: Directly Linked



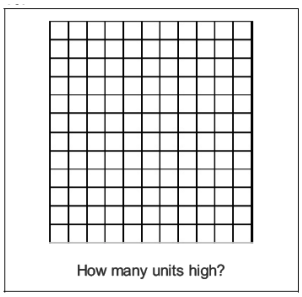
A. =
B. <
C. >

Number and Operations in Base Ten **1.NBT**

3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

This grade 2 item is directly aligned to prior-grade standard *1.NBT.3*

Prior-grade CCSS Alignment: Somewhat Linked



A. 14
B. 12
C. 13

Measurement and Data **1.MD**

2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

This grade 2 item is somewhat aligned to prior-grade standard *1.MD.2*

Skill Addressed: Essential Skill for On-grade CCSS Mastery

30, 3, 977

Which is greatest?

A. 3
B. 977
C. 30

Number and Operations in Base Ten **2.NBT**

4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

This grade 2 item is neither directly *or* somewhat aligned to standard 2.NBT.4, but addresses an **essential skill for on-grade standard mastery**:

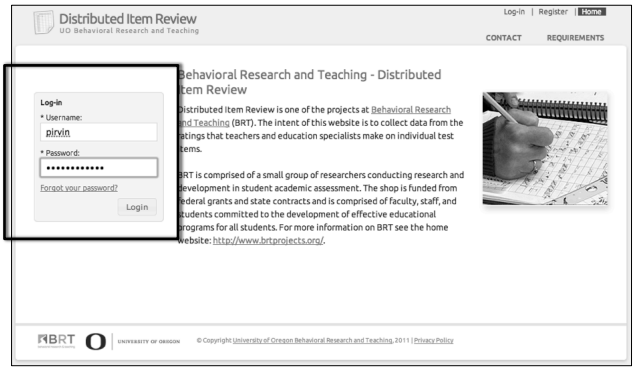
i.e., comparing 1-, 2- and 3-digit #s

…let's pause for a moment.

Do you have any questions or comments concerning review of the CCSS, or how you will determine the alignment of math items to CCSS and skills essential for on-grade standard mastery?

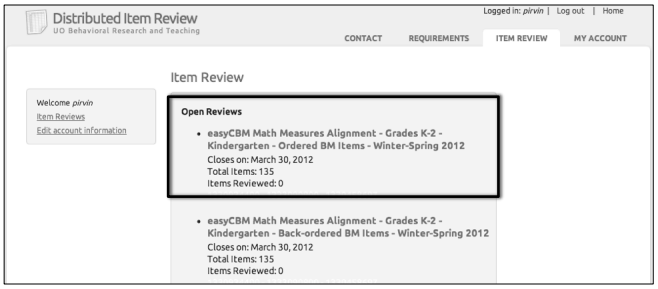
Accessing the DIR

Log on to the DIR website:
http://www.brtitemreview.com/shawndir



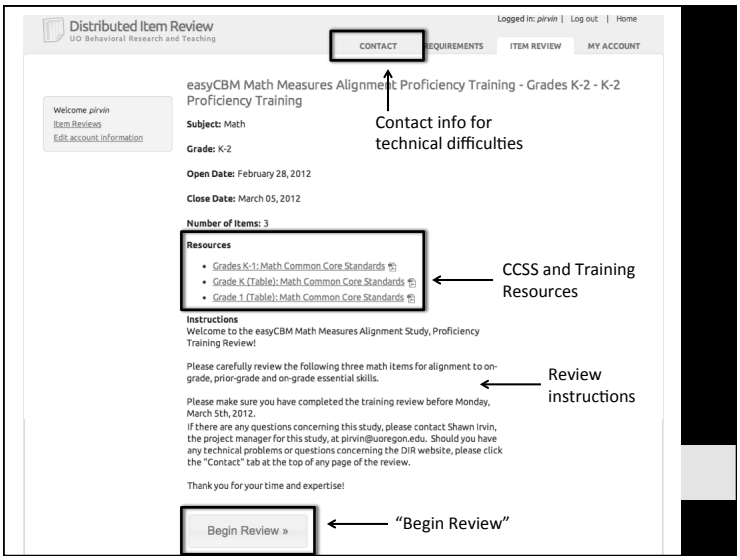
Accessing the DIR

Access an open review by clicking on the title of your first review



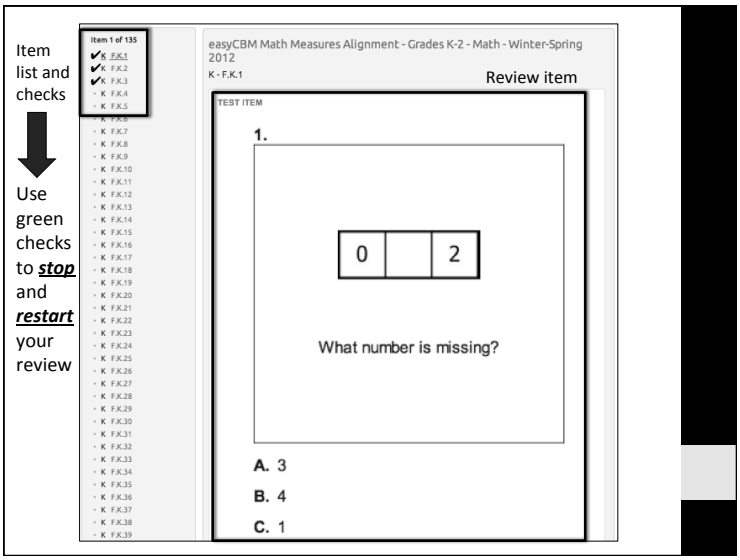
Accessing the DIR

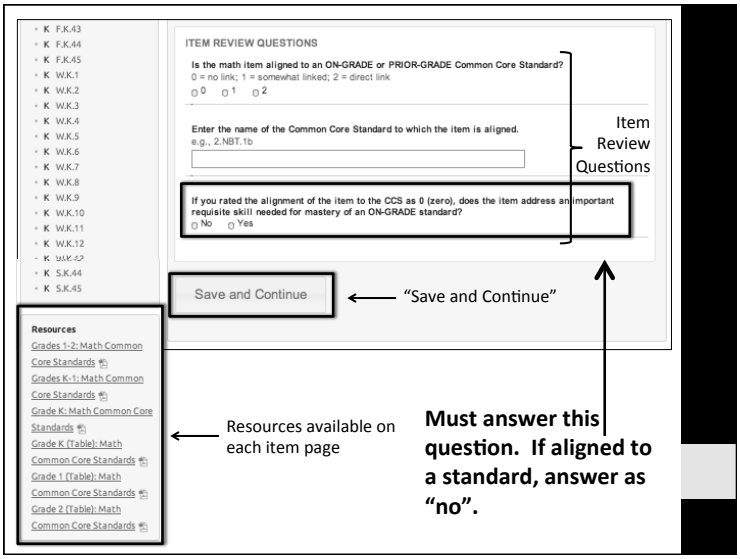
1. Carefully look over the specifics of the open review you have selected:
   - Review details (dates, # items)
   - Resources ➔ CCSS PDFs and Tables
   - Instructions
2. Get started by clicking on "Begin Review"



Reviewing Items on the DIR

1. Answer/complete ***all questions appropriate*** for a given item
2. Resources still accessible
3. ***CRITICAL!*** Click "Save and Continue" to save your responses and move to the next item
4. Check your progress, and stop and restart a review using "green checks"


