Analysis of the Commonwealth of Massachusetts State Standards and the Common Core State Standards for English Language Arts and Mathematics

Comments from Independent External Reviewers

July 19, 2010

Prepared for the Massachusetts Business Alliance for Education (MBAE) by

WestEd

Per the requirements of this study's scope of work, independent, external experts were asked to review WestEd's methodology and content area analyses (i.e., mathematics, English language arts). This document contains the independent external experts' comments, and in the cases of the content area reviews, WestEd responses to reviewer comments. More specifically, the following are included in this document:

- Comment from Dr. John Smithson, an expert in alignment methodology;
- Comment from Dr. William Vèlez, a mathematics expert;
- WestEd responses to Dr. Vèlez's comments;
- Comment from Dr. Karen Schaafsma Anderson, an English language arts expert; and
- WestEd responses to Dr. Anderson's comments.

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Date: July 10, 2010

To: Linda Noonan, Massachusetts Business Alliance for Education

From: John Smithson, Wisconsin Center for Education Research

CC: Edynn Sato, WestEd
Steve Hamilton, WestEd

Re: Independent expert review of the methodology used in the analysis of the Commonwealth of Massachusetts State Standards and the Common Core Standards for English Language Arts and Mathematics

The methodology described by WestEd staff to analyze the correspondence and gaps discernible from a cross-walk of the Massachusetts State Content Standards and the Common Core Standards for English Language Arts and Mathematics utilizes a modification of a methodology first proposed and utilized by Norman Webb while at the University of Wisconsin. As such, the methods proposed for this study build upon a solid foundation for conducting alignment analyses, and provide a systematic approach for examining the key characteristics targeted for comparison and thereby provide sufficient information to answer the central study question.

The primary content characteristics targeted for comparison includes the knowledge, skills and level of complexity (or depth of knowledge) emphasized by each document. These characteristics represent important dimensions widely accepted in the literature for describing and comparing descriptions of academic content. The particular methodology proposed by WestEd includes two additional measures (clarity and measurability) for describing the targeted documents. Both represent important qualitative indicators of sound standards that speak to the communicative need of standards to provide clear and measurable learning goals that teachers can target and support.

Each indicator is well-defined and utilizes a systematic, replicable procedure that appears likely to yield valid and reliable results. The response metrics are clearly defined and support an objective measure of each indicator. In addition, the method includes documentation of decision-rules adopted and deployed during the analysis, as well as analyst notes regarding determinations of clarity and measurability. Documentation of these factors will help to insure transparency and support any efforts that might be undertaken in the future to replicate the findings and/or procedures utilized.

There remain a few details of the methods described that the authors may wish to expand upon in the presentation of their findings. Quite likely, in the full measure of the reporting, these details would have been clearly addressed whether they were brought to attention here or not. However, since they are not specified in the description reviewed, a few questions do remain regarding the number of analysts to be involved and some of the details regarding how the analysis will be implemented. For example, will analysts work independently or collaboratively, will they

discuss decisions and questions with one another, and/or attempt to reach a consensus on decisions? Will a team work on separate parts of the analyses, or will multiple raters be involved in each step in rating process? Will inter-rater reliability need to be addressed? Interpreting the results may hinge on some of these operational parameters, and so their specification in the final report would be of value.

That said, the project leaders are well-experienced in conducting alignment analyses of this type, and their ability to oversee and manage the implementation of the study with excellence is unquestioned. It is with no hesitation then that I commend their efforts and look forward to their findings.

Beyond affirming the intellectual merit of the methodology described, it may be useful to situate the approach within the larger context of alignment analysis. The purpose is not to argue for or against any specific methodological approach, but rather to situate each methodological strategy within the larger frame of current research and scholarship.

Of the three most common strategies currently in use for examining alignment, the approach described by WestEd falls midway between the methodological extremes represented by the other two approaches, one very qualitative in nature and the other very quantitative. As such, the proposed methodology marks a middle ground, or mixed methodological approach that captures some of the benefits from both of the other two approaches. If there is a weakness to the mixed method approach, it is in the level of detail the analysis makes available, whether compared to the detailed insights and judgements yielded by a thoroughly qualitative inquiry, or the descriptive and analytic detail made possible by a more fine-grained descriptive and quantitative approach. The chief merits of the mixed approach are that it is systematic, replicable, reasonably objective, and relatively efficient in terms of the amount of time needed to conduct the analysis.

The fundamental distinction between each of the three methodologies commonly used for alignment analyses lies in the nature of the task each approach sets for the analyst. With the qualitative approach, teams of analysts make a systematic and detailed examination of the documents in question. Though very systematic, with generous use of protocols to insure each analyst is proceeding with clear and common tasks, the nature of the judgements made by analysts are both qualitative and complex. Analysts must draw upon their expert knowledge and skills to make fairly high-inference judgments regarding the qualities of the relationship revealed by the documents examined. The result is a detailed review of the qualities, similarities and differences observed in the target documents. Once completed the results provide clear and precise recommendations about what could/should be done to improve either or both documents in order to yield a high-quality set of well-aligned academic content standards.

At the other extreme, using a very quantitative, descriptive approach, analysts with expertise in the relevant academic content are asked to provide systematic and detailed descriptions of the content contained the target documents using a set of detailed content descriptors, or content taxonomy. This approach seeks to 'translate' documents into a neutral descriptive language that in turn allows for a detailed quantitative comparison between the two content descriptions to be made. In this approach analysts make fairly low-level inferences about the content being described, with the analytical aspect of the work being largely reduced to a set of mathematical

algorithms yielding indicators that serve to describe in some detail the similarities and differences between the two content descriptions. Though very systematic and requiring fairly low-level inferences from its analysts, this approach does not address how 'well' the two documents or content descriptions align to one another, only the degree to which they are aligned to one another. Nor does the quantitative approach yield any other qualitative judgments. In the quantitative approach, evaluative judgments are reserved for the consumers of the analysis. For some, this lack of expert 'judgment' regarding the sufficiency of the alignment result represents a critical missing element. For those interested in descriptive capacity and analytic power however, the quantitative approach can be very useful. While more time efficient than a qualitative alignment analysis, the quantitative approach does require two distinct steps, content description followed by alignment analysis, which for largely logistical reasons typically requires several weeks to complete the full process.

As already stated, the methodological approach reviewed here represents something of a middle ground between the strictly qualitative and strictly quantitative approaches. By utilizing the cross-walk strategy, analysts have a reasonably streamlined method for making systematic comparisons. While the decisions and judgments required of the analysts is substantially constrained by the indicator definitions and response metrics, those decisions still require some fairly sophisticated qualitative judgments made by the analysts as they compare descriptions from one document to another. Nonetheless, with proper training and practice there is no reason to believe this method will not yield good measures of inter-rater reliability, and thus reasonably objective results. Similar to the quantitative approach, the mixed approach proposed by WestEd includes a focus on the content knowledge, skills and depth of knowledge emphasized in the targeted standards. While the unit size (content area) to be employed is somewhat coarser than typically used with a purely quantitative approach, it will nonetheless provide valuable insights and descriptions of the similarities, differences, overlaps and gaps in the knowledge, skills and level of complexity evidenced by the cross-walk method.

