

Mathematics Gap Analysis (Sample): Common Core View of State Standards

Document Overview

This example shows how McREL’s gap analysis can provide the tools to help you understand how content in your State Standards is represented in the Common Core standards. This sample document is organized by the Common Core Standards; the analysis is done from that perspective. A paired sample document is available as well; it is organized by the State standards, and the analysis in that document is presented from the Common Core perspective.

There are two categories of criteria used in the analysis: content alignment and rigor. Content alignment concerns whether the content in a state standard is addressed at all in the Common Core and, if it is, whether the associated statements from the Common Core reflect the same scope, specificity, phrasing and emphasis, or whether the knowledge is simply implied. The analysis for rigor identifies when higher demands are made of students, either because mastery of content is expected at an earlier grade, or the expectations regarding the content are significantly more challenging, or both.

The findings related to content alignment and rigor are summarized in graphs at the beginning of each grade and course. These graphs provide a quick overview of how commonly the different types of alignments were found and how the documents differed in level of rigor. A sample graph is provided immediately following this page. Cases where content is required at an earlier grade, but is also found to be less difficult, are not counted as a rigor issue in the graphs; however, such cases are noted in the comments so that they may be reviewed and the discrepancy considered.

How this document may be used

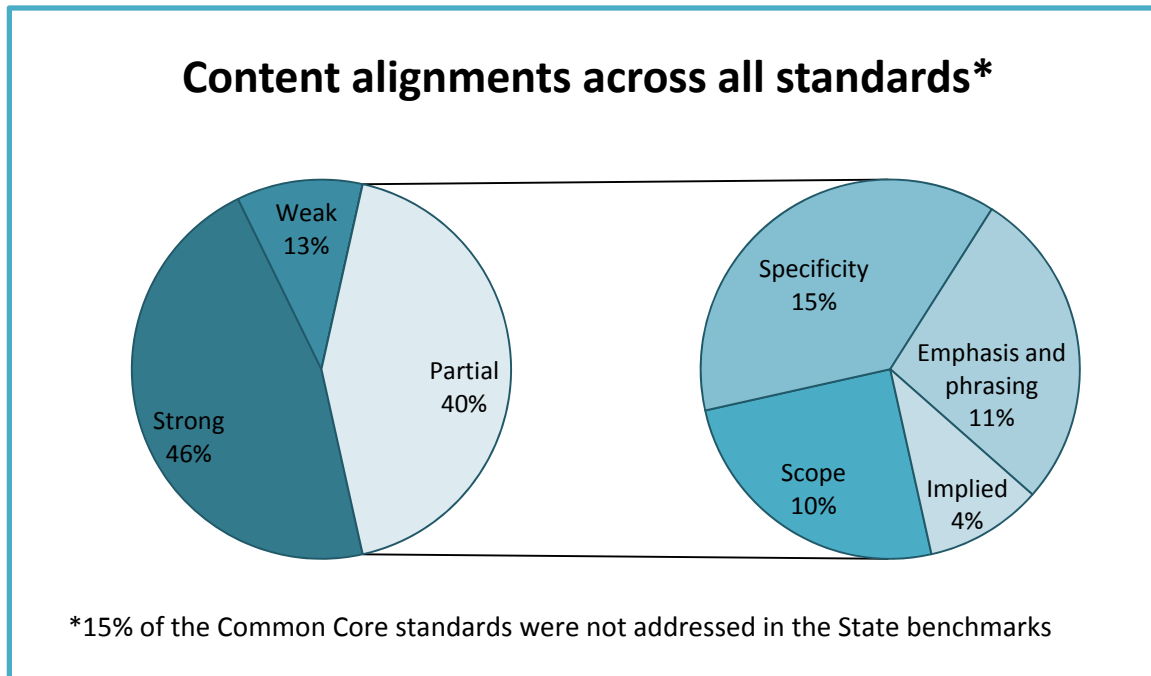
This document, which provides the Common Core perspective on the State Standards, may be used to answer questions like the following:

- Is this Common Core content currently taught in the State?
- Are all aspects of the content currently taught in the State, or are there more details found in the Common Core?
- If some content of the Common Core is currently not addressed in the State, is the addition reasonable and worthwhile?
- For which content does the focus and emphasis differ?
- Is the content of the Common Core currently taught at the same grade in the State, or is it now taught at earlier or later grades?
- Is the Common Core more challenging, or less so?
- How does the content in the Common Core play out across grades within the state?
- For answers to each item above may be added the question, what are the implications for instruction?

