High School Mathematics
Quality Instructional Materials Tool

Evidence Guides

Updated 6/28/2016

Guidance for Indicator 1ai: Focus and Coherence: Full Intent of the Mathematical Content
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).
Indicator 1a: The materials focus on the high school standards.

i. The materials attend to the full intent of the mathematical content contained in the high school standards for all students.

Indicator: What is the purpose of this indicator?

This indicator, along with the other indicators of Gateway 1, determines the shifts of focus and coherence. This indicator attends to the shift of focus by specifically examining those standards which do not have a plus (+) symbol (non-plus standards), and in the case of non-plus standards labeled as opportunities for modeling, this indicator only examines the content used in the modeling situation. This indicator attends to the shift of coherence by analyzing non-plus standards across a high school series to determine if the materials limit the aspects (see below) of non-plus standards that are addressed.

Evidence collection:

Finding the evidence:

- Review the HS CCSSM to become familiar with the non-plus standards and clusters.
- Review the tables of contents for both the student and teacher editions, any standards-alignment information in the materials, and any scope and sequence information provided by the publisher.
- Review chapters, lessons, activities, and assessments throughout the series to verify any standards-alignment information in the materials or given by the publishers.
- For each course in the series, note what aspects of non-plus standards are addressed through any instructional materials provided, including assessments. *Aspects* could include, but are not limited to:
    - types of mathematical objects (equation, expression, inequality, systems);
    - types of numbers;
    - families of functions/equations/inequalities (polynomial, exponential, logarithmic, rational, etc.);
    - tools used (paper and pencil, graphing calculators, software, etc.); and
    - actions required of students (calculate, graph, choose, explain, etc.).
- For the series, determine if **all** aspects of **all** non-plus standards are completely addressed through any instructional materials provided, including assessments.
- For the series, note entire non-plus standards that are not addressed or aspects of non-plus standards that are not addressed.
    - For example, if a series only offered opportunities with the cluster A-CED that involved mathematical objects from linear or quadratic families, then the series would not be attending to the full intent of the mathematical content contained in the cluster A-CED.
    - For example, if a series allows opportunities regarding A-REI.11 for students to work solely with linear functions and not the other function types listed, then the series would not be attending to the full intent of the standard.
    - For example, standard A-SSE.3 states "Choose and produce an equivalent form of an expression…" The series would not meet the full intent of the standard if students are required to produce equivalent forms without ever having a choice as to which equivalent form. That is, if students are always directed to produce a specific equivalent form (e.g. "Rewrite in factored form") and they are never allowed choice (e.g. "Rewrite in an equivalent form that reveals the zeros of the function."), then the series does not meet the full intent of the standard.

Team discussion:

Preparing for discussion—questions to ask yourself:

- Have all aspects of all non-plus standards been addressed through any instructional materials provided, including

Guidance for Indicator 1ai: Focus and Coherence: Full Intent of the Mathematical Content

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1a: The materials focus on the high school standards.

i. The materials attend to the full intent of the mathematical content contained in the high school standards for all students.

assessments, by the series?

- If yes, be sure to have evidence of where various aspects of different standards are addressed.
- If no, be sure to have evidence of which non-plus standards are omitted or which aspects of non-plus standards are not fully addressed.

- Do the materials address a non-plus standard only once or twice? If so, do they attend to the full intent of a standard? Is it a matter of "Students won't have enough time to get it" (indicator 1bii) or "the standard is not fully addressed?"

During discussion:

- Which non-plus standards have been addressed completely by the series?
- Which non-plus standards have been entirely omitted by the series, or which aspects of non-plus standards have not been fully addressed by the series?
- Are there any courses in the series that excel in addressing this indicator?
- Are there any courses in the series that do not address this indicator as well as the others?

Scoring:

4 points:

- All aspects of all non-plus standards are addressed by the instructional materials of the series.

AND/OR

- All non-plus standards are addressed with very few instances where all aspects are not addressed by the instructional materials of the series.

2 points:

- More than a few aspects of the non-plus standards have not been completely addressed by the instructional materials of the series.

AND/OR

- Some non-plus standards have been entirely omitted from the instructional materials of the series.

0 points:

- Many aspects of the non-plus standards have not been completely addressed by the instructional materials of the series.

AND/OR

- Many non-plus standards have been entirely omitted from the instructional materials of the series.

Guidance for Indicator 1aii: Focus and Coherence: Full Intent of the Modeling Process
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).
Indicator 1a: The materials focus on the high school standards.
ii. The materials attend to the full intent of the modeling process when applied to the modeling standards.

Indicator: What is the purpose of this indicator?
This indicator, along with the other indicators of Gateway 1, determines the shifts of focus and coherence. This indicator attends to the shift of focus by specifically examining the use of the modeling process with those standards that have a star symbol but do not have a plus (+) symbol (modeling standards). This indicator attends to the shift of coherence by analyzing the use of the modeling process with the modeling standards across a high school series to determine if the materials limit any of the aspects (see below) of the standards in which the modeling process is used.
Evidence collection:

Finding the evidence:

- Review the HS CCSSM description of modeling on pages 72-73.
- Review the progressions document "Modeling, High School."
- Review the "How to Identify Tasks that Engage Students in Mathematical Modeling NCTM-SIAM Committee on Modeling Across the Curriculum" document.
- For more information on the full intent of the modeling process, visit SIAM's modeling handbook.
- Review the HS CCSSM to become familiar with the modeling standards, clusters, domains, and conceptual categories (notation and wording).
- Review the tables of contents for both the student and teacher materials, any standards-alignment information in the materials, and any scope and sequence information provided by the publisher to gain a foundation of where and how often the modeling standards are addressed.
- For each course in the series, note where modeling standards are being addressed with the full intent of the modeling process through any instructional materials provided, including assessments.
- For each course in the series, note where aspects of modeling process are being addressed with the full attention to the modeling standards through any instructional materials provided, including assessments. *Aspects* could include, but are not limited to:
  - determination of important information;
  - variable identification;
  - approximation of quantities, shapes, behaviors, etc.;
  - formulation of models (e.g. geometric, graphical, tabular, algebraic, statistical representations);
  - analysis of relationships;
  - consideration of underlying assumptions;
  - interpretation of results in context of the situation;
  - validation of conclusions in light of the context;
  - revision of models as needed;
  - summarization of conclusions, assumptions, and methods; and
  - tools used (paper and pencil, graphing calculators, software, etc.).
- For the series, determine if all aspects of the modeling process are completely addressed with full attention to the modeling standards through any instructional materials provided, including assessments.
- For the series, reviewers should note instances of descriptive modeling.
- For the series, note aspects of modeling standards that are not addressed, especially in light of the modeling standards.
  - For example, if the materials regularly direct students to the choice of variables to be used, then the materials do not attend to the full intent of the modeling process.
  - For example, if the materials constantly give students the model to be used, then the materials do not attend to the

Guidance for Indicator 1aii: Focus and Coherence: Full Intent of the Modeling Process

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1a: The materials focus on the high school standards.

ii. The materials attend to the full intent of the modeling process when applied to the modeling standards.

full intent of the modeling process.

- For example, if the materials dictate what conclusions should be made, then the materials do not attend to the full intent of the modeling process.
- For example, if the materials do not allow for students to reflect on the appropriateness of results in light of the context and/or make adaptations to the model, then the materials do not attend to the full intent of the modeling process.

Team discussion:

Preparing for discussion—questions to ask yourself:

- Are individual aspects of the modeling process found in the materials? Do the materials focus on isolated aspects in order to build up to the fullness of the modeling process? If so, do the materials allow for multiple, culminating opportunities for students to employ the fullness of the modeling process?
  - If yes, document which aspects, or combination of aspects, of the modeling process are found. Provide evidence of how the materials allow students to grow in the modeling process.
  - If no, provide evidence for when different aspects of the modeling process are found in isolation.
- Has the full intent of the modeling process through any instructional materials provided, including assessments, by the series been addressed?
  - If yes, provide evidence of where the materials provide opportunities for students to employ the full modeling process.
  - If no, provide evidence of where the materials interrupt the modeling cycle. Specify which aspects of the modeling process are addressed and which aspects are neglected.
- Are there any modeling standards, clusters, domains, or conceptual categories that are addressed without consideration of the full intent of the modeling process?