The WestEd methodology goes further, addressing two additional, purely qualitative indicators. Clarity is a critical quality for any standard or other document that is intended to set the vision of educational excellence in the content area. If a standard is not clearly presented, the vision of that standard is likely to be lost to those who need to be most attentive to its message. Similarly, because schools, teachers, and in some cases students are to be held accountable for the knowledge and skills depicted in the chosen standards, it is critical that the knowledge and skills depicted are measurable, in order to support assessment efforts to determine whether the goals set forth by the standards have been met. Such qualitative measures are simply not available with the quantitative approach. Their inclusion here represents an important strength of the methodology.

All in all then, from the perspective of this reviewer, the funding source has chosen well in selecting a methodology that draws upon elements of both qualitative and quantitative analysis, combined with a talented and experienced team of researchers that will without doubt deliver a quality report within the specified time frame that will provide the necessary evidence to make an informed determination of the nature of the relationships found between the Commonwealth of Massachusetts academic content standards, and the newly established Common Core Standards.

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William Yslas Vélez
Department of Mathematics
Building #89
617 N. Santa Rita
Tucson, Arizona 85721

OFC: (520) 621-2259
FAX: (520) 621-8322
E-MAIL: velez@math.arizona.edu

July 13, 2010

To: Linda Noonan, Massachusetts Business Alliance for Education

From: William Yslas Vélez
Professor of Mathematics and University Distinguished Professor
Department of Mathematics
The University of Arizona

CC: Edynn Sato, WestEd
Steve Hamilton, WestEd

Re: Independent expert review of the crosswalk and analysis of the Massachusetts Mathematics Curriculum Framework and the Common Core State Standards for Mathematics

My independent review of the mathematics analyses considered the following questions:

- Are the ratings for DOK, Clarity, and Measurability for each set of standards appropriate and consistent?
- Are the alignment codes appropriate, based on reasonable interpretations of the skills and knowledge described in each set of content standards?
- Are the analyst comments appropriate and clear?

My comments are as follows:

I have gone through the Massachusetts Mathematics Curriculum Framework-Common Core State Standards Crosswalk. I read through the Crosswalk in some detail. In a separate document I have recorded the results of my analysis for each of the grade levels and each item in that grade level. Given the time constraints I was not able to proofread that document carefully and I apologize beforehand for any errors that appear there.

On the whole I am in agreement with the alignments that appear in this document and my opinion is that the Crosswalk exercise has produced a valuable document for the State of Massachusetts. This document will provide valuable assistance to Massachusetts as it moves forward with its work on the state standards.

You will note that my own alignments at times differ from the Crosswalk, though on the whole that is great agreement. I think it is important to state that I worked on this by myself and was not privy to the conversations and conventions that were made at WESTED as they went through this exercise. My experience in working on these matters is that group consensus always differs from individual assessments.

I would like to make some specific comments about ratings.

DOK & Measureability: I am in agreement with the ratings. However, the question of DOK for each standard does not imply that the problems that students see in relation to that standard should also be linked to that DOK rating. I can envision that even for DOK levels of 1, problems could be at a DOK level of 4.

Measureability is an important ingredient in setting a standard. Though the ratings in this category were mostly YES, revisions will take place in the standards and attention should always be paid to this aspect of the standards.

Clarity: The Crosswalk found several places where improvements could be made to the Clarity of an item. In my analysis, I also pointed to several more. I would like to bring up items that appeared several times and have caused me concern.

CAPACITY: This is a word that is used quite often in the MA standards and I believe it should be deleted. It appears to me that this word is a code word for "measureable quantity" as opposed to one's capacity for happiness. For example we have in standard K.M.1: Recognize and compare the attributes of length, area, weight, capacity, and time using appropriate vocabulary. If I am correct that capacity refers to measurable quantities, this sentence is redundant. These are mathematics standards and precision in mathematics is something that we strive for. I suggest replacing this work with a phrase like, "measureable attribute, for example …", which emphasizes the quantitative work that we are about.

RECIPROCAL: In the elementary grades one says that 2 and ½ are reciprocal. One could say that the reciprocal of x (x not zero) is 1/x. Later on one notes that the operations of multiplying by 2 and multiplying by ½ undo each other, that is there are inverse operations. Because of that generalization, it appears to me that the MA standards confuse reciprocal with inverse. I do not think that these words are interchangeable. In fact, this is the first time that I have come across the use of reciprocal to denote inverse (I have never worked in K-12 but at the university level, those two words are not interchangeable.).

CONGRUENCE: Congruence is a very technical word in mathematics and I see the word "congruent" appearing in grade 2 in the MA standards. I am not sure that students are prepared to handle this concept at this grade level.

There are several interesting things that can be learned from this Crosswalk.

I noticed that several MA standards were aligned to CCS at different grade levels. Though of course one expects this I think that when there is a difference of at lest two grades levels in such

an alignment it presents an opportunity for a serious discussion as to where that particular standard should appear. Thus the Crosswalk provides an important analysis to compare what is being proposed in Massachusetts to what is proposed nationally.

In my own analysis, I found that there was a divergence between the MA and CCS standards in grade 8. The alignments between MA and CCS at his grade level seemed to be to more superficial and I think some attention should be paid to this grade.

In assessing the alignments that were made I noticed at times that the level of abstraction required of the two standards were different. I give one example of this, MA standard 1.N.5. Both standards wanted students to recognize whole number less than 100 and to determine which number was larger. The CCS standard went further and described that it wanted students to do this by utilizing place value, as opposed to rote memory perhaps. I am not saying that the CCS standard is more abstract, but I do want to point out that besides the topic that is being aligned, one also has to be concerned about the level of abstraction involved.

One question that I was not able to answer is how closely the MA and CCS standards aligned. Most MA standards are not going to be fully aligned to a particular CCS standard. In fact, what we see is that most MA items are partially aligned to several CCS items. However, it is possible that the partial alignments add up to a full alignment for that standard. It would have been beneficial had such an occurrence been recorded. This would help in determining the extent of alignment for the two documents.

It was a pleasure for me to go over this Crosswalk. It is a valuable document which should prove useful in further developing the state standards in Massachusetts.