Item list and checks
Use green checks to stop and restart your review
Item 1 of 135
easyCBM Math Measures Alignment - Grades K-2 - Math - Winter-Spring 2012
K - F.K.1
Review item
TEST ITEM
1.
0
2
What number is missing?
A. 3
B. 4
C. 1


ITEM REVIEW QUESTIONS
Is the math item aligned to an ON-GRADE or PRIOR-GRADE Common Core Standard?
0 = no link; 1 = somewhat linked; 2 = direct link
Enter the name of the Common Core Standard to which the item is aligned.
e.g., 2.NBT.1b
If you rated the alignment of the item to the CCS as 0 (zero), does the item address an important requisite skill needed for mastery of an ON-GRADE standard?
No
Yes
Item Review Questions
Save and Continue
"Save and Continue"
Resources
Grades 1-2: Math Common Core Standards
Grades K-1: Math Common Core Standards
Grade K: Math Common Core Standards
Grade K (Table): Math Common Core Standards
Grade 1 (Table): Math Common Core Standards
Grade 2 (Table): Math Common Core Standards
Resources available on each item page
Must answer this question. If aligned to a standard, answer as "no".

Completing Your Item Review

1. Complete 3-item proficiency review by:
   Monday, March 5th
2. Complete 135-item main review by:
   Monday, April 2nd
3. Remember you may stop your main review and restart at the point you left off to avoid "review fatigue"
4. Double check there are are no items left to review on "End of Review" page
5. Email Shawn when you have finished the review

Thank you for participating! Questions / Comments?

Shawn Irvin
pirvin@uoregon.edu

BRT
behavioral research & teaching

Appendix B

Table 1
Item level alignment results for the easyCBM® kindergarten fall benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	Total n	Req Skills
1	K.CC.2	4	3	1.67					K.CC.3	1		2									5	0
2	K.CC.6	3		1.67					K.CC.7	1		2	K.CC.4	1		*					5	0
3	K.OA.1	3	2	2					K.OA.2	1		2	K.OA.5	1		2					5	0
4	K.CC.6	4		1.75					K.CC.4	1		*									5	0
5	K.OA.5	2		2					K.OA.1	1		1	K.OA.2	1		1	K.OA.4	1		*	5	0
6	NS	4		**					K.G.1	1		*									5	2
7	K.CC.2	2	1	1	NS	2		**	K.CC.4	1		2									5	1
8	K.OA.1	3	2	2					K.OA.2	1		2	K.OA.5	1		2					5	0
9	NS	4		**					K.MD.2	1		*									5	2
10	NS	3		**					K.CC.2	2	1	1									5	2
11	NS	3		**					K.CC.2	2	1	1									5	2
12	K.CC.5	4	3	1.67					NS	1		**									5	0
13	K.CC.7	3		1.33					K.CC.6	1		2	K.NBT.1	1		*					5	0
14	NS	3		**					K.CC.2	2	1	1									5	2
15	NS	4		**					K.CC.2	1		*									5	0
16	K.G.6	5	4	2																	5	0
17	K.G.4	3	2	1					K.G.1	1		1	K.G.2	1		1					5	0
18	K.G.2	2		2					K.G.1	1		2	K.G.4	1		1	K.G.3	1		*	5	0
19	K.G.2	2	1	1					K.CC.4	1		2	K.MD.3	1		2	K.CC.5	1		1	5	0
20	K.G.2	2	1	1					K.CC.4	1		2	K.MD.3	1		2	K.CC.5	1		1	5	0
21	K.G.6	5	4	1.75																	5	0
22	K.G.2	4		1.5					K.G.1	1		*									5	0
23	K.G.2	3	2	2					K.G.1	1		2	NS	1		**					5	0
24	K.G.6	5	4	2																	5	0
25	K.G.4	5	4	1.75																	5	0
26	K.G.6	5	4	2																	5	0
27	K.G.6	5	4	1.5																	5	0
28	K.G.6	2		1					K.G.6	2	1	1	NS	1		**					5	0

Table 1 cont.
Item level alignment results for the easyCBM® kindergarten fall benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	Total n	Req Skills
29	K.G.6	5	4	2																	5	0
30	K.G.2	2		1.5					K.G.1	1		2	K.G.4	1		1	K.G.3	1	*		5	0
31	K.G.4	5	4	1.75																	5	0
32	K.MD.2	5	4	1.25																	5	0
33	K.MD.2	4	3	1.33					K.MD.1	1		1									5	0
34	NS	5		**																	5	0
35	NS	3		**					K.MD.1	2	1	2									5	0
36	K.MD.2	5	4	1.25																	5	0
37	NS	3		**					K.MD.1	2	1	2									5	0
38	K.MD.2	5	4	1.25																	5	0
39	NS	5		**																	5	0
40	NS	3		**					K.MD.2	2	1	1									5	1
41	NS	3		**					K.MD.1	2	1	2									5	0
42	NS	3		**					K.MD.2	2	1	1									5	1
43	K.CC.6	3		1.33					K.MD.3	2	1	2									5	0
44	K.CC.6	2		1.5					K.MD.3	1		2	K.MD.2	1		*	NS	1		**	5	0
45	K.MD.2	4		1.25					K.MD.1	1		*									5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Fall table refers to the first test item on the fall benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., K.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = Geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., K.CC.4a, K.CC.4b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., K.CC.4a, K.CC.4b -> K.CC.4).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 2
Item level alignment results for the easyCBM® kindergarten winter benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
1	K.CC.2	4	3	1.67					K.CC.3	1		2																	5	0
2	K.CC.5	4	3	2					K.CC.4	1		2																	5	0
3	K.CC.5	4	3	1.67					K.CC.4	1		2																	5	0
4	K.CC.5	3	2	1.5					K.CC.3	1		2	K.CC.4	1		2													5	0
5	K.OA.1	2		2					K.CC.5	1		2	K.OA.2	1		2	K.CC.4	1		*									5	0
6	K.CC.5	2	1	2	K.OA.1	2		2	K.OA.2	1		2																	5	0
7	K.CC.5	3		1.67					K.CC.4	2		2																	5	0
8	K.OA.5	3		2					K.OA.2	1		1	K.OA.1	1		*													5	0
9	K.CC.2	5	4	1.75																									5	0
10	NS	4		**					K.CC.2	1		*																	5	1
11	***								K.OA.5	1		2	K.OA.1	1		1	K.OA.2	1		1	K.CC.5	1		*	NS	1		**	5	0
12	NS	3		**					K.CC.4	1		1	K.MD.2	1		*													5	0
13	K.OA.1	3	2	2					K.OA.2	2		2																	5	0
14	K.CC.2	4	3	1.67					K.CC.1	1		2																	5	0
15	K.G.2	5	4	1.75																									5	0
16	K.G.2	4		1.75					K.G.4	1		*																	5	0
17	K.G.2	3		2					K.G.5	1		*	NS	1		**													5	0
18	K.G.2	4		1.5					K.G.3	1		*																	5	0
19	K.G.2	5	4	1.75																									5	0
20	K.G.4	5	4	1.25																									5	0
21	K.G.4	5	4	1.5																									5	0
22	K.G.2	5	4	2																									5	0
23	K.G.2	3		1.67					K.CC.5	1		1	K.G.4	1		*													5	0
24	K.G.6	5	4	1.75																									5	0
25	K.G.2	3		1.33					K.G.5	2	1	2																	5	0
26	K.G.4	5	4	1.5																									5	0
27	K.G.4	5	4	1.5																									5	0