During discussion:

- Which aspects of the modeling process have been addressed?
- Which modeling standards, clusters, domains, or conceptual categories, have not been addressed with the full intent of the modeling process by the series?
- Do the materials allow for growth and sophistication with modeling as specified in the progression documents?
- Are there any courses in the series that excel in addressing this indicator?
- Are there any courses in the series that do not address this indicator as well as the others?

Scoring:

2 points:

- All, or nearly all, of the modeling standards are addressed with the full intent of the modeling process by the instructional materials of the series.

OR

- All, or nearly all, of the modeling standards are addressed with intentional development of the modeling process leading to culminating experiences with the full intent of the modeling process.

1 point:

- All, or nearly all, of the modeling standards are addressed with various aspects of the modeling process present in isolation or combinations, yet opportunities for the full modeling process are absent throughout the instructional materials of the series.

AND/OR

- More than a few modeling standards have not been addressed with the full intent of the modeling process by the

Guidance for Indicator 1aii: Focus and Coherence: Full Intent of the Modeling Process
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).
Indicator 1a: The materials focus on the high school standards.
ii. The materials attend to the full intent of the modeling process when applied to the modeling standards.

instructional materials of the series.

AND/OR

- More than a few modeling standards have been entirely omitted from being addressed with the full intent of the modeling process by the instructional materials of the series.

0 points:

- Some aspects of the modeling process are altogether missing by the instructional materials of the series.

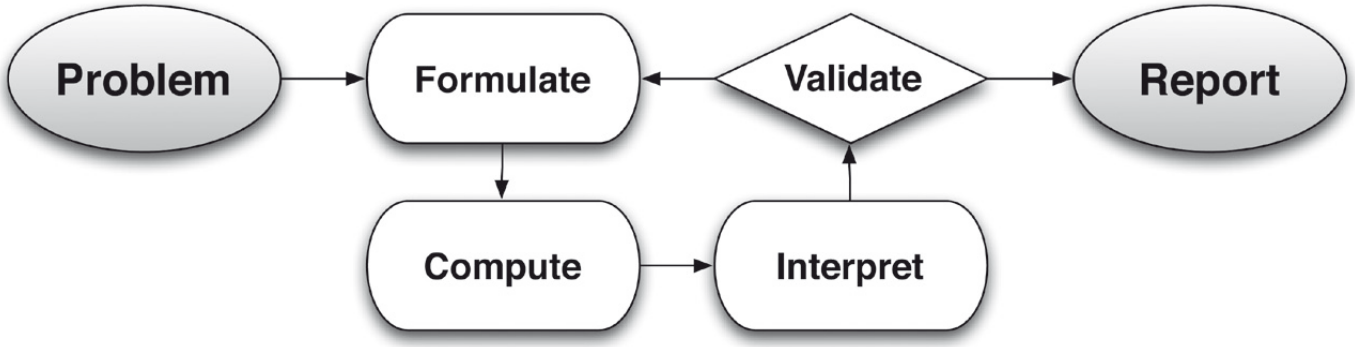
AND/OR

- Many of the modeling standards have not been completely addressed with the full intent of the modeling process by the instructional materials of the series.

AND/OR

- Many modeling standards have been entirely omitted from being addressed with the full intent of the modeling process by the instructional materials of the series.

Mathematical Modeling diagram from p. 72 of CCSSM:



Guidance for Indicator 1bi: Focus and Coherence: Widely Applicable as Prerequisites
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).
Indicator 1b: The materials provide students with opportunities to work with all high school standards and do not distract students with prerequisite or additional topics.

i. The materials, when used as designed, allow students to spend the majority of their time on the content from CCSSM widely applicable as prerequisites for a range of college majors, postsecondary programs, and careers.

Indicator: What is the purpose of this indicator?
This indicator, along with the other indicators of Gateway 1, determines the shifts of focus and coherence. This indicator attends to the shift of focus by specifically examining if a majority of the instructional materials are designed to engage students in content from the CCSSM widely applicable as prerequisites for a range of college majors, postsecondary programs, and careers. This indicator attends to the shift of coherence because much of the content from the CCSSM widely applicable as prerequisites for opportunities after high school not only spans multiple courses at the high school level but also incorporates the application of key takeaways from grades 6 through 8.
Evidence collection:

Finding the evidence:
● Review Table 1 on page 8 of High School Publishers' Criteria for the Common Core State Standards for Mathematics (Spring 2013) to become familiar with the content from the CCSSM widely applicable as prerequisites for a range of college majors, postsecondary programs, and careers (WAPs).
● Review the tables of contents for both the student and teacher editions, any standards-alignment information in the materials, and any scope and sequence information provided by the publisher to gain a foundation of where and how often the WAPs are addressed.
● Review chapters, lessons, activities, and assessments throughout the series to verify any standards-alignment information in the materials or given by the publishers.
● Review any information in the materials or given by the publishers that discuss the allocation of time to the WAPs.
● For each course in the series, note how often the WAPs are addressed through any instructional materials provided, including assessments.
● For each course in the series, document how often prerequisite or additional topics are included in a way that distracts students from the WAPs or all non-plus standards. When noting a distraction, reviewers should clearly describe how the prerequisite or additional topics are drawing students' learning away from the WAPs or all non-plus standards.
  o For example, in a first-year high school course, numerous activities, lessons, or chapters that merely review content standards from grades 6 through 8 could be distracting, prerequisite topics.
  o For example, a unit or chapter addressing the concept of limits and the skills associated with calculating limits could be a distracting additional topic.
  o For example, a unit on fractals or tessellations where the CCSSM are not intertwined would be considered an additional, distracting topic if the unit does not strengthen, support, or introduce CCSSM.
● For the series, analyze how often the WAPs are addressed by the instructional materials, including assessments. Analysis of how often the WAPs are addressed could include, but is not limited to:
  o amount of instructional materials, including assessment items, aligned to the WAPs;
  o amount of instructional materials, not including assessment items, aligned to the WAPs; and
  o amount of instructional materials that include distracting prerequisite or additional topics.

Team discussion:
Preparing for discussion – questions to ask yourself: ● In what ways might topics that align to standards from grades 6 through 8 not be considered distracting or prerequisite?

Guidance for Indicator 1bi: Focus and Coherence: Widely Applicable as Prerequisites

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1b: The materials provide students with opportunities to work with all high school standards and do not distract students with prerequisite or additional topics.

i. The materials, when used as designed, allow students to spend the majority of their time on the content from CCSSM widely applicable as prerequisites for a range of college majors, postsecondary programs, and careers.

- In what ways might topics that align to plus standards not be considered distracting or additional?
- Do a majority, at least 50%, of the materials in the series, when used as designed, engage students in the WAPs?

During discussion:

- Do a majority of the materials in the series, when used as designed, engage students in the WAPs?
  - If yes, be able to clearly explain what evidence has been collected and how the evidence justifies your conclusion.
  - If no, be able to clearly justify with concrete evidence how the materials fall short of having a majority. Concrete evidence could also include explaining how the materials could be supplemented so that the series does achieve a majority.
- Do the materials in the series, when used as designed, distract students with prerequisite or additional topics?

Scoring:

2 points:

- Evidence clearly describes how the materials for the series, when used as designed, allows students to spend the majority of their time, at least 50%, on the content from CCSSM widely applicable as prerequisites for a range of college majors, postsecondary programs, and careers.
- The series does not reach a majority of time on the WAPs, but the remainder of the materials does not address prerequisite or additional topics that are distracting.

1 point:

- The series does not reach a majority of time on the WAPs, and some of the remaining materials address prerequisite or additional topics that are distracting.

0 points:

- The series does not reach a majority of time on the WAPs, and much of the remaining materials address prerequisite or additional topics that are distracting.

Guidance for Indicator 1bii: Focus and Coherence: Fully learn each standard
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).
Indicator 1b: The materials provide students with opportunities to work with all high school standards and do not distract students with prerequisite or additional topics.
ii. The materials, when used as designed, allow students to fully learn each standard.