Analysis of the Commonwealth of Massachusetts State Standards and the Common Core State Standards for English Language Arts and Mathematics

Independent External Expert Comments and WestEd Responses—Mathematics

Per the requirements of this study's scope of work, an independent, external expert in mathematics, Dr. William Vèlez, was asked to review and comment on the WestEd analysts' ratings of the correspondence between the Commonwealth of Massachusetts State Standards and the Common Core State Standards for Mathematics. In addition to the memo submitted to the Massachusetts Business Alliance for Education, the reviewer submitted more specific comments to WestEd.

In the table below, the reviewer's comments are presented along with WestEd's responses to each comment. In some cases, as noted in the WestEd response, the reviewer presented a perspective related to the interpretation of the standards and judgments of degree of alignment (e.g., full vs. partial) that seemed reasonable. WestEd has addressed the reviewer's comments as appropriate in the table below, as well as in the *Analyst Ratings* tables associated with this report.

Independent External Reviewer Comment	WestEd Response
Grade Level K	
1. Alignment: Items K.N.7 and K.N.9 are aligned to items 2.MD.8 and 2.MD.3, respectively. Though it is correct that the words used in the items appear the same, the intellectual tasks are much different. For example, in K.N.7, students are simply asked to identify which of two coins is greater, while 2.MD.8 requires problem solving skills. The alignment of K.N.9 is problematical. This standard is vague and simply talks about the estimation of the number of objects in a group. An example might be to estimate how many quarters might fit in a given square. This item is aligned to 2.MD.3. But each of these items is focused on one thing-length. I don't see this alignment. Further the comment that appears on K.N.9 states that 2.MD.3 is the first time where estimation is addressed. Though it is correct that is the first time the word is used, 2.MD.1 deals with measuring the length of an object. The act of measuring implies estimation.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
2. I question whether or not an alignment that jumps two or more grade levels is possible, given the different learning styles that this entails. So, I would say that the two items listed above are not aligned to CCS.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of

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	interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. The alignment of K.A.3 to 3.OA.9 appears to be problematical. The level of abstraction for the third grade work is much higher that K level work described in K.A.3.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. I would rate the Clarity of K.A.3 as N, using the decision rules provided. The example of ABABAB is not clear to me. Had the example been, 121212, then I would be clearer to me what was required. The interpretation of the letters is unclear.	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
5. Items K.M.2 & K.M.3: I am bothered by the word, "capacity". There is a redundancy in the use of this word. I think that capacity refers to some measurable aspect of an object, perhaps its area or	This comment from the external reviewer suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.

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volume. But length is also a capacity, so why is it being singled out? I suggest replacing the wording to be, "estimate measurable aspects of an object, for example, length and weight, …".	
6. K.M.2: Is there a more technical description that could be used to describe the cubes so that laymen would not be bothered by the use of cubes to measure lengths? A professional who has worked at this grade level would understand that cubes are manipulatives commonly used in this fashion.	This comment from the external reviewer suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.
Grade Level 1	
1. My overall impression about the alignments for this grade level is that the level of abstraction is higher in the CCS standards than the MA standards.	This comment from the external reviewer provides an impression that may be reflected in the text of the report.
2. 1.N.5: I don't agree with the comment. There is a change from the use of language in the MA standards to the use of symbols in the CCS standards. That strikes me as fairly compatible. The difference in the CCS standards is the solution level. The CCS wants students to apply place-level understanding to solve this problem as opposed to the fact that MA does not explicitly state a solution technique.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.1.N.5.
3. 1.N.7: The CCS standard requires solving problems instead of just identifying the values of coins.	WestEd believes the information provided by the external reviewer is represented in the present comment for the partial rating of MA.1.N.7.
4. 1.N.10: I would rate this a P instead of an F because the CCS standard incorporates the addition facts to solve problems.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.

Independent External Reviewer Comment	WestEd Response
5. 1.A.1: I find the MA standard to be vague whereas 3.OA.9 is more quantitative. Not only does it ask to identify patterns but also to explain them. This goes far beyond 1.A.1. I would say that these two items do not align.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
6. 1.A.2: I have the same problem with this as the previous item. CCS.3.OA.9 wants to students to explain and not just identify. This is a higher cognitive skill. So, again I would say no alignment.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
7. 1.A.7: I would partially align this with K.OA.3. K.OA.3 stipulates that the number be less than 10, which appears to me to be the only difference.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts.

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	Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
8. 1.G.1 & 1.G.2: K.G.2 also asks to identify shapes and I would partially link the two MA items to this.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
9. 1.M.1: If we take the interpretation that time is often perceived as length, as in the length of a day, then 1.MD.2 also partially links to this item.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those

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	familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
10. 1.M.4: I have a problem with the word, capacity, as I have explained in the K section of comments. I think that 3.MD.2 is much too advanced to be linked to this item. I think a better match would be 1.MD.2 for the same reasons as the previous comments, time can be viewed as length.	This comment from the external reviewer suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.
11. 1.M.5: Again I do not agree with the linkage 3.MD.2. The CCS requires analyses and discussions with different unit systems.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
Grade Level 2	
1. I found that I agreed with most of the alignments and comments in this grade level.	No response to this comment.
2. 2.G.1: I think this is a Full alignment. The differences between the MA and CCS appear to me to be terminology and substantive.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of

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	analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 2.G.3: I do not think that there is an alignment here, even partial. The MA uses the word congruent, which is a technical term. The CCS does not appear to use this word until 8.G.2.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. 2.M.1: I would add 2.MD.3 as a partial alignment because the CCS standard uses inches and centimeters.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 2.M.4: The term capacity is used here and I have the same complaint about it. I would not match this with 2.MD.2 since in the CCS standard only one	This comment from the external reviewer (i.e., regarding "capacity") suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the

Independent External Reviewer Comment	WestEd Response
object is mentioned. 2.MD.4 appears to be a partial match since it deals with more than one object. I would also make a partial match to 2.MD.3 since the word, "lengths" appears leaving one the possibility of having more than one object.	scope of this project. Regarding degree of alignment, an independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
6. 2.M.6: A partial match could be made to 2.MD.8 since one could ask how many pennies are equivalent to three quarters.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
7. 2.D.1: It is not until 7.SP.1 that sampling a population comes up in CCS. Perhaps this standard is premature.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of

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8. 2.D.2: I would rate the Clarity a N. I simply don't understand what it is asking.	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
9. 2.D.4: I would rate the Clarity as N. The standard begins by discussing the manipulation of data that then translates this data into measurements. If the data was not a measurement before, it won't necessarily become a measurement after this translation.	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
Grade Level 3	
1. 3.N.3: I would partially align this to 2.NBT.1 and comment that the CCS standard restricts computations to 100.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts.