Table 2 cont.
Item level alignment results for the easyCBM® kindergarten winter benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
28	K.G.4	4	3	1.33					K.G.2	1		1																	5	0
29	K.G.6	5	4	2																									5	0
30	K.G.6	5	4	1.75																									5	0
31	NS	3		**					K.MD.1	2		2																	5	0
32	K.MD.2	3		1					NS	2		**																	5	1
33	NS	5		**																									5	0
34	K.MD.2	4		1.25					K.MD.1	1		*																	5	0
35	NS	5		**																									5	0
36	K.MD.2	3		1					NS	2		**																	5	0
37	K.MD.2	5	4	1.25																									5	0
38	NS	5		**																									5	0
39	K.MD.2	3		2					K.G.4	1		*	NS	1		**													5	0
40	NS	3		**					K.MD.1	2		2																	5	0
41	K.MD.2	4		1.25					K.MD.1	1		*																	5	0
42	NS	5		**																									5	0
43	NS	3		**					K.MD.1	2		2																	5	0
44	NS	5		**																									5	0
45	K.MD.2	4		1.25					NS	1		**																	5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Winter table refers to the first test item on the winter benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., K.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = Geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., K.CC.4a, K.CC.4b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., K.CC.4a, K.CC.4b -> K.CC.4).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 3
Item level alignment results for the easyCBM® kindergarten spring benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
1	NS	4		**					K.MD.3	1		*																	5	0
2	K.CC.4	3		1.67					K.OA.1	1		2	K.CC.6	1		*													5	0
3	K.CC.5	2	1	2	K.CC.4	2		1.5	K.OA.2	1		1																	5	0
4	K.OA.2	2		2					K.CC.2	1		2	K.OA.1	1		2	K.CC.5	1		*									5	0
5	K.OA.5	2		2					K.OA.1	1		1	K.OA.2	1		1	K.CC.5	1		*									5	0
6	K.OA.5	3		2					K.OA.2	1		1	K.G.5	1		*													5	0
7	***								K.OA.5	1		2	K.OA.1	1		1	K.OA.2	1		1	K.CC.2	1		*	NS	1		**	5	0
8	K.G.1	2		1.5	NS	2		**	K.MD.2	1		*																	5	1
9	NS	4		**					K.MD.3	1		*																	5	0
10	K.CC.2	4	3	2					K.CC.3	1		1																	5	0
11	K.CC.2	5	4	1.75																									5	0
12	K.CC.5	2	1	2	K.OA.1	2		2	K.OA.2	1		2																	5	0
13	NS	4		**					K.CC.4	1		1																	5	1
14	NS	3		**					K.CC.1	2		1																	5	0
15	K.OA.2	2	1	2	K.OA.1	2		1.5	K.OA.3	1		2																	5	0
16	NS	4		**					K.MD.3	1		*																	5	0
17	K.G.4	2		1.5	K.G.1	2	1	1	K.G.3	1		2																	5	0
18	K.G.6	5	4	2																									5	0
19	K.G.6	4	3	1.33					NS	1		**																	5	0
20	K.G.2	3		2					K.G.1	2	1	2																	5	0
21	NS	3		**					K.G.6	2		1.5																	5	0
22	K.G.4	4		1.5					K.G.2	1		*																	5	0
23	K.G.4	5	4	1.5																									5	0
24	K.G.6	5	4	1.5																									5	0
25	K.G.6	5	4	1.25																									5	0
26	K.G.4	4		1.5					K.MD.3	1		*																	5	0
27	K.G.2	3	2	2					K.G.1	2		2																	5	0
28	K.G.6	3		1.33					K.G.5	1		*	NS	1		**													5	1
29	K.G.6	5	4	1.75																									5	0
30	K.G.2	3	2	1.5					K.CC.5	1		2	NS	1		**													5	0
31	K.MD.2	5	4	1.75																									5	0

Table 3 cont.
Item level alignment results for the easyCBM® kindergarten spring benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
32	K.MD.2	5	4	1.25																									5	0
33	K.MD.2	4	3	1					NS	1		**																	5	0
34	NS	5		**																									5	0
35	NS	4		**					K.MD.3	1		*																	5	0
36	NS	5		**																									5	0
37	NS	3		**					K.MD.2	1		1	K.MD.3	1		*													5	0
38	NS	4		**					K.MD.3	1		*																	5	0
39	K.MD.2	3	2	1					NS	2		**																	5	0
40	K.MD.2	3		1					NS	2		**																	5	0
41	K.CC.6	2		1.5	K.MD.2	2		1	K.MD.1	1		*																	5	0
42	NS	3		**					K.MD.1	2	1	2																	5	0
43	NS	3		**					K.MD.2	1		2	K.MD.1	1		*													5	0
44	K.MD.3	2	1	2	NS	2		**	K.CC.4	1		1																	5	0
45	NS	3		**					K.CC.4	1		1	K.CC.3	1		*													5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Spring table refers to the first test item on the spring benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., K.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = Geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., K.CC.4a, K.CC.4b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., K.CC.4a, K.CC.4b -> K.CC.4).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 4
Item level alignment results for the easyCBM® first grade fall benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	Total n	Req Skills
1	K.CC.2	2	1	2					1.NBT.1	1		2	1.OA.1	1		2	1.OA.5	1		2	5	0
2	1.NBT.1	4	3	2					K.CC.1	1		2									5	0
3	NS	3		**					1.MD.1	1		2	1.MD.4	1		1					5	1
4	1.NBT.2	3	2	2					1.NBT.4	2		2									5	0
5	NS	4		**					1.NBT.2	1		1									5	1
6	1.NBT.3	2		1	NS	2		**	K.CC.2	1		*									5	2
7	NS	3		**					1.MD.4	2		1									5	1
8	NS	4		**					1.NBT.1	1		*									5	1
9	1.NBT.1	5	4	2																	5	0
10	1.NBT.2	5	4	1.5																	5	0
11	1.NBT.1	4	3	2					1.OA.4	1		1									5	0
12	NS	4		**					1.NBT.1	1		*									5	1
13	1.NBT.2	4	3	1.67					NS	1		**									5	1
14	1.NBT.2	4	3	2					1.NBT.4	1		2									5	0
15	1.NBT.3	4		2					1.OA.8	1		*									5	0
16	1.NBT.1	5	4	2																	5	0
17	K.G.4	5	4	1.5																	5	0
18	K.G.6	5	4	2																	5	0
19	K.G.4	5	4	1.5					K.G.2	1		*									6	0
20	K.G.4	4	3	2					1.G.4	1		2									5	0
21	1.G.2	3	2	1.5					K.G.5	1		2	K.G.6	1		2					5	0
22	K.G.4	4	3	1.67					1.G.1	1		1									5	0
23	K.G.4	3	2	1.5					1.G.1	1		1	NS	1		**					5	1
24	K.G.4	4	3	1.67					1.G.1	1		1									5	0
25	K.G.6	3		2					1.G.2	2		2									5	0
26	K.G.2	3	2	2					1.G.2	1		2	NS	1		**					5	0
27	NS	3		**					1.G.3	2		1.5									5	1