Indicator: What is the purpose of this indicator?
This indicator, along with the other indicators of Gateway 1, determines the shifts of focus and coherence. This indicator attends to the shift of focus by examining the non-plus standards. This indicator attends to the shift of coherence by determining if the materials of a series, when used as designed, enable all students to fully learn every aspect of each non-plus standard.
Evidence collection:
Finding the evidence: ● Review the HS CCSSM to become familiar with the non-plus standards and clusters. ● Review the tables of contents for both the student and teacher editions, any standards-alignment information in the materials, and any scope and sequence information provided by the publisher to gain a foundation of where and how often the non-plus standards are addressed. ● Review chapters, lessons, activities, and assessments throughout the series to verify any standards-alignment information in the materials or given by the publishers. ● For each course in the series, reviewers should note what aspects, how often those aspects, and in what ways those aspects of non-plus standards are addressed through any instructional materials provided, including assessments. *Aspects* could include, but are not limited to: o types of mathematical objects (equation, expression, inequality); o types of numbers; o families of mathematical objects (polynomial, exponential, logarithmic, rational, etc.); and o tools used (paper and pencil, graphing calculators, software, etc.). ● For the series, reviewers should document when students are provided with sufficient opportunities to fully learn a non-plus standard, paying careful attention to each aspect of the standard. o For example, if students are given numerous opportunities to decide if two figures are similar by using the definition of similarity in terms of transformations, articulate the transformations required to show the similarity, and explain the meaning of similarity- all verified with formative assessments and given further opportunities if needed- then the materials allow students to fully learn standard G-SRT.2. ● For the series, reviewers should document when aspects of non-plus standards are addressed on limited occasions through any instructional materials provided, including assessments. o For example, standard F-IF.2 requires students to use function notation. If the materials provide only one lesson where students see function notation, then the materials do not allow students to fully learn F-IF.2. o For example, if students are required to explain each step in solving a simple equation only a couple times within the series, then the materials do not allow students to fully learn A-REI.1. o For example, if students only calculate average rate of change of linear functions, then the materials do not allow students to fully learn F-IF.6. o For example, if materials provide few exercises for students to practice a fluency standard, then the materials do not allow students to fully learn the standard. ● For the series, reviewers should consider the variability of numbers, equation types, contexts, etc. that students will encounter while working with non-plus standards. o For example, if students solve systems of linear equations only with equations in slope-intercept form, then the materials do not allow students to fully learn A-REI.6. o For example, if students only factor quadratics with a leading coefficient of 1, then the materials do not allow

Guidance for Indicator 1bii: Focus and Coherence: Fully learn each standard

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1b: The materials provide students with opportunities to work with all high school standards and do not distract students with prerequisite or additional topics.

ii. The materials, when used as designed, allow students to fully learn each standard.

students to fully learn A-SSE.3 or A-APR.3.

- For the series, reviewers should note where the materials employ formative assessments to help students and teachers know if students are ready to move on or if students require more work on non-plus standards. When this occurs, document how teachers and student will know what to do in order to fully learn non-plus standards.

Team discussion:

Preparing for discussion – questions to ask yourself:

- In what ways might materials for a series, when used as designed, enable students to fully learn each non-plus standard?
- What might be some minimal characteristics of series that enable all students to fully learn each non-plus standard?
- If the series has not enabled all students to fully learn each non-plus standard, then what are the specific characteristics that the series is missing?
- Would it be reasonable to believe students would have mastered the standards by the end of the series?

During discussion:

- Do the materials, when used as designed, enable students to fully learn each non-plus standard?
  - If yes, be able to clearly describe the various ways in which the materials enable all students to learn all of the aspects of the non-plus standards.
  - If no, be able to clearly describe what characteristics the series is missing and how those characteristics would inhibit students from fully learning each non-plus standard.
- What were the ways materials for a series, when used as designed, might enable students to fully learn each non-plus standard?
- What were the minimal characteristics of the series that enable all students to fully learn each non-plus standard?

Scoring:

4 points:

- Evidence clearly describes how the materials for the series, when used as designed, could enable students to fully learn the non-plus standards.

2 points:

- The materials for the series, when used as designed, would not enable students to fully learn some of the non-plus standards.

0 points:

- The materials for the series, when used as designed, would not enable students to fully learn many of the non-plus standards.

Guidance for Indicator 1c: Focus and Coherence: Sophistication Appropriate to High School
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).
Indicator 1c: The materials require students to engage in mathematics at a level of sophistication appropriate to high school.

What is the purpose of this indicator? This indicator supports the shifts of Focus and Coherence. This indicator examines the materials to determine if students are given extensive opportunities to work with course-level problems and exercises appropriate to high school and relates new concepts to students' prior skills and knowledge.

Evidence Collection

- Review the units, chapters, lessons, and assessments in both student and teacher materials.
- Review the far right column in Table 1 on page 8 of High School Publishers' Criteria for the Common Core State Standards for Mathematics (Spring 2013) to become familiar with the application of key takeaways from Grades 6-8.
- Throughout the series, look for age appropriate mathematical contexts. Scenarios should consist of real-life and relevant situations appropriate for high school students. Consider also that student interests can change as they progress through high school. Document instances of contexts that are or are not appropriate for high school students.
  - For example, if later in the series the materials have situations dealing with driving cars, then the materials are mindful of age appropriate contexts.
- Throughout the series, consider the types of numbers being used. Look for opportunities where students perform operations on rational and irrational numbers. .
  - For example, if students regularly engage with operations on only whole numbers, then the materials do not require students to engage in mathematics at a level of sophistication appropriate to high school.
- Throughout the series, find evidence where students apply key takeaways from middle school.
  - Applying ratios and proportional relationships
  - Applying percentages and unit conversions, e.g., in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.)
  - Applying basic function concepts, e.g., by interpreting the features of a graph in the context of an applied problem
  - Applying concepts and skills of geometric measurement e.g., when analyzing a diagram or schematic
  - Applying concepts and skills of basic statistics and probability (see 6-8.SP)

  "For example, a problem in which students use reference data to determine the energy cost of different fuels might draw on proportional relationships, unit conversion, and other skills that were first introduced in the middle grades, yet still be a high-school level problem because of the strategic competence required" (p. 10 HS Publishers' Criteria).
- If the materials provide resources for differentiated learning, consider whether lower-performing students and/or special populations still have opportunities to engage in non-plus standards experiences appropriate for high school.

Guidance for Indicator 1c: Focus and Coherence: Sophistication Appropriate to High School

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1c: The materials require students to engage in mathematics at a level of sophistication appropriate to high school.

- For the problems provided for students needing intervention, would students who are using these problems still get to engage with the full depth of the non-plus standards?
  - For example, when the materials provide resources for students needing intervention, do the resources only replace the course-level content with content from multiple grades/courses below the current course, or do the materials provide resources that help students attain the course-level content?
- For the problems provided for students for extension, would students who are using these problems get to engage deeply with course-level non-plus standards?

Prepare for team discussion

Preparing for discussion – questions to ask yourself:

- What type of contexts regularly appear in the materials? How familiar would high school students be to these contexts? Would your students take interest in the contexts?
- During a typical problem set, how often are the numbers not whole numbers?
- Where can you see key takeaways from grades 6-8 being applied?

During discussion:

- How relevant are the contexts to typical high school students? Do the contexts throughout the series reflect changes in students as they mature through high school?
- Do students regularly practice operations on rational and irrational numbers? Do the tasks and exercises help students grow in their fluency with operations on rational numbers?
- Which of the key takeaway applications (from Table 1 of the Publishers' Criteria) are present in the series? Are the key takeaways being applied or are they merely absorbed into a procedure? Do the applications of key takeaways occur throughout the series or only within one course?

Scoring

2 points:

- The materials regularly use age appropriate contexts, use various types of real numbers, and provide opportunities for students to apply key takeaways from grades 6-8.

1 point:

- The materials regularly use age appropriate contexts and apply key takeaways from grades 6-8, yet do not vary the types of real numbers being used.

Guidance for Indicator 1c: Focus and Coherence: Sophistication Appropriate to High School

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1c: The materials require students to engage in mathematics at a level of sophistication appropriate to high school.

AND/OR

- The materials regularly use various types of real numbers and apply key takeaways from grades 6-8, yet do not use age appropriate contexts.

AND/OR

- The materials regularly use age appropriate contexts and vary the types of real numbers being used, yet some of the key takeaways from grades 6-8 are not applied.

0 points:

- The materials regularly do use age appropriate contexts or vary the types of real numbers being used and some of the key takeaways from grades 6-8 are not applied.

AND/OR

- The materials do not apply many of the key takeaways from grades 6-8.

Guidance for Indicator 1d: Focus: Coherence within and across courses

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1d: The materials are mathematically coherent and make meaningful connections in a single course and throughout the series, where appropriate and where required by the Standards.