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	The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
2. 3.N.7: I don't believe there is an alignment to CCS for this item. I looked up to grades 8 in the CCS standards and found nothing dealing with sets. Perhaps the standard 3.N.7 is premature.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 3.N 14 & 3.N.15: I would rate the Clarity of both of these items as N. Perhaps the word "measures" should be 'measurements"? However even this does not clarify these items for me. These measurements are supposed to be whole numbers (that is restrictive) and also they deal with money (which very likely introduces decimals). Moreover, I just don't see the point of these standards. Finally, the alignment to CCS 3.OA.8 seems like a real stretch.	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
4. 3.A.3: I would also align to 2.OA.1 and mention that the CCS standard only uses addition and subtraction.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team

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5. 3.A.4: This standard has as one of its tasks to solve inequalities. In CCS, I didn't find solving inequalities mentioned until CCS 7.EE.4 (though I was less careful here and don't guarantee that solving inequalities did not appear before.). So, this part of the standard strikes me as premature.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
6. 3.G.1: I would replace CCS 4.G.1 with 3.G.1. If there is a fit with the same grade level, I think it should be used.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and

Independent External Reviewer Comment	WestEd Response
	determine the implications of the reviewers' judgments.
7. 3.G.5: I am bothered by the fact that we have to go to two grade levels higher to make an alignment.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
8. 3.M.1: I don't know what "capacity" means.	This comment from the external reviewer suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project. To best ensure that terminology used in the standards is understood as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
Grade Level 4	
1. 4.N.2: In the CCS alignment, counting without the number line was not addressed.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.4.N.2.
2. 4.N.4: The CCS item 4.NF.1 does not mention ordering. I would add a partial alignment to 4.NF.2 which mentions ordering but does not mention mixed fractions	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team

Independent External Reviewer Comment	WestEd Response
	of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 4.N.5: I would rate the Clarity as N. The sentence in the standard is asking to generate equivalent forms of common decimals. Except for infinite, repeating 9's, the form of a decimal is unique. The sentence should read, "Identify common decimals and generate equivalent forms of common fractions." In the alignment, I would replace 3.NF.2A with 3.NF.2B since the A only does fractions of the form 1/b. I would add a partial alignment to 4.NF.1 for equivalent fractions.	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample. This comment from the external reviewer also suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.
4. 4.N.6: I would add a partial alignment to 4.NF.7, and state that the CCS standard goes beyond by comparing decimals.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 4.N.8: I would change this to partial alignment since the CCS standard does not deal with classes of numbers.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards,

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	such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
6. 4.N.13: I would change the alignment to 4.NBT.6 and point out that the CCS does 4 digits, while the MA does three digits.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
7. 4.N.14: I am not sure about the word "measures". Shouldn't this be " measurements"? It should also be mentioned that the CCS standard does not mention money problems, while the MA standard does.	This comment from the external reviewer regarding "measures" versus "measurements" suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project. This comment from the external reviewer regarding the CCS has been addressed in the comments in the analyst rating sheet for MA.4.N.14.
8. 4.A.2: I would change the Clarity to N. The standard discusses using < in equations and in the last sentence to determine the value of the unknown. Solving an inequality does not produce one value, but possibly many. So, do they really	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a

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mean to be solving linear inequalities at this level?	representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
9. 4.A.4: I would make a partial alignment to 5.NF.5 since the CCS mentions scaling and that partly addresses the MA standard.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
10. 4.G.1: The CCS standard lacks the detail that is requested in the MA standard.	WestEd believes the information provided by the external reviewer is represented in the present comment for the partial rating of MA.4.G.1.
11. 4.G.4: I would add 4.G.3 since lines of symmetry can lead to reflections and are often explained in that fashion. The fact that there is alignment to eighth grade makes me think that this standard might not be appropriate.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.

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12. 4.M.4: I would add a partial alignment to 3.MD.7A and mention that the CCS standard restricts calculations to whole numbers.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
13. 4.M.5: The CCS standard does not mention polygons.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.4.M.5.
Grade Level 5	
1. 5.N.3: 4.NF.2 does mention ordering. I would make a partial alignment to 3.NF.2B since it discusses fractions on the number line.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
2. 5.N.4: Comment should include that the CCS standards does not mention solving.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.5.N.4.

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3. 5.N.5: I suggest replacing 6.EE. 2C with 5.OA.1. 6.EE.2C is at too high of a level. The 5.OA.1 deals with grouping of symbols.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. 5.N.7: Add the comment that the CCS does not request the use of models.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.5.N.7.
5. 5.N.10: The alignment to 7.EE.3 is too much of a stretch. I suggest replacing it with 5.NBT.7, even though this last restricts to 2 digits.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
6. 5.A.3: I don't agree with the alignment to 5.G.2. Nowhere in the MA standard does it refer to coordinate geometry.	WestEd interpreted the reference to graphing in MA.5.A.3 to include graphing a line on the coordinate plane.
7. 5.G.1: I suggest replacing K.G.4. This is too low of a level. I also suggest partial alignments to 6.G.2 &	An independent, external analysis of correspondence between two sets of standards involves a degree of

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6.G.4.	interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
8. 5.G.4: I suggest a partial alignment to 5.G.1, as this CCS standard does everything but mention paths.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
9. 5.G.5: A partial alignment has to be made to 8.G.2, since the MA standard mentions congruence.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team

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10. 5.M.2: I suggest replacing 7.G.6 with 6.G.1, as this CCS standard mentions areas of right triangles. I would also have a partial alignment to 6.G.2 as this mentions volumes of prisms.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
11. 5.M.3: I suggest deleting G-CO.10. This CCs standard is too advanced to be aligned to this MA standard.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and

Independent External Reviewer Comment	WestEd Response
	determine the implications of the reviewers' judgments.
Grade Level 6	
1. 6.N.1: replace 8.EE.1 with 6.EE.1	WestEd agrees that MA.6.N.1 could be aligned with CCS.6.EE.1 in addition to CCS.8.EE.1. This is now reflected in the comments in the analyst rating sheet for MA.6.N.1.
2. 6.N.2: I suggest changing the full alignment from Full to Partial as the CCS standard does not locate points on the number line.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 6.N.5: Add comment that the CCS standard does not mention percentages.	WestEd believes the information provided by the external reviewer is represented in the present comments for the partial ratings of MA.6.N.5.
4. 6.N.13: I suggest replacing 6.EE.2C with 6.EE.1 and making it Full alignment.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the

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	standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 6.N.14: I suggest adding a comment that the CCS standard does not discuss contextual problems.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.6.N.14.
6. 6.A.1: I suggest a partial alignment to 4.OA.5, where arithmetic progressions are introduced.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
7. 6.A.3: I suggest deleting the comment that mentions "only models of fractions" as whole numbers are also fractions.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.6.A.3.
8. 6.A.4: In the comment for 6.EE.9, change it to read, "which does not specifically address data with a non-constant rate of change". Also, delete 8.F.2. This CCS standard gave an example of two data sets, each of which had constant rate of change. The MA standard dealt with data sets where the rate of change was not constant.	WestEd believes the information provided by the external reviewer is represented in the present comment for the partial ratings of MA.6.A.4.
9. 6.G.1: I suggest adding a partial alignment to 8.G.9, where at least the volumes of these solids are discussed.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts.