Table 4 cont.
Item level alignment results for the easyCBM® first grade fall benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	Total n	Req Skills
28	K.G.4	5	4	1.75																	5	0
29	1.G.2	3	2	2					K.G.6	2		2									5	0
30	1.G.2	4	3	2					K.G.6	1		2									5	0
31	K.G.4	4	3	1.67					1.G.1	1		1									5	0
32	1.MD.4	5	4	2																	5	0
33	1.OA.6	2		1.5					1.OA.3	1		2	1.OA.8	1		*	NS	1		**	5	1
34	1.OA.2	5	4	2																	5	0
35	1.OA.6	2		2					1.OA.1	1		2	1.OA.3	1		2	1.OA.8	1		*	5	0
36	NS	4		**					1.NBT.4	1		*									5	0
37	NS	3		**					1.NBT.4	1		*	1.OA.3	1		1					5	1
38	1.OA.6	2		1.5	NS	2		**	1.NBT.4	1		*									5	1
39	1.NBT.4	4	3	1.67					1.OA.6	1		2									5	0
40	1.OA.2	3		2					1.OA.1	2		1.5									5	0
41	1.OA.1	5	4	2																	5	0
42	1.OA.3	4	3	2					1.OA.2	1		2									5	0
43	1.OA.1	3		1.67					1.OA.2	1		*	NS	1		**					5	0
44	1.OA.3	3		2					1.OA.6	2	1	2									5	0
45	1.OA.1	5	4	2																	5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Fall table refers to the first test item on the fall benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., 1.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., 1.NBT.2a, 1.NBT.2b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., 1.NBT.2a, 1.NBT.2b -> 1.NBT.2).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 5
Item level alignment results for the easyCBM® first grade winter benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
1	1.NBT.1	4	3	2					K.CC.2	1		2																	5	0
2	1.NBT.1	3		2					K.CC.2	1		*	K.CC.3	1		1													5	0
3	1.NBT.1	4	3	2					K.CC.2	1		2																	5	0
4	NS	4		**					1.NBT.1	1		*																	5	1
5	1.NBT.2	5	4	2																									5	0
6	NS	5		**																									5	1
7	1.NBT.1	5	4	2																									5	0
8	K.CC.2	2	1	2					1.NBT.1	1		2	1.OA.1	1		1	K.CC.3	1		2									5	0
9	1.NBT.1	2		1.5	K.CC.2	2	1	1	NS	1		**																	5	1
10	1.NBT.1	3		2					K.CC.2	2		2																	5	0
11	1.NBT.1	2	1	1.5					1.OA.5	1		2	K.CC.4	1		*	NS	1		**									5	1
12	1.NBT.2	5	4	1.75																									5	0
13	NS	2		**					1.NBT.1	1		*	1.OA.5	1		1	K.CC.1	1		1									5	2
14	1.NBT.2	5	4	2																									5	0
15	NS	2		**					1.NBT.1	1		*	1.NBT.5	1		1	K.CC.4	1		2									5	1
16	1.NBT.1	4	3	2					K.CC.2	1		2																	5	0
17	1.G.3	4	3	1.33					1.G.2	1		1																	5	0
18	K.G.4	3	2	2					1.G.1	2		2																	5	0
19	K.G.2	4	3	2					1.G.2	1		2																	5	0
20	K.G.1	3	2	2					K.G.2	2		2																	5	0
21	NS	3		**					K.G.4	2	1	2	K.G.2	1		*													6	1
22	K.G.6	2		1.5	NS	2		**	1.G.2	1		2																	5	0
23	1.G.1	4	3	2					K.G.4	1		2																	5	0
24	K.G.6	3	2	2					1.G.1	1		2	1.G.2	1		2													5	0
25	K.G.6	3	2	2					1.G.1	1		2	1.G.2	1		2													5	0
26	NS	3		**					K.G.2	1		2	K.G.4	1		2													5	0
27	NS	3		**					K.G.4	2	1	2	K.G.2	1		*													6	1

Table 5 cont.
Item level alignment results for the easyCBM® first grade winter benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
28	1.G.2	3		2					K.G.6	1		2	NS	1		*													5	0
29	NS	3		**					1.G.2	1		2	K.G.2	1		2													5	0
30	1.G.2	3	2	1.5					K.G.5	1		2	K.G.6	1		2													5	0
31	***								1.OA.6	1		2	1.OA.7	1		1	1.OA.8	1		*	K.NBT.1	1		2	NS	1		**	5	1
32	K.OA.1	2		2					1.OA.4	1		2	1.OA.6	1		2	K.CC.2	1		*									5	0
33	1.MD.4	4	3	2					K.OA.2	1		1																	5	0
34	1.OA.1	3		2					1.NBT.5	1		2	1.OA.2	1		2													5	0
35	1.NBT.4	2	1	2	1.OA.4	2		1.5	NS	1		**																	5	0
36	1.OA.1	4	3	2					1.OA.2	1		2																	5	0
37	***								1.OA.1	1		1	1.OA.3	1		2	1.OA.6	1		2	1.OA.8	1		*	K.OA.1	1		2	5	0
38	1.OA.1	2	1	2	1.OA.2	2		1	NS	1		**																	5	0
39	1.NBT.4	5	4	1.75																									5	0
40	1.OA.3	4		2					1.OA.6	1		*																	5	0
41	1.OA.1	3		1.67					1.OA.2	1		*	NS	1		**													5	0
42	1.OA.3	5	4	2																									5	0
43	K.OA.1	2	1	2					1.OA.1	1		2	1.OA.8	1		1	NS	1		**									5	0
44	1.OA.1	5	4	2																									5	0
45	1.OA.1	5	4	2																									5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Winter table refers to the first test item on the winter benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., 1.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., 1.NBT.2a, 1.NBT.2b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., 1.NBT.2a, 1.NBT.2b -> 1.NBT.2).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 6
Item level alignment results for the easyCBM® first grade spring benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
1	1.NBT.1	4	3	2					K.CC.2	1		2																	5	0
2	1.NBT.1	3	2	2					1.NBT.6	1		2	1.OA.5	1		1													5	0
3	K.CC.5	2	1	2					1.OA.1	1		2	1.OA.5	1		2	K.CC.4	1		2									5	0
4	NS	4		**					K.G.4	1		1																	5	2
5	1.OA.6	2		2					1.NBT.6	1		2	1.OA.1	1		1	1.OA.8	1		*									5	0
6	K.CC.7	2		1.5	K.CC.2	2	1	1	NS	1		**																	5	1
7	1.NBT.1	4	3	1.33					1.OA.5	1		1																	5	0
8	1.NBT.2	5	4	2																									5	0
9	1.NBT.2	5	4	2																									5	0
10	K.OA.1	2	1	2					1.OA.1	1		2	1.OA.3	1		2	K.OA.2	1		2									5	0
11	1.NBT.2	4	3	2					1.NBT.4	1		1																	5	0
12	1.NBT.1	4	3	2					K.CC.2	1		1																	5	0
13	1.NBT.2	5	4	2																									5	0
14	1.NBT.2	5	4	1.75																									5	0
15	1.NBT.2	5	4	1.75																									5	0
16	1.NBT.1	3	2	2					K.CC.1	1		2	K.CC.2	1		3													5	0
17	K.G.2	5	4	2																									5	0
18	K.G.6	4	3	2					1.G.2	1		2																	5	0
19	K.G.6	3	2	2					1.G.2	2		2																	5	0
20	1.G.3	5	4	1.75																									5	0
21	K.G.4	2	1	2	1.G.1	2		2	NS	1		**																	5	1
22	K.G.4	3	2	1.5					1.G.1	1		2	1.G.2	1		2	K.G.2	1		*									6	0
23	1.G.1	3		1					1.G.3	1		*	K.G.4	1		2													5	0
24	1.G.2	3		2					K.G.4	1		2	K.G.6	1		*													5	0
25	1.G.2	3	2	2					1.G.3	1		1	K.G.6	1		2													5	0
26	NS	4		**					1.G.2	1		1																	5	1
27	***								1.G.1	1		1	K.CC.4	1		2	K.G.2	1		2	K.G.4	1		*	NS	1		**	5	0