What is the purpose of this indicator? This indicator supports the shifts of Focus and Coherence within and across courses throughout the series. This indicator examines the materials to determine if the materials are making meaningful connections to prior learning. Connections between and across multiple standards are made in meaningful ways to support understanding of multiple standards at the same time.

Evidence Collection

- Review the units, chapters and lessons in both student and teacher materials.
- Review the course and series scope and sequence.
- Review progression documents and standards as needed: CCSSM Progressions documents
- Look for evidence throughout the series where
  - students build understanding by linking together concepts within and across courses. Lesson objectives develop in a systematic way to meet the full depth of the high school standards. Connections to prior course and series learning is made explicit for teachers and students. Materials allow teachers to design lessons and units that carefully connect new content and skills to those learned earlier in the year or in previous years.
  - lessons and activities serve to connect two or more clusters in a domain, two or more domains in a conceptual category, or two or more conceptual categories.
- Examples of connections between conceptual categories:
  - Applying geometric concepts in modeling situations (G-MG) could allow students to create equations in one variable (A-CED.1) and use units as a way to understand problems and guide the solution (N-Q.3).
  - The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra.
  - Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.
- Examples of connections among standards, clusters, and domains:
  - The progression from congruence to area to similarity can be used to put each of these topics on a logical footing: The basic assumptions that congruent figures have the same area and that area is invariant under finite dissection bring coherence to the formulas for calculating areas of polygonal regions. These formulas, along with results such as the fact that triangles with equal bases and heights have the same area, can be used to prove properties of dilations and similarity. The triangle similarity criteria are necessary to develop the trigonometry of right triangles.
  - Study of linear associations in statistics and probability (S-ID.6c, 7) builds on students' understanding of linear relationships (cf. F-LE.1). Exploration of quadratic relationships in data on two measurement variables (S-ID.6) depends on understanding key features of a quadratic function and being able to interpret them in terms of a context (F-IF..4).
- Further examples can be found at PARCC HS Model Content Framework starting on page 73.

Guidance for Indicator 1d: Focus: Coherence within and across courses

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1d: The materials are mathematically coherent and make meaningful connections in a single course and throughout the series, where appropriate and where required by the Standards.

Prepare for team discussion
● How is coherence present both within and across courses in the series? ● How are the materials using previous course concepts to develop the full depth of the high school standards?
Scoring
2 points: ● Materials foster coherence through meaningful mathematical connections in a single course and throughout the series, where appropriate and where required by the Standards. **1 point:** ● Materials partially foster coherence through meaningful mathematical connections in a single course and throughout the series, where appropriate and where required by the Standards. **0 points:** ● Materials do not foster coherence through meaningful mathematical connections in a single course and throughout the series, where appropriate and where required by the Standards.

Guidance for Indicator 1e: Focus and Coherence: Connect to Grades 6-8 prior knowledge
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p.57 and 84 of CCSSM).
Indicator 1e. The materials explicitly identify and build on knowledge from Grades 6-8 to the High School Standards.

What is the purpose of this indicator? This indicator supports the shifts of Focus and Coherence, looking specifically at how the non-plus standards coherently connect to and build upon standards from grades 6-8. This indicator examines the materials to determine if references to standards from grades 6-8 are for the purpose of building on students' previous knowledge and allowing students to make connections to new learning.

Evidence Collection:

Finding the Evidence:

- Review the units, chapters and lessons in both student and teacher materials.
  - Review additional documents provided by the publisher, such as scope and sequence materials.
  - Review criterion 3c on page 11 of the High School Publishers' Criteria for the Common Core State Standards for Mathematics (Spring 2013).
- Review progression documents and standards as needed: http://ime.math.arizona.edu/progressions/.
- Cluster headings in the Standards sometimes signal key moments where reorganizing and extending previous knowledge is important in order to accommodate new knowledge. At other times, the cluster headings signal key connections to grades 6-8. Look for and be mindful of such clusters. Examples include but are not limited to:
  - N-RN.A "Extend the properties of exponents to rational exponents."
  - A-REI.C "Solve systems of equations" extends 8.EE.8 "Analyze and solve pairs of simultaneous linear equations."
  - F-IF.A "Understand the concept of a function and use function notation" connects naturally with 8.F.A "Define, evaluate, and compare functions."
  - G-.SRT.A "Understand similarity in terms of similarity transformations" builds on the work of 8.G.A "Understand congruence and similarity…"
  - G-GMD.A "Explain volume formulas and use them to solve problems" coheres with 8.G.9 "Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems," 7.G.6 "Solve real-world and mathematical problems involving area, volume…," and 6.G.A "Solve real-world and mathematical problems involving area, surface area, and volume."
  - G-CO.A "Prove geometric theorems" extends the work of 7.G.5 "Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure."
  - S-ID.A "Summarize, represent, and interpret data on a single count or measurement variable" relates well to 6.SP.B "Summarize and describe distributions."
- Throughout the series, look for:
  - grades 6-8 standards that are clearly identified as such in both the teacher and student materials.
  - connections between 6-8 and high school concepts that are clearly articulated for teachers but

Guidance for Indicator 1e: Focus and Coherence: Connect to Grades 6-8 prior knowledge
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p.57 and 84 of CCSSM).
Indicator 1e. The materials explicitly identify and build on knowledge from Grades 6-8 to the High School Standards.

may not be explicitly named for students.
  - the design of the materials to focus on the connections to mathematics of the previous grades as referenced in the Progression documents.
- Determine if standards from grades 6-8 are addressed in an appropriate way for high school; the materials are not just a "re-teaching" of 6-8 standards.
- Examples of grade 6-8 to high school coherence could include, but are not limited to:
  - Students work extensively with ratios and proportions in grades 6-8. In high school students work with trigonometric ratios.
  - Students work with transformations in order to understand similarity and congruence. In high school, students extend their work with transformations in similarity and congruence proofs.
  - Students in middle grades worked with measurement units, including units obtained by multiplying and dividing quantities. In high school, students apply these skills in a more sophisticated fashion to solve problems in which reasoning about units adds insight (N.Q).
  - Students in grade 8 extended their prior understanding of proportional relationships to begin working with functions with an emphasis on linear functions. In high school, students will master linear and quadratic functions. Students encounter other kinds of functions to ensure that general principles are perceived in generality, as well as to enrich the range of quantitative relationships considered in problems.
  - As students acquire mathematical tools from their study of algebra and functions, they apply these tools in statistical contexts (e.g., S.ID.B.6). In a modeling context, they might informally fit a quadratic function to a set of data, graphing the data and the model function on the same coordinate axes. They also draw on skills they first learned in middle school to apply basic statistics and simple probability in a modeling context. For example, they might estimate a measure of center or variation and use it as an input for a rough calculation.
  - In grades K-8, students worked with a variety of geometric measures (length, area, volume, angle, surface area, and circumference). In high school, students apply these component skills in tandem with others in the course of modeling tasks and other substantial applications (MP.4).
  - In grade 8, students learned the Pythagorean theorem and used it to determine distances in a coordinate system (8.G.B.6–8). Early in high school, students prove theorems using coordinates (G.GPE.B.4–7). Later in high school, students build on their understanding of distance in coordinate systems and draw on their growing command of algebra to connect equations and graphs of conic sections (e.g., G.GPE.A.1).
- Further examples can be found at PARCC HS Model Content Framework starting on page 44.

Prepare for team discussion:

Guidance for Indicator 1e: Focus and Coherence: Connect to Grades 6-8 prior knowledge
Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p.57 and 84 of CCSSM).
Indicator 1e. The materials explicitly identify and build on knowledge from Grades 6-8 to the High School Standards.

Preparing for discussion – questions to ask yourself:
- Are the grade 6-8 standards clearly identified?
- How are the materials using standards from grades 6 through 8 to develop understanding of high school content?
- Are the grades 6-8 connections a purposeful extension or reinforcement of course-level standards, or do the connections unduly interfere with the work of the course/ series?

During discussion:
- Do the materials make explicit mention of content from grades 6-8 for both teachers and students?
- Do the materials clearly extend the work from grades 6-8?

Scoring:

2 points:
- Content from 6-8 grades is clearly identified and supports the progressions of the high school standards. Connections between grades 6-8 and high school concepts are clearly articulated and allow students to extend their previous knowledge.

1 point:
- Content from 6-8 grades is present but not clearly identified and/or does not fully support the progressions of the high school standards. Connections between grades 6-8 and high school concepts are partially articulated.