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	The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
10. 6.G.2: I suggest deleting 4.G.1. This CCS standard is too low of a level to be aligned to this MA standard.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
11. 6.M.5: I suggest no alignment. The CCS standard does not mention polygons nor the issue of obtaining the sum of the interior angles.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.

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12. 6.D.3: I suggest a partial alignment to 7.SP.8B for mentioning sample space.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
Grade Level 7	
1. 7.N.1: I suggest changing to a Full alignment. The CCS standard talks about irrational numbers but makes comparisons to integers and the decimal approximations to irrational numbers. The decimal approximations are the rational numbers. So the CCS standard includes both irrational and rational numbers.	Given the reviewer's explanation, WestEd agrees that CCS.8.NS.2 could be judged as fully aligned with MA.7.N.1. This is reflected in the comments in the analyst rating sheet for MA.7.N.1.
2. 7.N.3: I suggest replacing 6.G.7C (which must be a typo with a Full alignment to 7.NS.1C.	WestEd has made this correction in the analyst rating sheet for MA.6.N.1. This specific correction may not be reflected in the data summary tables but should not significantly affect the interpretation of the data.
3. 7.A.1: I suggest a partial alignment with 4.OA.5 for arithmetic sequences.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of

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	analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. 7.A.3. I suggest a partial alignment with 7.NS.2C and point out the CCS standard only discusses multiplication and division.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 7.G.1: I do not believe that there is an alignment. 8.G.5 is very general, while the MA standard is very focused.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
6. 7.G.2: I suggest making this a Full alignment. In fact, the CCS is more expansive in that it suggests the tools that could be used to provide this	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g.,

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similarity. The dilation mentioned in CCS is equivalent to the proportional reasoning in the MA.	interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
7. 7.M.2: I suggest deleting the discussion on problem solving mentioned in the comment. The CCS standard mentions "solving unit rate problems", so problem solving is addressed in both standards.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.7.M.2.
8. 7.D.1: I suggest expanding the comment that CCS makes no mention of Venn diagrams.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.7.D.1.
Grade Level 8	
1. My overall comment on this grade level is that there is a distinct divergence from CCS, so the alignments are more difficult to make, and perhaps more superficial.	This comment from the external reviewer provides a considered opinion that may be reflected in the text of the report.
2. 8.N.2. I think that partial alignments should be made to N-RN.1 & N-RN.2.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the

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	standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 8.N.3: I think that 8.EE.3 is in Full alignment to the MA standard. Further 8.EE.4 goes beyond the MA standard as it also discusses computations,	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. 8.N.5: I suggest partial alignments to N-RN.1 & N-RN.2.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 8.N.6: 8.NS.2 does talk about cube roots so I suggest deleting part of the comment.	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.8.N.6.
6. 8.A.1: I suggest deleting the word "series" in the comment section. Here is an alignment that is misleading. In the comment section, it is stated that	This comment from the external reviewer raises an issue that is beyond the scope of this project (i.e., deciding if the MA standard is fully covered based on two or more

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the MA goes beyond each of the two standards in CCS. However, when combined the CCS standards cover the MA standard. I am sure that this situation has occurred before and the comments are misleading.	partial alignments).
7. 8.A.2: I suggest this is a Full alignment. Just because the CCS used (-1)(-1) does not suggest that it was numerical.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
8. 8.A.6: I would rate the Clarity as N. It should read something like: "find the intercept of the line determined by the two points, and write the equation of this line."	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample.
9. 8.G.4: I suggest a partial alignment to 8.G.8, which would cover distance between two points on the plane.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem

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	reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
Grade Level 10	
1. I have a question about the use of a word in these standards. I saw the word, "reciprocal" used several times, I think it referred to a function, as in reciprocal function. I have never heard of a reciprocal function. In standard, 10.A.12 I noted that (inverse) can after the word reciprocal. So, it appears to me that the word "reciprocal" is being used as inverse. In grade school one says that 2 and ½ are reciprocal. This later on can be phrased as saying that multiplication by and division by 2 are inverse operations. So, reciprocal and inverse are associated in this context. However, at university level mathematics, reciprocal and inverse do not mean the same thing. I suggest that the word, "reciprocal" be replaced by "inverse" in the MA standards.	This comment from the external reviewer suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.
2. 10.N.1: I suggest a partial alignment with F.B.4, as this CCS standard discusses inverse functions, though it does not specifically talk about n-th powers. I also suggest a partial alignment to F. BF.4A, as this CCS standard describes a procedure for verifying whether or not two functions are inverse to each other. I think that F alignments are more appropriate than the ones to grade 7.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 10.N.3: I suggest a partial alignment to N.Q.3, as this CCS standard discusses appropriate accuracy.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities

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	intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. 10.A.1: I suggest a partial alignment to B.BF.1B & F.BF.1C as this CCS standard addresses the issue of "extending" that appears in the MA standard. I suggest a partial alignment to A.REI.4 and its subsections as they describe quadratics.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 10.A.2: I am not in agreement with the comment. I think that the phrases, "explain each step" and "construct viable argument" are code words for "proof". MA standards go further by asking to "disprove".	This comment from the external reviewer has been addressed in the comments in the analyst rating sheet for MA.10.A.2.
6. 10.A.4: I suggest a partial alignment to F.IF.7 and its subsections because these CCS standard describe all of the functions that appear in the MA standards. Given this I do not agree with the comment.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved

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	in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
7. 10.A.5: I suggest a partial alignment to F.IF.8 as the CCS standard describes working with equivalent forms. I suggest a partial alignment to F.IF.9 as the CCS standard describes working with different representations for two functions.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
8. 10.A.6: I suggest a partial alignment to F.IF.7A as the CCs standard describes graphing a line. I suggest a partial alignment to F.LE.2 as the CCS standard describes constructing a line from two points, though the two points are described as two input-output pairs.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of

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9. 10.A.8: I suggest a partial alignment to A.APR.2 as the CCS standard describes division by a monomial. Given this partial alignment, I suggest deleting the comment about no division by a monomial.	WestEd agrees that CCS.A-APR.2 could be judged as partially aligned to MA.10.A.8. This is reflected in the comments in the analyst rating sheet for MA.10.A.8.
10. 10.A.9: I suggest a full alignment with A-APR-7 as polynomials can be considered to be rational functions.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
11. 10.A.11: I suggest that the full be changed to partial for this alignment since the CCS standard restricts itself to linear equations.	WestEd agrees that CCS.A-REI.3 could be judged as partially aligned with MA.10.A.11. This is reflected in the comments in the analyst rating sheet for MA.10.A.11.
12. 10.A.19: I suggest a partial alignment to G.GPE.6 as this CCS standard goes beyond midpoints.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of