Table 6 cont.
Item level alignment results for the easyCBM® first grade spring benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
28	K.G.4	2		1.5	1.G.1	2		1.5	1.G.3	1		*																	5	0
29	1.G.2	3		2					K.G.6	2	1	2																	5	0
30	1.NBT.3	2		1					1.MD.4	1		2	1.OA.1	1		*	1.OA.2	1		1									5	0
31	1.OA.4	3		1.67					1.OA.6	1		2	1.OA.8	1		*													5	0
32	K.CC.4	2		2					K.CC.5	1		*	K.OA.1	1		2	K.OA.2	1		2									5	0
33	K.CC.2	3	2	1.5					K.OA.1	2		2																	5	0
34	1.NBT.5	2		2					1.OA.1	1		2	1.OA.6	1		1	NS	1		**									5	0
35	NS	2		**					1.OA.1	1		2	1.OA.2	1		*	1.OA.6	1		1									5	1
36	***								1.OA.3	1		2	1.OA.4	1		2	1.OA.6	1		2	1.OA.8	1		*	K.OA.2	1		1	5	0
37	K.OA.2	2	1	2	1.OA.1	2		2	1.OA.2	1		2																	5	0
38	1.NBT.4	5	4	1.75																									5	0
39	***								1.MD.4	1		2	K.CC.3	1		2	K.CC.5	1		*	K.CC.6	1		2	K.G.4	1		1	5	0
40	***								1.G.3	1		2	1.NBT.1	1		2	1.OA.1	1		1	1.OA.2	1		*	NS	1		**	5	0
41	1.OA.3	4		2					1.OA.6	1		*																	5	0
42	1.MD.4	4	3	2					NS	1		**																	5	0
43	1.OA.4	3		1.33					1.NBT.4	1		*	NS	1		**													5	1
44	1.MD.4	5	4	2																									5	0
45	1.OA.1	4	3	2					1.OA.4	1		2																	5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Spring table refers to the first test item on the spring benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., 1.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., 1.NBT.2a, 1.NBT.2b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., 1.NBT.2a, 1.NBT.2b -> 1.NBT.2).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 7
Item level alignment results for the easyCBM® second grade fall benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
1	2.NBT.4	4	3	1.33					NS	1		**																	5	1
2	2.NBT.1	4	3	2					NS	1		**																	5	1
3	2.NBT.4	4	3	1.33					NS	1		**																	5	1
4	2.NBT.1	4	3	1.33					NS	1		**																	5	1
5	2.NBT.4	3		1.33					2.NBT.1	1		*	NS	1		**													5	1
6	2.NBT.1	4	3	2					NS	1		**																	5	1
7	2.NBT.4	3		1					NS	2		**																	5	1
8	2.NBT.1	5	4	2																									5	0
9	2.NBT.1	5	4	1.75																									5	0
10	2.NBT.1	4		2					1.OA.6	1		*																	5	0
11	2.NBT.1	5	4	1.75																									5	0
12	2.NBT.4	4	3	1.33					NS	1		**																	5	1
13	2.NBT.1	4	3	1.33					NS	1		**																	5	1
14	2.NBT.1	3		1.33					1.NBT.2	2	1	2																	5	0
15	2.NBT.4	3		1					NS	2		**																	5	1
16	1.MD.2	3	2	2					1.MD.1	1		2	2.G.2	1		2													5	0
17	1.MD.2	2		2	2.OA.4	2		1.5	2.G.2	1		*																	5	0
18	2.MD.7	5	4	1.75																									5	0
19	2.MD.1	5	4	1.75																									5	0
20	2.MD.1	3	2	1.5					2.MD.2	1		2	1.MD.1	1		1													5	0
21	NS	3		**					2.MD.1	2		2																	5	2
22	NS	5		**																									5	2
23	1.MD.2	3	2	2					2.G.2	1		2	1.MD.1	1		1													5	0
24	2.MD.1	5	4	1.75																									5	0
25	2.MD.1	3		1.67					NS	2		**																	5	0
26	2.MD.1	3	2	1.5					2.MD.2	2		1.5																	5	0
27	2.MD.7	5	4	1.75																									5	0

Table 7 cont.
Item level alignment results for the easyCBM® second grade fall benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
28	2.MD.7	5	4	1.75																									5	0
29	1.MD.1	4	3	1.33					NS	1		**																	5	1
30	2.MD.1	3	2	1.5					2.MD.2	2		1.5																	5	0
31	1.NBT.3	3	2	2					2.NBT.4	1		2	NS	1		**													5	1
32	2.OA.2	2		2	1.OA.6	2	1	1	1.OA.4	1		2																	5	0
33	2.MD.6	3		2					2.OA.1	1		2	NS	1		**													5	0
34	NS	2		**					1.NBT.4	1		1	2.NBT.5	1		1	2.OA.1	1		1									5	1
35	2.NBT.7	4	3	1.67					NS	1		**																	5	1
36	2.OA.2	4	3	2					1.OA.4	1		2																	5	0
37	2.OA.1	2		1.5					1.NBT.4	1		1	2.NBT.5	1		1	NS	1		**									5	0
38	2.OA.2	3		2					1.NBT.4	1		2	1.OA.6	1		*													5	0
39	2.MD.8	4	3	1.67					2.NBT.8	1		2																	5	0
40	2.NBT.7	4	3	1.67					NS	1		**																	5	1
41	***								2.OA.1	1		2	1.NBT.4	1		1	2.NBT.5	1		1	2.NBT.8	1		1	NS	1		**	5	0
42	2.NBT.5	2		1	NS	2		**	2.OA.1	1		2																	5	0
43	2.MD.8	5	4	2																									5	0
44	NS	2		**					2.OA.1	1		2	1.NBT.4	1		1	2.NBT.5	1		1									5	0
45	2.MD.6	2		2					2.OA.1	1		2	1.OA.5	1		1	NS	1		**									5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Fall table refers to the first test item on the fall benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., 2.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = Geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., 2.NBT.1a, 2.NBT.1b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., 2.NBT.1a, 2.NBT.1b -> 2.NBT.1).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 8
Item level alignment results for the easyCBM® second grade winter benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	Total n	Req Skills
1	2.NBT.1	4	3	2					NS	1		**									5	1
2	2.NBT.1	4		1.75					NS	1		**									5	0
3	2.NBT.4	3		1.33					NS	2		**									5	1
4	2.NBT.1	3		2					NS	2		**									5	1
5	2.NBT.1	4	3	2					NS	1		**									5	1
6	2.NBT.2	2	1	1	NS	2		**	1.OA.5	1		1									5	1
7	2.NBT.4	3		1.33					NS	2		**									5	1
8	2.NBT.1	3		2					NS	2		**									5	1
9	2.NBT.1	4		1.75					NS	1		**									5	0
10	2.NBT.1	3		2					NS	2		**									5	1
11	1.NBT.2	3	2	1					2.NBT.5	1		2	NS	1		**					5	1
12	2.NBT.1	3		2					NS	2		**									5	1
13	2.NBT.1	4	3	2					NS	1		**									5	1
14	1.NBT.2	4	3	1					2.NBT.5	1		2									5	0
15	2.NBT.1	2		2	1.NBT.2	2		1	NS	1		**									5	0
16	1.MD.2	2		1.5					2.OA.4	1		2	2.G.2	1		1	NS	1		**	5	0
17	1.MD.2	2	2	2	NS	2		**	2.G.2	1		1									5	1
18	2.MD.1	5	4	1.75																	5	0
19	NS	5		**																	5	1
20	NS	5		**																	5	3
21	2.MD.7	5	4	1.75																	5	0
22	2.MD.1	3	2	1.5					2.MD.2	2		1.5									5	0
23	2.MD.7	5	4	1.75																	5	0
24	NS	5		**																	5	2
25	2.MD.7	5	4	1.75																	5	0
26	2.MD.7	5	4	1.75																	5	0
27	2.MD.1	3	2	1.5					2.MD.2	2		1.5									5	0