0 points:
- Content from 6-8 grades is not clearly identified and does not support the progressions of the high school standards. Connections between grades 6-8 and high school concepts are not clearly articulated.

Guidance for Indicator 1f: Focus: Plus Standards *(This indicator is not scored.)*

Criterion: The instructional materials are coherent and consistent with "the high school standards that specify the mathematics which all students should study in order to be college and career ready" (p. 57 of CCSSM).

Indicator 1f. The plus (+) standards, when included, are explicitly identified and coherently support the mathematics which all students should study in order to be college and career ready.

What is the purpose of this indicator? "The high school standards specify the mathematics that all students should study in order to be college and career ready. Additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics is indicated by (+)" (CCSSM, p. 57). The purpose of this indicator is to identify the plus standards in the materials, analyze their coherence with non-plus standards within the series, and determine if the materials attend to the full depth of the plus standards when they are addressed.

Evidence Collection

Finding the Evidence:

- Review the units, chapters, and lessons in both student and teacher materials.
- Review additional documents provided by the publisher, such as scope and sequence materials.
- Determine which of the plus standards are addressed within the materials.
- Note if the plus standards are clearly identified as such in both student and teacher materials.
- Find evidence where the materials reach the full depth of the plus standards.
- Look to find connections between non-plus and plus standards. They should be clearly articulated for teachers but may not be explicitly named for students.
- Look to find connections between plus standards and advanced courses, such as calculus, advanced statistics, or discrete mathematics. These connections should be clearly articulated for teachers but may not be explicitly named for students.
- Determine if work with the plus standards deters from the work with the non-plus standards.
- If the plus standards are separated from non-plus standards in a course within the series, then the evidence should note if this separation is inappropriate or distracting.

Prepare for team discussion

Questions to keep in mind before and during discussion:

- How are the materials incorporating the plus standards in order to prepare students sufficiently for future advanced level mathematics courses?
- How does the treatment of a plus standard enhance the work of the lesson/unit/course?
- If a teacher omits a plus standard in the materials, how will the flow of the lesson/unit change? Will omitting a plus standard diminish student opportunity for learning other standards in the lesson/unit?
- In what ways do the plus standards serve as purposeful extensions of course-level standards?
- Do the plus standards unduly interfere with the work of the course?

Guidance for Indicator 2a: Rigor and Balance: Conceptual Understanding

Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.

Indicator 2a: The materials support the intentional development of students' conceptual understanding of key mathematical concepts, especially where called for in specific content standards or clusters.

What is the purpose of this indicator? This indicator, along with 2b, 2c and 2d, determines the shift of rigor. In order to obtain rigor, there needs to be a balance among conceptual understanding, procedural skill and fluency, and application. Conceptual understanding of key concepts will allow students to be able to access concepts from a number of perspectives in order to see Mathematics as more than a set of algorithmic procedures.

Evidence collection:

- Review criterion 2a on page 9 of the High School Publishers' Criteria for the Common Core State Standards for Mathematics (Spring 2013).
- Select cluster(s) or standard(s) that specifically relate to conceptual understanding. Be aware that some cluster(s) and standard(s) lend themselves to more than one aspect of rigor. In such cases, look for evidence of conceptual understanding. Examples include, but are not limited to:
  - N.RN.A.1 – Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
  - A.APR.B – Understand the relationship between zeros and factors of polynomials.
  - A.REI.A – Understand solving equations as a process of reasoning and explain the reasoning.
  - A.REI.D.10 – Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
  - A.REI.D.11 – Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★
  - F.IF.A – Understand the concept of a function and use function notation
  - F.LE.A.1 – Distinguish between situations that can be modeled with linear functions and with exponential functions.
  - G.SRT.A.2 – Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
  - G.SRT.C.6 – Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
  - S.ID.C.7 – Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
- Look for the evidence in lessons, review lessons, chapter and/or unit assessments, homework assignments, concept checks (if offered), hands-on activities (if offered), investigations (if offered), simple tasks and problems, and other areas that appear to be conceptual in nature.
- Evaluate whether aspects of rigor present in lessons/chapters/units align to the aspect of rigor in the targeted standard(s).

Guidance for Indicator 2a: Rigor and Balance: Conceptual Understanding

Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.

Indicator 2a: The materials support the intentional development of students' conceptual understanding of key mathematical concepts, especially where called for in specific content standards or clusters.

- Determine if the materials feature high-quality conceptual problems and conceptual discussion questions, including brief conceptual problems with low computational difficulty.
- Determine if the materials offer opportunities for students to engage with concrete and semi-concrete representations, as well as verbalization and writing, when developing conceptual understanding.
- Determine if the materials feature opportunities to identify correspondences across mathematical representations in order to further develop conceptual understanding.
  - Example: Through the series, the materials do not just offer opportunities for students to engage with different families of functions through equations, tables, graphs, and contexts, but the materials offer opportunities for students to make connections between the different representations for the various families of functions.

Team discussion:

Preparing for discussion—questions to ask yourself:

- What does conceptual understanding look like in materials?
- What are various ways that conceptual understanding is seen in these instructional materials?

During discussion:

- What specific evidence illustrates attention to conceptual understanding?
- How do the materials in the series enable students to reason in settings involving the careful application of concept definitions, relations, or representations?
- Where does the conceptual understanding being asked for in the materials truly lead to a deeper understanding and ability to communicate or demonstrate that understanding?
- Do the materials attend to conceptual understanding throughout the series?

Scoring:

2 points:

- The cluster(s) or standard(s) that specifically relate to conceptual understandings are addressed. The materials thoroughly develop conceptual understandings across the series.

1 point:

- The lessons/ units have missed some opportunities to develop conceptual understandings.

AND/OR

- The materials include whole-group opportunities for exploration or demonstration of conceptual understandings, but students aren't given opportunities to independently develop and demonstrate conceptual understandings.

0 points:

- The materials have missed many opportunities to develop conceptual understanding.

Guidance for Indicator 2b: Rigor and Balance: Procedural Skill and Fluency
Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.
Indicator 2b: The materials provide intentional opportunities for students to develop procedural skills and fluencies, especially where called for in specific content standards or clusters.

What is the purpose of this indicator? This indicator, along with 2a, 2c, and 2d, determines the shift of rigor. In order to obtain rigor, there needs to be a balance among conceptual understanding, procedural skill and fluency, and application. Procedural skill and fluency is the call for efficiency and accuracy in calculations. Students need to practice core skills in order to have access to more complex concepts and procedures.

Evidence collection:

- Review criterion 2b on page 9 of the High School Publishers' Criteria for the Common Core State Standards for Mathematics (Spring 2013).
- Select cluster(s) or standard(s) that specifically relate to procedural skill and fluency. Be aware that some cluster(s) and standard(s) lend themselves to more than one aspect of rigor. In such cases, look for evidence of procedural skill and fluency. Examples include, but are not limited to:
  - A.SSE.A.1b – Interpret complicated expressions by viewing one or more of their parts as a single entity.
  - A.SSE.A.2 – Use the structure of an expression to identify ways to rewrite it.
  - A.APR.A.1 – Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.
  - A.APR.D.6 – Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.
  - F.BF.B.3 – Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
  - G.GPE.B.4 – Use coordinates to prove simple geometric theorems algebraically.
  - G.GPE.B.5 – Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
  - G.GPE.B.7 – Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★
  - G.CO.A.1 – Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

Guidance for Indicator 2b: Rigor and Balance: Procedural Skill and Fluency
Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.
Indicator 2b: The materials provide intentional opportunities for students to develop procedural skills and fluencies, especially where called for in specific content standards or clusters.

- G.SRT.B.5 – Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

- Look for the evidence in lessons, review lessons, routine daily checks, chapter and unit assessments, homework assignments, and other sections demonstrating connections between the development of procedural skill and fluency with conceptual understanding.
- Evaluate whether aspects of rigor present in lessons/chapters/units align to the aspect of rigor in the targeted standard(s).
- Look for purely procedural problems and exercises that include cases in which opportunistic strategies are valuable, as well as generic cases that require efficient algorithms.
  - Example of problems when opportunistic strategies are valuable: solving the system $x + y = 1$, $2x + 2y = 3$
  - Example of problems when generic cases require efficient algorithms: the system $2x + 3y = -(1/2)x + 6 - y$, $2x + 5 = y + 2$

Team discussion:

Preparing for discussion—questions to ask yourself:
- Procedural fluency extends students' computational fluency. How would this look in the materials?