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13. 10.G.1: I would rate the Clarity of this standard as N. Functions do not have solutions. I suggest rewording to talk about equations involving these different types of functions.	Judgments of clarity are often influenced by the knowledge and experiences of the analysts (e.g., of a range of instructional materials). To best ensure that standards are clear and will be interpreted as intended, examples that are purposefully selected to illustrate a representative range of relevant information (e.g., content) in a manner that is familiar to educators and students in the state are advisable. Additionally, there should be a clear indication of whether examples provided are comprehensive or a representative sample. This comment from the external reviewer also suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.
14. 10.G.15: I suggest making this a partial alignment since the CCS standard does not discuss projections.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
15. 10.M.2: I think more appropriate partial alignments would be to G.GPE.7, which discusses perimeters and areas of polygons and G-GMD.1, which discuses deriving formulas for circumference and areas.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who

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16. 10.M.6: I suggest a partial alignment to N-Q1 as this CCS standard discusses using units to understand problems.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
Grade Level 12	
1. 12.A.2: I suggest a partial alignment to F-BF.2 though the CCS standard restricts to arithmetic and geometric progressions.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment

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	signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
2. 12.A.10: I suggest a full alignment to A-REA.9. The request for algebraic methods in the MA allows the use of matrices.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
3. 12.A.12: I suggest a partial alignment to A-REI.11 since the CCS standard mentions graphical techniques.	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
4. 12.A.17: I suggest partial alignment to G-GPE.1, G-GPE.2 and G-GPE.3 since these three CCS standards ask for the derivation of the equations. This is not the same as the MA standard which asks	An independent, external analysis of correspondence between two sets of standards involves a degree of interpretation of the intention of the standards (e.g., interpreting the particular skills/abilities/activities

Independent External Reviewer Comment	WestEd Response
to transform an equation and thereby decide on the type of conic section determined by the conic. I suggest deleting the alignments to A-REI.4A and A-SSE.3B as these two CCS standards describe the process of completing the square only and do not specifically relate this to conic sections.	intended by terminology often used in the standards, such as "to know" or "to estimate"). Consistency of interpretation of the standards across analysts involved in an independent, external alignment analysis is ensured through training and calibration of the analysts. Therefore, it is not unusual for an external reviewer who has not been trained or calibrated with a particular team of analysts to question judgments of alignment made by that team of analysts. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) in order to reconcile and determine the implications of the reviewers' judgments.
5. 12.A.19: I suggest removing the two words, "system of". I am not sure about this but I think that the MA standard is not about systems of equations.	This comment from the external reviewer suggests a revision to the Massachusetts standard and therefore raises an issue that is beyond the scope of this project.
6. 12.A.22: I would rate the measurability of this standard as N. How does one check if a student demonstrates understanding? I suggest a partial alignment to F-IF.7E since this CCS standard deals with the graphs of trigonometric functions. I suggest a partial alignment to F-TF.2 for the relation between trigonometric functions and the unit circle.	WestEd believes that understanding can be measured by asking appropriate questions, in a formative manner. Because analysts determined MA.12.A.22 fully aligns with CCS.G-SRT.6, additional alignments were not required by the protocol used in this analysis.
7. 12.A.23: I would change the full to partial as CCS does not discuss Euler's formula.	WestEd agrees that this alignment could be interpreted as partial. Acknowledgement of this interpretation is noted in the comments in the analyst rating sheet for MA.12.A.23.
8. 12.A.26: I think someone forgot to list F-IF.7A on the table.	The partial alignment with CCS.F-IF.7A is noted in the comments in the analyst rating sheet for MA.12.A.26.
9. 12.G.1: I found the comment about "congruences" curious. The MA standards use the word congruence several times.	In this case, the use of the term "congruence" refers to the name of the first Geometry domain and not to the general concept of congruence addressed in various MA and CCS standards.

Karen Schaafsma Anderson, PH.D
5001 Shamrock Drive
Fair Oaks, CA 95628
(916) 947-3070

July 14, 2010

To: Linda Noonan, Massachusetts Business Alliance for Education

From: Karen S. Anderson, Independent Consultant

CC: Edynn Sato, WestEd
Steve Hamilton, WestEd

Re: Independent expert review of the crosswalk and analysis of the Massachusetts English Language Arts Curriculum Framework and the Common Core State Standards for English Language Arts

My independent review of the language arts analyses considered the following questions:

- Are the ratings for DOK, Clarity, and Measurability for each set of standards appropriate and consistent?
- Are the alignment codes appropriate, based on reasonable interpretations of the skills and knowledge described in each set of content standards?
- Are the analyst comments appropriate and clear?

My comments are as follows:

Strengths of the Crosswalk and Ratings:

Overall, the alignment codes seemed appropriate based on content in the two sets of standards. Due to the different organization of the standards and variations in content, some matches are found in a cluster of alignments (one matched to two or three); some are found off-grade. A few additional possible matches were noted in the detailed comments. Ratings for DOK, Clarity, and Measurability were relatively consistent across grades for both sets of standards. However, the rating sheets for some grade spans included specific comments about measurability (classroom only or constructed response only) while other rating sheets did not. Some exceptions in the consistency of DOK rating both within and across both sets of standards are noted in the detailed comments.

Concerns About the Crosswalk and Ratings:

Overall, the DOK ratings assigned to standards in both sets appeared considerably lower than expected. DOK ratings seemed particularly low for standards in Reading and Writing across all grades and especially in the lower grades (K-5) for both CCS and MA standards. In the case of the MA standards, the frequent use of the verb "identify" in many standards may have

contributed to lower than expected DOK ratings. I would have flagged many of these standards as needing clarification, as the verb invites multiple interpretations at lower (recognize, recall) and higher (analyze, interpret) levels of complexity.

In both sets of standards, many closely related standards show a progression in skills and knowledge across grades; in general, however, DOK ratings for related standards appear to be notably lower in lower grades. It might be worthwhile to examine the consistency of DOK ratings across vertical standards, to see if the distribution of DOK ratings in lower and higher grades appropriately reflects the intended range of complexity at all points along that continuum.

Analysis of the Commonwealth of Massachusetts State Standards and the Common Core State Standards for English Language Arts and Mathematics

Independent External Expert Comments and WestEd Responses—English Language Arts

Per the requirements of this study's scope of work, an independent, external expert in English language arts (ELA), Dr. Karen Schaafsma Anderson, was asked to review and comment on the WestEd analysts' ratings of the correspondence between the Commonwealth of Massachusetts State Standards and the Common Core State Standards for ELA. In addition to the memo submitted to the Massachusetts Business Alliance for Education, the reviewer submitted more specific comments to WestEd. In the table below, the reviewer's comments are presented along with WestEd's responses to each comment.