Table 8 cont.
Item level alignment results for the easyCBM® second grade winter benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	Total n	Req Skills
28	NS	5		**																	5	1
29	2.MD.1	3	2	1.5					2.MD.2	2		1.5									5	0
30	2.MD.6	3		2					2.OA.2	1		2	NS	1		**					5	0
31	1.OA.6	3		1.67					2.OA.2	2	1	2									5	0
32	2.NBT.5	4		1.75					1.NBT.4	1		*									5	0
33	2.OA.1	2		1.5					1.NBT.4	1		1	2.NBT.5	1		1	NS	1		**	5	0
34	2.OA.1	2		1.5					1.NBT.4	1		1	2.NBT.5	1		1	NS	1		**	5	0
35	2.OA.1	2		1.5					1.NBT.4	1		1	2.NBT.5	1		1	NS	1		**	5	0
36	2.OA.2	3		2					2.NBT.5	1		2	1.OA.6	1		*					5	0
37	2.NBT.7	4	3	2					NS	1		**									5	0
38	2.NBT.5	5	4	1.75																	5	0
39	2.MD.8	5	4	1.75																	5	0
40	2.NBT.5	2		1.5					1.NBT.4	1		2	2.OA.1	1		1	NS	1		**	5	0
41	1.NBT.3	3	2	2					2.NBT.4	1		2	NS	1		**					5	1
42	2.NBT.7	5	4	1.75																	5	0
43	2.MD.8	5	4	1.75																	5	0
44	2.NBT.7	5	4	1.75																	5	0
45	1.NBT.4	3	2	1.5					2.NBT.5	2		2									5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Winter table refers to the first test item on the winter benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., 2.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = Geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., 2.NBT.1a, 2.NBT.1b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., 2.NBT.1a, 2.NBT.1b -> 2.NBT.1).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Table 9
Item level alignment results for the easyCBM® second grade spring benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
1	2.NBT.4	2	2	1	NS	2		**	2.NBT.3	1		1																	5	1
2	2.NBT.1	3	2	2					2.NBT.5	1		2	NS	1		**													5	1
3	2.NBT.2	4	3	2					2.NBT.8	1		2																	5	0
4	2.NBT.1	3	2	1.5					2.NBT.5	1		2	NS	1		**													5	1
5	2.NBT.4	3		1					NS	2		**																	5	1
6	2.NBT.1	3	2	1.5					2.NBT.5	1		2	NS	1		**													5	1
7	1.NBT.2	3	2	2					2.NBT.5	1		2	NS	1		**													5	1
8	2.NBT.1	3		1.67					1.NBT.2	1		1	NS	1		**													5	0
9	2.NBT.1	3		1.67					1.NBT.2	1		1	NS	1		**													5	0
10	2.NBT.1	3	2	1					2.NBT.5	1		2	NS	1		**													5	1
11	1.NBT.2	3	2	2					2.NBT.5	1		2	NS	1		**													5	1
12	2.NBT.1	3	2	1					2.NBT.5	1		2	NS	1		**													5	1
13	2.NBT.1	3	2	1					2.NBT.5	1		2	NS	1		**													5	1
14	1.NBT.2	3	2	1.5					2.NBT.5	1		2	NS	1		**													5	1
15	2.NBT.2	4	3	2					2.NBT.8	1		2																	5	0
16	2.MD.1	5	4	1.75																									5	0
17	2.MD.1	3	2	1.5					2.MD.2	2		1.5																	5	0
18	1.MD.2	4	3	1.67					2.G.2	1		2																	5	0
19	NS	5		**																									5	2
20	2.MD.1	3	2	1.5					2.MD.2	2		1.5																	5	0
21	2.MD.1	3	2	1.5					2.MD.2	2		1.5																	5	0
22	2.MD.1	3	2	1.5					2.MD.2	2		1.5																	5	0
23	2.MD.3	4	3	2					2.MD.1	1		2																	5	0
24	2.MD.1	5	4	1.75																									5	0
25	1.MD.2	4	3	1.67					NS	1		**																	5	0
26	1.MD.1	3	2	1.5					K.MD.2	1		1	NS	1		**													5	1
27	2.MD.3	3	2	2					2.MD.1	2		2																	5	0

Table 9 cont.
Item level alignment results for the easyCBM® second grade spring benchmark in mathematics.

Item	PS1	PS1 N	PS1 Ave N	PS1 Ave	PS2	PS2 N	PS2 Ave N	PS2 Ave	SS1	SS1 N	SS1 Ave N	SS1 Ave	SS2	SS2 N	SS2 Ave N	SS2 Ave	SS3	SS3 N	SS3 Ave N	SS3 Ave	SS4	SS4 N	SS4 Ave N	SS4 Ave	SS5	SS5 N	SS5 Ave N	SS5 Ave	Total n	Req Skills
28	2.MD.3	3	2	2					2.MD.1	2		2																	5	0
29	1.MD.2	3	2	2					2.G.2	1		2	2.MD.1	1		2													5	0
30	2.MD.1	3	2	1.5					2.MD.2	2		2																	5	0
31	1.NBT.4	2	1	2					2.OA.2	1		2	1.OA.5	1		1	1.OA.6	1		1									5	0
32	2.MD.8	5	4	2																									5	0
33	2.MD.8	5	4	2																									5	0
34	***								1.NBT.4	1		1	1.OA.1	1		1	2.NBT.5	1		1	2.OA.1	1		*	NS	1		**	5	1
35	2.NBT.7	4	3	2					2.NBT.5	1		1																	5	0
36	2.NBT.5	2	1	2	2.OA.2	2		1.5	1.OA.6	1		1																	5	0
37	2.MD.6	4	3	1.67					2.OA.1	1		2																	5	0
38	2.OA.1	3	2	1.5					2.NBT.5	2		2																	5	0
39	2.OA.2	4		1.75					2.NBT.5	1		*																	5	0
40	2.OA.1	3	2	1.5					2.NBT.5	2		1																	5	0
41	2.OA.1	3	2	1.5					2.NBT.5	2		1																	5	0
42	2.MD.8	5	4	2																									5	0
43	2.OA.1	3	2	1.5					2.NBT.5	1		1	NS	1		**													5	1
44	2.NBT.7	5	4	1.75																									5	0
45	2.MD.6	4	3	1.67					2.OA.1	1		2																	5	0