During discussion:
- What does fluency mean at the high school level?
- Do the materials adequately prepare a student for fluency?
- How do program materials build procedural skills and fluencies over a course? Over a series?

Scoring:

2 points:
- The cluster(s) or standard(s) that specifically relate to procedural skills and fluencies are addressed. The materials thoroughly develop procedural skills and fluencies across the series.

1 point:
- The lessons/ units have missed some opportunities to develop procedural skills and fluencies. Examples of missed opportunities should be provided.

AND/OR

- The materials include whole-group opportunities for exploration or demonstration of procedural skills and fluencies, but students aren't given opportunities to independently develop and demonstrate procedural skills and fluencies.

0 points:
- The materials have missed many opportunities to develop procedural skills and fluencies. Examples of missed opportunities should be provided.

Guidance for Indicator 2c: Rigor and Balance: Applications

Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.

Indicator 2c: The materials support the intentional development of students' ability to utilize mathematical concepts and skills in engaging applications, especially where called for in specific content standards or clusters.

What is the purpose of this indicator? This indicator, along with 2a, 2b, and 2d, determines the shift of rigor. In order to obtain rigor, there needs to be a balance among conceptual understanding, procedural skill and fluency, and application. To engage in application, students need opportunities to apply mathematical knowledge and skills in a real-world context. Materials should promote problem-solving activities that call for using Mathematics flexibly in routine and non-routine contexts.

Evidence collection:

- Review criterion 2c on page 10 of the High School Publishers' Criteria for the Common Core State Standards for Mathematics (Spring 2013).
- Select cluster(s) or standard(s) that specifically relate to application. Be aware that some cluster(s) and standard(s) lend themselves to more than one aspect of rigor. In such cases, look for evidence of application. Examples include, but are not limited to:
  - N.Q.A – Reason quantitatively and use units to solve problems.
  - A.SSE.B.3 – Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★
  - A.REI.D.11 – Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★
  - F.IF.B – Interpret functions that arise in applications in terms of the context.
  - F.IF.C.7 – Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★
  - F.BF.A.1 – Write a function that describes a relationship between two quantities.★
  - G.SRT.C.8 – Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★
  - S.ID.A.2 – Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
  - S.IC.A.1 – Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- Determine if there is a variety of single and multi-step contextual problems, including non-routine problems, that develop the Mathematics of the non-plus standards.
- Look for evidence where application problems particularly stress applying the content of the non-plus standards.
- Consider if applications build over the series.
- Determine if the materials include an ample number of contextual problems that develop the mathematics of the course.
- Note when the materials:

Guidance for Indicator 2c: Rigor and Balance: Applications

Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.

Indicator 2c: The materials support the intentional development of students' ability to utilize mathematical concepts and skills in engaging applications, especially where called for in specific content standards or clusters.

- afford opportunities for students to engage in and practice problem solving,
- allow or require students to make their own assumptions or simplifications in order to model a situation mathematically, and
- provide problems to be worked individually as well as classroom activities centered on application scenarios.

Team discussion:

Preparing for discussion—questions to ask yourself:

- What are the non-routine problems?
- How do the materials encourage students to apply mathematics to contextual situations?
- Where do the materials provide opportunities for students to engage in problem solving?
- Do the materials require greater levels of problem solving sophistication as the series progresses?

During discussion:

- What specific evidence illustrates attention to applications?
- How do the materials throughout the series enable students to solve non-routine problems and/or apply mathematics to contextual situations?
- Do the materials frequently engage students in problem solving?

Scoring:

2 points:

- The cluster(s) or standard(s) that specifically relate to applications are addressed. The materials include numerous applications across the series.

1 point:

- The lessons/ units have missed some opportunities to include applications. Examples of missed opportunities should be provided.

AND/OR

- The materials include whole-group opportunities to engage in applications, but students aren't given opportunities to independently engage in application settings.

0 points:

- The materials have missed many opportunities to include applications. Examples of missed opportunities should be provided.

Guidance for Indicator 2d: Balance

Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.

Indicator 2d: The three aspects of rigor are not always treated together and are not always treated separately. The three aspects are balanced with respect to the standards being addressed.

What is the purpose of this indicator? This indicator, along with 2a, 2b, and 2c, determines the shift of rigor. In order to be considered rigorous, as defined by CCSSM instructional shifts, program materials must include a balance of conceptual understanding, procedural skill and fluency, and application. This balance should be evident in all aspects of the high school series and in each course to support students as they develop deep mathematical understanding.

Evidence collection:

- Review lessons, chapter/unit assessments, and homework assignments.
- Look for individual lessons/topics, as well as complete units, that include more than one aspect of rigor.
- Look for a balance of all three aspects of rigor, considering the program materials as a whole and as individual units of study.
  - Consider whether the content/topic is being introduced to students for the first time or is an extension of previous learning.
  - Consider whether materials in the series simultaneously develop conceptual understandings and procedural skills and fluencies.
  - Be mindful of where students are encouraged to use multiple representations and written explanations to support their work in application problems.
- Look for evidence when multiple aspects of rigor are together in the materials. "Conceptual understanding and fluency go hand in hand; fluency can be practiced in the context of applications; and brief applications can build conceptual understanding." -- Publishers' Criteria p. 10.
- For this indicator, consider the intent of the series to balance the three aspects of rigor, not the quality of the materials—indicators 2a-c focus on the quality of rigor within the materials.
- Determine if the materials consistently balance the three aspects of rigor while allowing for dedicated focus on each individual aspect.
- Determine if the materials neglect to attend to all aspects of rigor specified by the standards or clusters. Examples may include, but are not limited to:
  - With A-APR.1, the materials fully develop students adding, subtracting, and multiplying polynomials, but the materials do not engage students in understanding that polynomials form a system closed under addition, subtraction, and multiplication.
  - With A-REI.11, the materials have students find solutions to systems of equations through applications, but the materials do not have students develop conceptual understanding by explaining why the x-coordinates of the points where two graphs intersect are the solutions to setting the two equations equal to each other.

Team discussion:

Preparing for discussion—Questions to ask yourself:

- Where do the materials call for specific aspects of rigor?
- Throughout the series, does the balance of rigor change?
- Is one aspect of rigor more prominent in a course? In the materials?
- Where are multiple aspects of rigor found in each course?

Guidance for Indicator 2d: Balance

Criterion: The instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by giving appropriate attention to: developing students' conceptual understanding; procedural skill and fluency; and engaging applications.

Indicator 2d: The three aspects of rigor are not always treated together and are not always treated separately. The three aspects are balanced with respect to the standards being addressed.

During discussion:

- Do the materials intentionally focus on one aspect of rigor over the others in specific units? If so, do the materials work to maintain balance throughout the course?
- Do the materials focus on one aspect of rigor over the others in a single course?
- Do the materials neglect one aspect of rigor throughout a course?

Scoring:

2 points:

- Clear evidence of all three aspects of rigor are present throughout the series.

AND

- Materials balance all three aspects of rigor throughout units, courses, and across the series.

1 point:

- All three aspects of rigor are present in the materials of the series, yet balance amongst the three aspects is not present within a course or throughout the series..

0 points:

- No or minimal evidence is present of one of the three aspects of rigor throughout the series.

AND/OR

- Program materials have an overwhelming emphasis on one aspect of rigor, with little attention paid to the other aspects.

Guidance for Indicator 2e: Practice-Content Connections: Overarching Habits of Mind (MP1 and MP6)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2e: The materials support the intentional development of overarching, mathematical practices (MPs 1 and 6), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

What is the purpose of this indicator? This indicator, along with 2f, 2g, and 2h, determines the adherence to the Standards for Mathematical Practice. This indicator specifically looks at MPs 1 and 6 which address overarching, mathematical practices. First, this indicator verifies the Standards for Mathematical Practice are identified in the curricular materials. Second, it assesses whether the provided opportunities for student engagement with the math practices are a) used to enrich the mathematics content of the courses and b) fully developed across the series to meet the level of expectation of high school mathematical study.

Evidence Collection:

- Look at all lessons in teacher's manuals and in the student materials to ensure that the Standards for Mathematical Practice MP1 and MP6 are clearly identified throughout the courses.
- Look in unit overviews, scope and sequence charts, and/or other instructional guides to ensure that the Standards for Mathematical Practice are clearly identified throughout the courses of the series.
- Record any instances where MP1 and MP6 are over or under-identified in the curricular materials (e.g. a lesson is marked as aligned to a standard when only a small part addresses that, or vice versa).
- Ensure that both MP1 and MP6 are identified regularly and appropriately throughout each set of course materials in the series.