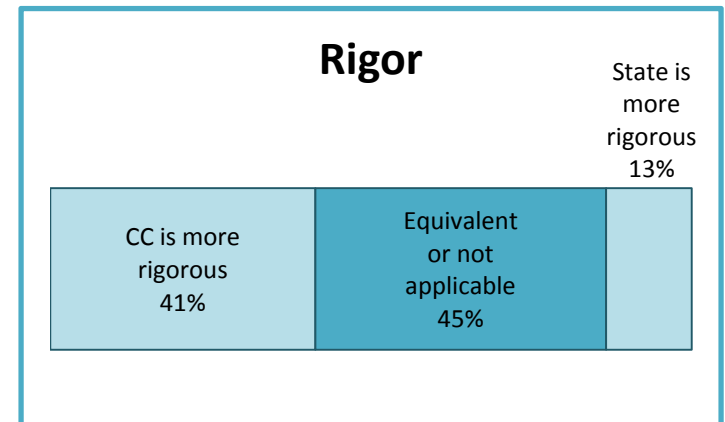
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Grade 4, Common Core Compared to State

How well the Common Core mathematics content is addressed in the State standards at this grade is summarized in two categories, content alignment and rigor. The findings are depicted in the graphs below. **Content alignment** characterizes the nature of the content match between the Common Core and State standards. A *Strong* match indicates the State fully addresses the content of the Common Core. A *Partial* match is assigned when the State benchmark either does not offer the same level of *Specificity* as the Common Core content, does not cover the complete *Scope* of the Common Core, differs importantly in its *Emphasis and Phrasing*, provides only an *Implied* coverage of the content, or focuses on a different *Knowledge Type*, specifically, that the State addresses a skill where Common Core addresses the related concept. If more than one of the issues just described characterizes the coverage of Common Core content by the State, the alignment is identified as *Weak*. Finally, if a standard in the Common Core could not be aligned to the State benchmarks, it is marked as *Not Addressed*. The standards were also compared to identify relative **Rigor**. A benchmark was counted more rigorous over the other when higher demands are made of students, either because mastery of content is expected at an earlier grade, or the expectations regarding the content are significantly more challenging, or both.



A summary of how well the State benchmarks addressed content found in the Common Core. See above for a discussion about the alignment categories. [For illustration purposes; does not reflect data of the sample analysis that follows.]



Content in the documents was compared for the relative demands placed on students. The graph displays the percentage of benchmarks that were more rigorous, by document. A significant percentage of the content was either equivalent in rigor between the two standards, or could not be rated for rigor (e.g., when content was not addressed by both documents). See discussion above for more information.

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| Common Core Standards | Content Alignment | More Rigor* | Comments | State Content Standards |
|-----------------------|---|-----------------|--|---|
| | | | | represent the problem. |
| 4.NF.4 | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of $1/b$. <i>For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.</i> b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. <i>For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</i> c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. <i>For example: If each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?</i> | Partial (scope) | CC includes conceptual understanding of fraction multiplication and using visual fraction models to represent problems. CC includes conceptual understanding of fraction multiplication and using visual fraction models to represent problems. | 4.1.5 Multiply fractions by whole numbers. 4.1.8 Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those i fractions. |

* Rigor: CC: Common Core standards are more rigorous; ST: State standards are more rigorous.

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| Common Core Standards | Content Alignment | More Rigor* | Comments | State Content Standards |
|--|--|-----------------------|----------------------|---|
| Understand decimal notation for fractions, and compare decimal fractions. | | | | |
| 4.NF.5 | Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. <i>For example, express $3/10$ as $30/100$ and add $3/10 + 4/100 = 34/100$.</i> | Partial (specificity) | CC is more specific. | 4.1.7 Understand and use decimal fractions and common fractions in problem-solving situations. |
| 4.NF.6 | Use decimal notation for fractions with denominators 10 or 100. <i>For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.</i> | Strong | | 4.1.7 Understand and use decimal fractions and common fractions in problem-solving situations. |
| 4.NF.7 | Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. | Weak | CC | CC includes methods for comparing numbers and conceptual knowledge. CC is more specific. CC is more difficult |
| | | | | 4.1.9 Students compare and order numbers. |

* Rigor: CC: Common Core standards are more rigorous; ST: State standards are more rigorous.