Note. Items are labeled 1 to 45 based on their location in actual seasonal benchmark tests. For example, Item 1 in the Spring sheet, refers to the first test item on the spring benchmark for that grade. Unique CCSS standard identifiers are used in this table (e.g., 2.G.1), where the first number indicates grade level, the letter code refers to the grade-level domain (e.g., G = Geometry), and the last number refers to the standard number within a given domain. Please note that alignment ratings were not broken down by sub-standard (e.g., 2.NBT.1a, 2.NBT.1b).
When substandards were indicated by raters they were collapsed into the parent standard (e.g., 2.NBT.1a, 2.NBT.1b -> 2.NBT.1).
When Total n is greater 5, Rater 1 Phase 1 chose multiple standards as being aligned to a given item.
PS1 = primary standard (standard with the most raters, out of 5, selecting it); PS2 - second primary standard (in cases where two primary standards were required); SS1 = secondary standard (a standard selected as being aligned by a smaller number of raters relative to primary PS1/PS2); N = number of raters selecting a given standard; Ave N = number of raters included in the Ave calculation; Ave = average alignment rating strength (calculated using a 3-point scale from 0 to 2); NS (alone) = no standard selected as being aligned; * = Standard selected by the Rater 1 Phase 1, where rating strength was not given; ** = NS selected without strength rating; *** = no chosen CCSS had a higher frequency count over another, thus, any standard indicated by a reviewer was deemed a secondary standard with a frequency count of 1; Req Skills = prerequisite skill alignment (when a given item was ranked as not aligned (NS) to any on- or prior-grade standard, was the item aligned to a prerequisite skill necessary for mastery).

Appendix C

Table 1
CCSS level alignment results for the easyCBM® kindergarten fall benchmark in mathematics.

Standard	# ps items	# sec items
K.CC.1		
K.CC.2	2	4
K.CC.3		1
K.CC.4		5
K.CC.5	1	2
K.CC.6	4	1
K.CC.7	1	1
K.G.1		6
K.G.2	6	1
K.G.3		2
K.G.4	3	2
K.G.5		
K.G.6	7	1
K.MD.1		5
K.MD.2	5	4
K.MD.3		4
K.NBT.1		1
K.OA.1	2	1
K.OA.2		3
K.OA.3		
K.OA.4		1
K.OA.5	1	2

Note. Standards are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 2
CCSS domain and grade level alignment results for the easyCBM® kindergarten fall benchmark in mathematics.

Domain	# ps items	# sec items
K.CC	8	14
K.G	16	12
K.MD	5	13
K.NBT	0	1
K.OA	3	7
Grade K (overall)	32	47

Note. Domains are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 3
CCSS level alignment results for the easyCBM® kindergarten winter benchmark in mathematics.

Standard	# ps items	# sec items
K.CC.1		1
K.CC.2	3	1
K.CC.3		2
K.CC.4		6
K.CC.5	5	3
K.CC.6		
K.CC.7		
K.G.1		
K.G.2	8	1
K.G.3		1
K.G.4	5	3
K.G.5		2
K.G.6	3	
K.MD.1		5
K.MD.2	7	1
K.MD.3		
K.NBT.1		
K.OA.1	3	2
K.OA.2		5
K.OA.3		
K.OA.4		
K.OA.5	1	1

Note. Standards are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 4
CCSS domain and grade level alignment results for the easyCBM® kindergarten winter benchmark in mathematics.

Domain	# ps items	# sec items
K.CC	8	13
K.G	16	7
K.MD	7	6
K.NBT	0	0
K.OA	4	8
Grade K (overall)	35	34

Note. Domains are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 5
CCSS level alignment results for the easyCBM® kindergarten spring benchmark in mathematics.

Standard	# ps items	# sec items
K.CC.1		1
K.CC.2	2	2
K.CC.3		2
K.CC.4	2	3
K.CC.5	2	3
K.CC.6	1	1
K.CC.7		
K.G.1	2	2
K.G.2	3	1
K.G.3		1
K.G.4	4	
K.G.5		2
K.G.6	6	1
K.MD.1		3
K.MD.2	6	3
K.MD.3	1	7
K.NBT.1		
K.OA.1	2	4
K.OA.2	2	5
K.OA.3		1
K.OA.4		
K.OA.5	2	1

Note. Standards are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 6
CCSS domain and grade level alignment results for the easyCBM® kindergarten spring benchmark in mathematics.

Domain	# ps items	# sec items
K.CC	7	12
K.G	15	7
K.MD	7	13
K.NBT	0	0
K.OA	6	11
Grade K (overall)	35	43

Note. Domains are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 7
CCSS level alignment results for the easyCBM® first grade fall benchmark in mathematics.

Standard	# ps items	# sec items	Standard	# ps items	# sec items
K.CC.1		1	1.G.1		4
K.CC.2	1	1	1.G.2	3	2
K.CC.3			1.G.3		1
K.CC.4			1.G.4		1
K.CC.5			1.MD.1		1
K.CC.6			1.MD.2		
K.CC.7			1.MD.3		
K.G.1			1.MD.4	1	2
K.G.2	1	1	1.NBT.1	4	3
K.G.3			1.NBT.2	4	1
K.G.4	8		1.NBT.3	2	
K.G.5		1	1.NBT.4	1	5
K.G.6	2	3	1.NBT.5		
K.MD.1			1.NBT.6		
K.MD.2			1.OA.1	3	3
K.MD.3			1.OA.2	2	2
K.NBT.1			1.OA.3	2	3
K.OA.1			1.OA.4		1
K.OA.2			1.OA.5		1
K.OA.3			1.OA.6	3	2
K.OA.4			1.OA.7		
K.OA.5			1.OA.8		3

Note. On- and prior-grade standards are labeled using the unique CCSS identification code. # ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 8
CCSS domain and grade level alignment results for the easyCBM® first grade fall benchmark in mathematics.

Domain	# ps items	# sec items	Domain	# ps items	# sec items
K.CC	1	2	1.G	3	8
K.G	11	5	1.MD	1	3
K.MD	0	0	1.NBT	11	9
K.NBT	0	0	1.OA	10	15
K.OA	0	0			
Grade K (overall)	12	7	Grade 1 (overall)	25	35

Note. On- and prior-grade domains are labeled using the unique CCSS identification code. # ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 9
CCSS level alignment results for the easyCBM® first grade winter benchmark in mathematics.

Standard	# ps items	# sec items	Standard	# ps items	# sec items
K.CC.1		1	1.G.1	1	3
K.CC.2	2	6	1.G.2	2	6
K.CC.3		2	1.G.3	1	
K.CC.4		2	1.G.4		
K.CC.5			1.MD.1		
K.CC.6			1.MD.2		
K.CC.7			1.MD.3		
K.G.1	1		1.MD.4	1	
K.G.2	1	5	1.NBT.1	8	4
K.G.3			1.NBT.2	3	
K.G.4	1	4	1.NBT.3		
K.G.5		1	1.NBT.4	2	
K.G.6	3	2	1.NBT.5		2
K.MD.1			1.NBT.6		
K.MD.2			1.OA.1	6	3
K.MD.3			1.OA.2	1	3
K.NBT.1		1	1.OA.3	2	1
K.OA.1	2	1	1.OA.4	1	1
K.OA.2		1	1.OA.5		2
K.OA.3			1.OA.6		4
K.OA.4			1.OA.7		1
K.OA.5			1.OA.8		3

Note. On- and prior-grade standards are labeled using the unique CCSS identification code. # ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 10
CCSS domain and grade level alignment results for the easyCBM® first grade winter benchmark in mathematics.