To check that MP1 and MP6 are being used to enrich the mathematics content and are fully developed to meet the level of expectation for high school:

- Thoroughly reexamine the practice standards MP1 and MP6. This compilation document and this Mathematical Practice Message might be helpful.
- Look at lessons, assessments and any examples/descriptions of anticipated student work. Look for places that require students to:
  - analyze and make sense of problems
  - find solution pathways
  - engage in problem solving
  - persevere in solving problems
  - monitor and evaluate their progress in solving problems
  - determine if their answers make sense
  - reflect on and revise their problem solving strategies
  - check their answers with different methods
  - use accurate, precise mathematical language (vocabulary and conventions)

- specify units of measure
- state the meaning of symbols

- Look at teacher directions and how teachers are guided to carry out the lessons. In particular, look for places where teachers are expected to:
  - pose rich problems
  - provide time for students to make sense of problems
  - provide opportunities for students to engage in problem solving
  - ask clarifying and probing questions
  - ensure students know and use clear definitions
  - model accurate, precise mathematical language (vocabulary and conventions)
- Check to see if any materials focus only on the Standards for Mathematical Practice (therefore, they are not being used to enrich the mathematical content). Record any instances where the Standards for Mathematical Practice are not being used to enrich the mathematics content.
- Verify that student engagement with the lessons and assessments would require deep use of the Standards for Mathematical Practice so that across the series students will develop their use of the MPs to the full intent of the standards.
- Record any instances where a MP was identified, however, engagement with the lesson or task would only require minimal or trivial use of the indicated MP.
- If you found that MPs are only located in a specific part of the teacher's manuals (e.g. the teacher-led portion of the lesson), you will need to look at other sections (e.g. independent work, homework, assessments) to ensure that the MPs are intentionally used to enrich the content. **Look not only where the MPs are identified in the material, but also look at places where they are not identifie**d.

Prepare for team discussion:

Preparing for discussion—questions to ask yourself:

- Where, and how often, are MP1 and MP6 each present in the materials? When do the MPs, when used by the students, enrich the mathematical content in an authentic way and ensure a progression through high school courses to the full intent of the MPs?
- Do the materials provide guidance to teachers in order to develop students' skills identified in MP1 and MP6?

During discussion:

- Are MP1 and MP6 clearly identified throughout the materials?
- Are MP1 and MP6 used to enrich the mathematical content at hand?
- Do expectations for students increase throughout courses and the series?

Scoring:

Guidance for Indicator 2e: Practice-Content Connections: Overarching Habits of Mind (MP1 and MP6)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2e: The materials support the intentional development of overarching, mathematical practices (MPs 1 and 6), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

2 points:

- The majority of the time MP1 and MP6 are used to enrich the mathematical content.

AND

- Across the series, there are increasing expectations for MP1 and MP6 to the full intent of the standards.

AND

- MP1 and MP6 are clearly identified throughout the materials, with few or no exceptions.

1 point:

- There are a few instances where the MP1 and MP6 do not enrich the content.

AND/OR

- The materials do not develop both MP1 and MP6 to the full intent of the standards

AND/OR

- MP1 and MP6 are attended to fully but are not identified.

AND/OR

- MP1 and MP6 are identified, but there are many examples of over- or under-identification.

0 points:

- MP1 and MP6 rarely occur within the materials.

AND/OR

- MP1 and MP6 are not identified ,and the materials do not develop either MP1 or MP6 to the full intent of the standards

AND/OR

- MP1 and MP6 are not used to enrich the content.

AND/OR

- MP1 and MP6 are regularly treated as separate from the mathematical content.

Additional notes

Here are the possible outcomes:

Identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	2
	Not used to enrich the math content and provide progression to the full intent of the standards	1
Fail to identify all	Used to enrich the math content and provides progression to the full intent of the standards	1

Guidance for Indicator 2e: Practice-Content Connections: Overarching Habits of Mind (MP1 and MP6)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2e: The materials support the intentional development of overarching, mathematical practices (MPs 1 and 6), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

MPs	Not used to enrich the math content and provide progression to the full intent of the standards	0
Identify MPs accurately for only one of the standards studied in this indicator	Used to enrich the math content and provides progression to the full intent of the standards	1
	Not used to enrich the math content and provide a progression to the full intent of the standards	0

Guidance for Indicator 2f: Practice-Content Connections: Reasoning and Explaining (MP2 and MP3)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2f: The materials support the intentional development of reasoning and explaining (MPs 2 and 3), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

What is the purpose of this indicator? This indicator, along with 2e, 2g, and 2h, determines the adherence to the Standards for Mathematical Practice. This indicator specifically looks at MPs 2 and 3 which address practices of reasoning and explaining. First, this indicator verifies the Standards for Mathematical Practice are identified in the curricular materials. Second, it assesses whether the provided opportunities for student engagement with the math practices are a) used to enrich the mathematics content of the courses and b) fully developed across the series to meet the level of expectation of high school mathematical study.

Evidence Collection:

- Look at all lessons in teacher's manuals and in the student materials to ensure that the Standards for Mathematical Practice MP2 and MP3 are clearly identified throughout the courses.
- Look in unit overviews, scope and sequence charts, and/or other instructional guides to ensure that the Standards for Mathematical Practice are clearly identified throughout the courses of the series.
- Record any instances where MP2 and MP3 are over or under-identified in the curricular materials (e.g. a lesson is marked as aligned to a standard when only a small part addresses that, or vice versa).
- Ensure that both MP2 and MP3 are identified regularly and appropriately throughout each set of course materials in the series.

To check that MP2 and MP3 are being used to enrich the mathematics content and are fully developed to meet the level of expectation for high school:

- Thoroughly reexamine the practice standards MP2 and MP3. This compilation document and this Mathematical Practice Message might be helpful.
- Look at lessons, assessments and any examples/descriptions of anticipated student work. Look for places that require students to:
  - represent situations symbolically
  - consider units involved in a problem and attend to the meaning of quantities
  - understand the relationships between problem scenarios and mathematical representations
  - explain/discuss what the numbers or symbols in an expression/equation represent
  - determine if their answers make sense
  - explain/justify their reasoning
  - create their own conjectures
  - listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments
- Look at teacher directions and how teachers are guided to carry out the lessons. In particular, look

Guidance for Indicator 2f: Practice-Content Connections: Reasoning and Explaining (MP2 and MP3)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2f: The materials support the intentional development of reasoning and explaining (MPs 2 and 3), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

for places where teachers are expected to:
  - ensure students make connections between mathematical representations and scenarios
  - provide opportunities for students to engage in active mathematical discourse
  - ask clarifying and probing questions
- Check to see if any materials focus only on the Standards for Mathematical Practice (therefore, they are not being used to enrich the mathematical content). Record any instances where the Standards for Mathematical Practice are not being used to enrich the mathematics content.
- Verify that student engagement with the lessons and assessments would require deep use of the Standards for Mathematical Practice so that across the series students will develop their use of the MPs to the full intent of the standards.
- Record any instances where an MP was identified, however, engagement with the lesson or task would only require minimal or trivial use of the indicated MP.
- If you found that MPs are only located in a specific part of the teacher's manuals (e.g. the teacher-led portion of the lesson), you will need to look at other sections (e.g. independent work, homework, assessments) to ensure that the MPs are intentionally used to enrich the content. **Look not only where the MPs are identified in the materials, but also look at places where they are not identified.** It may help to search for keywords like conjecture, explain, justify, discuss, analyze, ask, and clarify.

Prepare for team discussion:

Preparing for discussion—questions to ask yourself:
- Where, and how often, are MP2 and MP3 each present in the materials?.
- When do the MPs, when used by the students, enrich the mathematical content in an authentic way and ensure a progression through high school courses to the full intent of the MPs.
- Do the materials provide guidance to teachers in order to develop students' skills identified in MP2 and MP3?

During discussion:
- Are MP2 and MP3 clearly identified throughout the materials?
- Are MP2 and MP3 used to enrich the mathematical content at hand?
- Do expectations for students increase throughout courses and the series?