For grade levels K-5

Independent External Reviewer Comment	WestEd Response
On the whole, DOK ratings were mostly consistent across grades K-2; however, a number of inconsistencies in grades 3-5 are noted in the detailed comments. In some cases, DOK ratings applied to CCS 3-5 standards did not appear consistent with those assigned to comparable MA standards; in other cases, the inconsistencies were between ratings within CCS standards.	Based on the reviewer's comments, the DOK ratings for standards in grades 3-5 were reviewed again by senior analysts. Subsequent reviews did not uncover any systematic misinterpretation of the level of cognitive complexity embodied by those standards, hence analysts' ratings were upheld. More specific comments related to depth of knowledge (DOK) are addressed below.
In the areas of Reading and Writing, in particular, the DOK levels applied to standards tended to be at the very low end of possible levels. Low ratings in the primary grades may reflect a tendency to underestimate the cognitive demand of some standards, especially those that represent the precursors to more highly rated standards at later grades. Retelling a story (rated as DOK 1), for example, is a form of summary (level 2); except in cases in which students have memorized a simple story verbatim (in which case the skill is recitation), this standard requires understanding the 'story grammar (how the parts go together),' what is and isn't essential, and translating the story into one's own words (paraphrase). Similarly, asking questions to clarify understanding of a text requires students to self-monitor their understanding, identify gaps, and formulate the right question to obtain the information they need. RL2.4 requires second graders to describe how words and phrases "supply rhythm and meaning" in stories, poems, and songs. This standard (rated DOK 2) requires using analysis, considering how parts to contribute to a whole. It is a precursor to the more advanced standards at later grades requiring students to	An independent, external analysis of the DOK reflected in content standards involves professional judgment in interpreting the intent of the standards. That is, unless explicitly specified, the context in which skill and knowledge are expected to be applied, type and nature of associated stimuli (e.g., length or complexity of passage), and the grade level of the student may affect whether the skill or concept embedded in that standard is determined to be at the Recall, Basic Application, Strategic Thinking, or Extended Thinking level of DOK). Consistency of interpretation across analysts involved in an independent, external alignment analysis is ensured through training and ongoing calibration of the analysts. Therefore, it is not unusual for an external reviewer who has applied particular criteria in assigning judgments that may differ in some respects from those of other reviewers—to question judgments made by a team of analysts that has been trained to assign judgments using a slightly different interpretive lens. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of

Independent External Reviewer Comment	WestEd Response
analyze aspects of author's craft and explain their effects on texts.	analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) who are best positioned to reconcile discrepant DOK ratings in light of the intended meaning of each standard. Based on the reviewer's comments, the DOK ratings for standards were reviewed again by senior analysts, particularly in grades K-3 where foundational skills were described. Subsequent reviews did not uncover any systematic misinterpretation of the level of cognitive complexity embodied by these standards, hence analysts' ratings were upheld.
The high percentage of level 1 and 2 ratings and the scarcity of level 3 ratings in the earlier grades may fail to adequately distinguish the different levels of cognitive complexity of the skills and knowledge expected at those grade levels, or to recognize in some early standards (as in RL.2.4), the first forms of analytical skills that represent DOK 3 skills at that level.	
A final concern relates to the imprecision of DOK ratings applied to foundational skills that may require very active thinking, reasoning, and the deliberate application of knowledge when students first develop them but eventually become automatic. The assigned level may be accurate for the standard at the point of mastery but inaccurate when applied to the development of the skill. This may be worth keeping in mind in relation to the DOK ratings applied to many foundational skills in K-3, in particular.	

For grade levels 6-8

External Reviewer Comment	WestEd Response
On the whole, DOK ratings were applied consistently across grades 6-8; however, some ratings for standards at these grade levels were not consistent with ratings for similar CCS standards at grades 9-12. It may be worth considering whether some of those standards, such as those for persuasive writing, are sufficiently more rigorous at grades 9-12 to merit the DOK rating of 4 while those for grades 6-8 are rated at DOK 3	An independent, external analysis of the DOK reflected in content standards involves professional judgment in interpreting the intent of the standards. That is, unless explicitly specified, the context in which skill and knowledge are expected to be applied, type and nature of associated stimuli (e.g., length or complexity of passage), and the grade level of the student may affect whether the skill or concept embedded in that standard is determined to be at the Recall, Basic Application, Strategic Thinking, or Extended Thinking level of DOK). Consistency of interpretation across analysts involved in an independent, external alignment analysis is ensured through training and ongoing calibration of the analysts. Therefore, it is not unusual for an external reviewer who has applied particular criteria in assigning judgments that may differ in some respects from those of other reviewers—to question judgments made by a team of analysts that has been trained to assign judgments using a slightly different interpretive lens. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment
The DOK ratings assigned to CCS grades 6-8 seemed generally consistent with those assigned to MA standards at the same grade levels. In a few cases in which DOK ratings did not appear consistent for similar MA and CCS standards, the analyst's comments provided some explanation of the difference. For example, two standards requiring the analysis of point-of-view in fiction were rated as DOK 2 in the CCS standards (RL.6.6) and DOK 3 in the MA standards (6.F.1). (In this case, I agree with the analyst that the MA standard is more rigorous but would assign both standards a DOK of 3).	
Low DOK ratings A number of standards in the Reading strand (and a few in the Speaking and Listening strand) received lower	