Domain	# ps items	# sec items	Domain	# ps items	# sec items
K.CC	2	11	1.G	4	9
K.G	6	12	1.MD	1	0
K.MD	0	0	1.NBT	13	6
K.NBT	0	1	1.OA	10	18
K.OA	2	2			
Grade K (overall)	10	26	Grade 1 (overall)	28	33

Note. On- and prior-grade domains are labeled using the unique CCSS identification code. # ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 11
CCSS level alignment results for the easyCBM® first grade spring benchmark in mathematics.

Standard	# ps items	# sec items	Standard	# ps items	# sec items
K.CC.1		1	1.G.1	3	2
K.CC.2	2	3	1.G.2	3	4
K.CC.3		1	1.G.3	1	4
K.CC.4	1	2	1.G.4		
K.CC.5	1	2	1.MD.1		
K.CC.6		1	1.MD.2		
K.CC.7	1		1.MD.3		
K.G.1			1.MD.4	2	2
K.G.2	1	2	1.NBT.1	5	1
K.G.3			1.NBT.2	6	
K.G.4	3	5	1.NBT.3	1	
K.G.5			1.NBT.4	1	2
K.G.6	2	3	1.NBT.5	1	
K.MD.1			1.NBT.6		2
K.MD.2			1.OA.1	2	7
K.MD.3			1.OA.2		4
K.NBT.1			1.OA.3	1	2
K.OA.1	1	2	1.OA.4	2	2
K.OA.2	1	3	1.OA.5		3
K.OA.3			1.OA.6	1	5
K.OA.4			1.OA.7		
K.OA.5			1.OA.8		3

Note. On- and prior-grade standards are labeled using the unique CCSS identification code. # ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 12
CCSS domain and grade level alignment results for the easyCBM® first grade spring benchmark in mathematics.

Domain	# ps items	# sec items	Domain	# ps items	# sec items
K.CC	5	10	1.G	7	10
K.G	6	10	1.MD	2	2
K.MD	0	0	1.NBT	14	5
K.NBT	0	0	1.OA	6	26
K.OA	2	5			
Grade K (overall)	13	25	Grade 1 (overall)	29	43

Note. On- and prior-grade domains are labeled using the unique CCSS identification code. # ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 13
CCSS level alignment results for the easyCBM® second grade fall benchmark in mathematics.

Standard	# ps items	# sec items	Standard	# ps items	# sec items
1.G.1			2.G.1		
1.G.2			2.G.2		3
1.G.3			2.G.3		
1.G.4			2.MD.1	6	1
1.MD.1	1	3	2.MD.2		3
1.MD.2	3		2.MD.3		
1.MD.3			2.MD.4		
1.MD.4			2.MD.5		
1.NBT.1			2.MD.6	2	
1.NBT.2		1	2.MD.7	3	
1.NBT.3	1		2.MD.8	2	
1.NBT.4		5	2.MD.9		
1.NBT.5			2.MD.10		
1.NBT.6			2.NBT.1	9	1
1.OA.1			2.NBT.2		
1.OA.2			2.NBT.3		
1.OA.3			2.NBT.4	6	1
1.OA.4		2	2.NBT.5	1	4
1.OA.5		1	2.NBT.6		
1.OA.6	1	2	2.NBT.7	2	
1.OA.7			2.NBT.8		2
1.OA.8			2.NBT.9		
			2.OA.1	1	6
			2.OA.2	3	
			2.OA.3		
			2.OA.4	1	

Note. On- and prior-grade standards are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 14
CCSS domain and grade level alignment results for the easyCBM® second grade fall benchmark in mathematics.

Domain	# ps items	# sec items	Domain	# ps items	# sec items
1.G	0	0	2.G	0	3
1.MD	4	3	2.MD	13	4
1.NBT	1	6	2.NBT	18	8
1.OA	1	5	2.OA	5	6
Grade 1	6	14	Grade 2	36	21

Note. On- and prior-grade domains are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 15
CCSS level alignment results for the easyCBM® second grade winter benchmark in mathematics.

Standard	# ps items	# sec items	Standard	# ps items	# sec items
1.G.1			2.G.1		
1.G.2			2.G.2		2
1.G.3			2.G.3		
1.G.4			2.MD.1	4	
1.MD.1			2.MD.2		3
1.MD.2	2		2.MD.3		
1.MD.3			2.MD.4		
1.MD.4			2.MD.5		
1.NBT.1			2.MD.6	1	
1.NBT.2	3		2.MD.7	4	
1.NBT.3	1		2.MD.8	2	
1.NBT.4	1	5	2.MD.9		
1.NBT.5			2.MD.10		
1.NBT.6			2.NBT.1	10	
1.OA.1			2.NBT.2	1	
1.OA.2			2.NBT.3		
1.OA.3			2.NBT.4	2	1
1.OA.4			2.NBT.5	3	7
1.OA.5		1	2.NBT.6		
1.OA.6	1	1	2.NBT.7	3	
1.OA.7			2.NBT.8		
1.OA.8			2.NBT.9		
			2.OA.1	3	1
			2.OA.2	1	2
			2.OA.3		
			2.OA.4		1

Note. On- and prior-grade standards are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 16
CCSS domain and grade level alignment results for the easyCBM® second grade winter benchmark in mathematics.

Domain	# ps items	# sec items	Domain	# ps items	# sec items
1.G	0	0	2.G	0	2
1.MD	2	0	2.MD	11	3
1.NBT	5	5	2.NBT	19	8
1.OA	1	2	2.OA	4	4
Grade 1	8	7	Grade 2	34	17

Note. On- and prior-grade domains are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.

Table 17
CCSS level alignment results for the easyCBM® second grade spring benchmark in mathematics.

Standard	# ps items	# sec items	Standard	# ps items	# sec items
1.G.1			2.G.1		
1.G.2			2.G.2		2
1.G.3			2.G.3		
1.G.4			2.MD.1	7	4
1.MD.1	1		2.MD.2		5
1.MD.2	3		2.MD.3	3	
1.MD.3			2.MD.4		
1.MD.4			2.MD.5		
1.NBT.1			2.MD.6	2	
1.NBT.2	3	2	2.MD.7		
1.NBT.3			2.MD.8	3	
1.NBT.4	1	1	2.MD.9		
1.NBT.5			2.MD.10		
1.NBT.6			2.NBT.1	8	
1.OA.1		1	2.NBT.2	2	
1.OA.2			2.NBT.3		1
1.OA.3			2.NBT.4	2	
1.OA.4			2.NBT.5	1	16
1.OA.5		1	2.NBT.6		
1.OA.6		2	2.NBT.7	2	
1.OA.7			2.NBT.8		2
1.OA.8			2.NBT.9		
			2.OA.1	4	3
			2.OA.2	2	1
			2.OA.3		
			2.OA.4		

Note. On- and prior-grade standards are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard; # sec items = the number of items identified as aligned as secondary standard.

Table 18
CCSS domain and grade level alignment results for the easyCBM® second grade spring benchmark in mathematics.

Domain	# ps items	# sec items	Domain	# ps items	# sec items
1.G	0	0	2.G	0	2
1.MD	4	0	2.MD	15	9
1.NBT	4	3	2.NBT	15	19
1.OA	0	4	2.OA	6	4
Grade 1	8	7	Grade 2	36	34

Note. On- and prior-grade domains are labeled using the unique CCSS identification code.
ps items = the number of items identified as aligned as primary standard to a given CCSS domain; # sec items = the number of items identified as aligned as secondary standard to that CCSS domain.