External Reviewer Comment	WestEd Response
than expected DOK ratings (DOK 2 instead of DOK level 3) based on their range of cognitive complexity. The standards receiving DOK ratings at the low end of the scale were mostly similar or closely related standards across the grades. These included RL.6.1, RL.6.3, RL.6.6, RL.6.9, RI.6.1, RI.6.2, SL.6.1d, RH.6-8.1, RH.6-8.6, RST.6-8.1, RST.6.8.3, and W.66. Some specific examples are discussed below: RL.6.1 and RI.6.1, as well as RH.6-8.1and RST.6-8.1 call for students to cite specific evidence to support analysis of both implicit and explicit content in a text. These standards could potentially include some applications at level 2 but they clearly meet for the criteria for DOK 3. Characteristics of this DOK level include making inferences across a text and providing support for thinking. The latter requirement, that students support their analysis, interpretation, or conclusion with evidence, is particularly useful for distinguishing DOK level 2 from DOK level 3. None of the sample tasks (summary, interpretation of words in context, prediction of next steps) included at level 2 would typically require support in the form of reasoning or evidence; this reflects the more limited or "basic" application of knowledge and skills at this level. RL.6.3 and RL.6.6 both require students to make inferences across an entire text; 6.3 calls for analysis of how characters change over the course of a narrative and 6.6 calls for analysis of how an author develops the narrator's point-of-view in a text. However, both standards use verbs—"describe" in 6.3 and "explain" in 6.6--that tend to mask the complexity of the skills involved. Neither standard uses the word "analyze" or "interpret." W.6.6, in the Production and Distribution of Writing strand, is a standard that recurs across all grades, K-12. It was rated at DOK level 2 at every grade. This rating seems rather low. The standard calls for students to use technology to produce and publish writing and to "link to and cite sources as well as to interact and collaborate with others." Some skills included in this standard, such as keyboarding, clearly fit the definition of DOK 2, but if interaction and collaboration with others is an important element of the standard, DOK 3 would seem more appropriate. The lower DOK rating may reflect the fact that the standard is quite general; it does not specify the purpose or goal of collaborative activities (such as joint projects, for example).	signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) who are best positioned to reconcile discrepant DOK ratings in light of the intended meaning of each standard. Based on the reviewer's comments, the DOK ratings for the reading and writing standards in grades 6-8 were reviewed again by senior analysts. Subsequent reviews did not uncover any systematic misinterpretation of the level of cognitive complexity embodied by these standards, hence analysts' ratings were upheld.

External Reviewer Comment	WestEd Response
DOK 4 Ratings: Questions of consistency In a few instances, there seemed to be some inconsistency in the application of DOK levels 3 and 4, with some similar standards receiving higher or lower ratings. DOK level 4 tasks typically involve both significant cognitive depth and complexity and enough breadth to require an extended time period. In the 6-8 standards, RL.6.9 ("compare and contrast texts in different forms or genres" for their "approaches to similar themes and topics") was rated at DOK 3 while RH.6-8.9 ("Analyze the relationship between a primary and secondary source on the same topic") was assigned a DOK 4. Standard RL.7.7 (compare and contrast a written text to its audio, visual, or multimedia version) also received a DOK 4. The complexity and scope of these standards seem too similar to easily account for the variation in rating.	
DOK Ratings for Writing Standards at 6-8 and 9-12 Overall, similar writing standards for grades 6-8 and grades 9-12 varied in DOK rating, with many 9-12 standards rated at level 4 and the comparable standards at 9-12 rated at DOK 3. Here is one example: WHST.6-8.2b: "Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples." DOK 3 WHST.910.2b: "Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic." DOK 4 It's difficult to determine whether the slight variations in the standard at the higher grade are sufficient to account for the higher rating. Overall, the two standards are very similar. Both require students to integrate a variety of types of evidence or support, most likely from multiple sources, to develop informational/expository texts in the field of history or science. Both standards will most likely include application to projects requiring extended time and varying degrees of conceptual complexity. It seems most appropriate to assign both standards a DOK of 4 to allow for the range of complexity encompassed by both.	

For grade levels 9-10 and 11-12

External Reviewer Comment	WestEd Response
Overall, the alignments and ratings for CCS grades 9-12 seem reasonable and appropriate. DOK ratings were generally consistent across these grades but in a few instances, less consistent with similar standards for MA grades 9-12. As in grades 6-8, some DOK ratings seemed lower than expected, mostly for the higher-grade versions of the same standards in grades 6-8 that received ratings of DOK rather than DOK 3. Standards at grades 9-12 did receive more DOK 4 ratings, primarily for writing standards. Some specific examples are discussed below	An independent, external analysis of the DOK reflected in content standards involves professional judgment in interpreting the intent of the standards. That is, unless explicitly specified, the context in which skill and knowledge are expected to be applied, type and nature of associated stimuli (e.g., length or complexity of passage), and the grade level of the student may affect whether the skill or concept embedded in that standard is determined to be at the Recall, Basic Application, Strategic Thinking, or Extended Thinking level of DOK). Consistency of interpretation across analysts involved in an independent, external alignment analysis is ensured through training and ongoing calibration of the analysts. Therefore, it is not unusual for an external reviewer who has applied particular criteria in assigning judgments that may differ in some respects from those of other reviewers—to question judgments made by a team of analysts that has been trained to assign judgments using a slightly different interpretive lens. The points raised by the external reviewer seem reasonable and do not necessarily invalidate the judgments made by the trained and calibrated team of analysts. Rather, the external reviewer's comment signals a need for additional examination by those familiar with the intention and development of the standards (an internal review) who are best positioned to reconcile discrepant DOK ratings in light of the intended meaning of each standard. Based on the reviewer's comments, the DOK ratings for the reading and writing standards in grades 9-12 were reviewed again by senior analysts. Subsequent reviews did not uncover any systematic misinterpretation of the level of cognitive complexity embodied by these standards, hence analysts' ratings were upheld.
Low DOK ratings in the Reading strand As in grades 6-8, some 9-12 standards in the Reading strand received lower than expected DOK ratings. For example, RL.9-10.1, RI.9-10.1, RH.9-10.1, RH.9-10.2, and RST.9-10.1-RST.9-10.3 (and comparable standards at 11-12) all received ratings of DOK 2 when DOK 3 seems more appropriate. There were some similarly low DOK ratings assigned to some MA reading standards at these grades but the low-rated standards in the two sets did not necessarily match. For example, MA standard 9.F.5, "Determine what makes a work of fiction satiric, whimsical, tragic, or suspenseful" was rated at DOK 2 but it was matched to CCS RL.9-104 and RL.9-10.5, both of which were assigned DOK 3. Similarly, MA 9.D.2, "Identify the structure and elements of different genres of dramatic literature" received a DOK 2 but was matched to CCS RL 9-10.5, rated as DOK 3. In the latter case, the CCS standard required students to make connections between the structure of a text and specific effects created by that structure. The use of the word "identify" in the MA standard may have led to the lower DOK rating; however, if the intent of standard is that students apply knowledge of dramatic structures to the interpretation of a specific drama, that would represent a DOK 3 task.	
DOK 3 and 4 in the Writing strand In the writing strand, grade 9-12 standards received more DOK 4 ratings than at any other grade level. (This was also the case in the MA 9-12 writing standards). However, the CCS writing standards include separate standards for composing/organizing an essay (W.9-10.1a, W11-12.1a, rated DOK 3) and for developing it with details, examples, etc. (W.9-10b, WHST.9-10b, W.11-12b, etc, rated DOK 4). The different levels assigned to different parts of the process appear somewhat inconsistent. In the MA writing standards, the overall process for each type of writing (including organization and development) is included in one	

External Reviewer Comment	WestEd Response
standard, typically rated at DOK 4. In this case, variations in ratings across the MA and CCS standards relate more to the different organization of content in each set than to actual differences in levels of complexity.	