Scoring:

2 points:
- The majority of the time MP2 and MP3 are used to enrich the mathematical content.

AND

Guidance for Indicator 2f: Practice-Content Connections: Reasoning and Explaining (MP2 and MP3)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2f: The materials support the intentional development of reasoning and explaining (MPs 2 and 3), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

- Across the series, there are increasing expectations for MP2 and MP3 to the full intent of the standards.

AND

- MP2 and MP3 are clearly identified throughout the materials, with few or no exceptions.

1 point:

- There are a few instances where the MP2 and MP3 do not enrich the content.

AND/OR

- The materials do not develop both MP2 and MP3 to the full intent of the standards.

AND/OR

- MP2 and MP3 are attended to fully but are not identified.

AND/OR

- MP2 and MP3 are identified, but there are many examples of over- or under-identification.

0 points:

- MP2 and MP3 rarely occur within the materials.

AND/OR

- MP2 and MP3 are not identified, and the materials do not develop either MP2 or MP3 to the full intent of the standards.

AND/OR

- MP2 and MP3 are not used to enrich the content.

AND/OR

- MP2 and MP3 are regularly treated as separate from the mathematics content.

.

Additional notes

Here are the possible outcomes:

Identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	2
	Not used to enrich the math content and provide progression to the full intent of the standards	1
Fail to identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	1

Guidance for Indicator 2f: Practice-Content Connections: Reasoning and Explaining (MP2 and MP3)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2f: The materials support the intentional development of reasoning and explaining (MPs 2 and 3), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

	Not used to enrich the math content and provide progression to the full intent of the standards	0
Identify MPs accurately for only one of the standards studied in this indicator	Used to enrich the math content and provides progression to the full intent of the standards	1
	Not used to enrich the math content and provide a progression to the full intent of the standards	0

Guidance for Indicator 2g: Practice-Content Connections: Modeling and Using Tools (MP4 and MP5)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2g: The materials support the intentional development of modeling and using tools (MPs 4 and 5), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

What is the purpose of this indicator? This indicator, along with 2e, 2f, and 2h, determines the adherence to the Standards for Mathematical Practice. This indicator specifically looks at MPs 4 and 5 which address mathematical modeling and use of appropriate tools. First, this indicator verifies the Standards for Mathematical Practice are identified in the curricular materials. Second, it assesses whether the provided opportunities for student engagement with the math practices are a) used to enrich the mathematics content of the courses and b) fully developed across the series to meet the level of expectation of high school mathematical study.

Evidence Collection:

- Look at all lessons in teacher's manuals and in the student materials to ensure that the Standards for Mathematical Practice MP4 and MP5 are clearly identified throughout the courses.
- Look in unit overviews, course/series scope and sequence charts and/or other instructional guides to ensure that the Standards for Mathematical Practice are clearly identified throughout the courses of the series.
- Record any instances where MP4 and MP5 are over- or under-identified in the curricular materials (e.g. a lesson is marked as aligned to a standard when only a small part addresses that, or vice versa).
- Ensure that both MP4 and MP5 are identified regularly and appropriately throughout each set of course materials in the series.

To check that MP4 and MP5 are being used to enrich the mathematics content and are fully developed to meet the level of expectation for high school:

- Thoroughly reexamine the practice standards MP4 and MP5. This compilation document and this Mathematical Practice Message might be helpful.
- Look at lessons, assessments and any examples/descriptions of anticipated student work. Look for places that require students to:
  - engage in the modeling cycle
  - apply prior knowledge to new problems
  - identify important relationships and map relationships with tables, diagrams, graphs, rules, etc.
  - draw conclusions from solutions as they pertain to a situation
  - choose appropriate tools
  - use multiple tools to represent information in a situation
  - create and use models to represent

  *also consider whether the tool encourages opportunities for students to use technological tools to explore and deepen their understanding of concepts
- Look at teacher directions and how teachers are guided to carry out the lessons. In particular, look for places where teachers are expected to:

Guidance for Indicator 2g: Practice-Content Connections: Modeling and Using Tools (MP4 and MP5)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2g: The materials support the intentional development of modeling and using tools (MPs 4 and 5), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

- Pose problems connected to previous concepts
- Provide a variety of real world contexts
- Provide meaningful, real-world, authentic performance tasks
- Promote discourse and investigation
- Make a variety of tools available
- Model tools effectively, including their benefits and limitations
- Encourage the use of multiple tools for communication, calculation, investigation, sense-making, etc.

- Check to see if any materials focus only on the Standards for Mathematical Practice (therefore, they are not being used to enrich the mathematical content). Record any instances where the Standards for Mathematical Practice are not being used to enrich the mathematics content.
- Verify that student engagement with the lessons and assessments would require deep use of the Standards for Mathematical Practice so that across the series students will develop their use of the MPs to the full intent of the standards.
- Record any instances where an MP was identified, however, engagement with the lesson or task would only require minimal or trivial use of the indicated MP.
- If you found that MPs are only located in a specific part of the teacher's manuals (e.g. the teacher-led portion of the lesson), you will need to look at other sections (e.g. independent work, homework, assessments) to ensure that the MPs are intentionally used to enrich the content. **Look not only where the MPs are identified in the materials, but also look at places where they are not identified.**

Prepare for team discussion:

Preparing for discussion—questions to ask yourself:

- Where, and how often, are MP4 and MP5 are each present in the materials?
- When do the MPs, when used by the students, enrich the mathematical content in an authentic way and ensure a progression through the high school courses to the full intent of the MPs?
- Do the materials provide guidance to teachers in order to develop students' skills identified in MP4 and MP5?

During discussion:

- Are MP4 and MP5 clearly identified throughout the materials?
- Are MP4 and MP5 used to enrich the mathematical content at hand?
- Do expectations for students increase throughout courses and the series?

Scoring:

2 points:

- The majority of the time MP4 and MP5 are used to enrich the mathematical content.

AND

Guidance for Indicator 2g: Practice-Content Connections: Modeling and Using Tools (MP4 and MP5)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2g: The materials support the intentional development of modeling and using tools (MPs 4 and 5), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

- Across the series, there are increasing expectations for MP4 and MP5 to the full intent of the standards.

AND

- MP4 and MP5 are clearly identified throughout the materials, with few or no exceptions.

1 point:

- There are a few instances where the MP4 and MP5 do not enrich the content.

AND/OR

- The materials do not develop both MP4 and MP5 to the full intent of the standards.

AND/OR

- MP4 and MP5 are attended to fully but are not identified.

AND/OR

- MP4 and MP5 are identified, but there are many examples of over- or under-identification.

0 points:

- MP4 and MP5 rarely occur within the materials.

AND/OR

- MP4 and MP5 are not identified, and the materials do not develop either MP4 or MP5 to the full intent of the standards.

AND/OR

- MP4 and MP5 are not used to enrich the content.

AND/OR

- MP4 and MP5 are regularly treated as separate from the mathematics content..

Additional notes

Here are the possible outcomes:

Identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	2
	Not used to enrich the math content and provide progression to the full intent of the standards	1
Fail to identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	1
	Not used to enrich the math content and provide progression to the full intent of the standards	0

Guidance for Indicator 2g: Practice-Content Connections: Modeling and Using Tools (MP4 and MP5)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2g: The materials support the intentional development of modeling and using tools (MPs 4 and 5), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

Identify MPs accurately for only one of the standards studied in this indicator	Used to enrich the math content and provides progression to the full intent of the standards	1
	Not used to enrich the math content and provide a progression to the full intent of the standards	0

Guidance for Indicator 2h: Practice-Content Connections: Seeing Structure and Generalizing (MP7 and MP8)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2h: The materials support the intentional development of seeing structure and generalizing (MPs 7 and 8), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

What is the purpose of this indicator? This indicator, along with 2e, 2f, and 2g, determines the adherence to the Standards for Mathematical Practice. This indicator specifically looks at MPs 7 and 8 which support the intentional development of seeing structure and generalizing. First, this indicator verifies the Standards for Mathematical Practice are identified in the curricular materials. Second, it assesses whether the provided opportunities for student engagement with the math practices are a) used to enrich the mathematics content of the courses and b) fully developed across the series to meet the level of expectation of high school mathematical study.

Evidence Collection:

- Look at all lessons in teacher's manuals and in the student materials to ensure that the Standards for Mathematical Practice MP7 and MP8 are clearly identified throughout the courses.
- Look in unit overviews, scope and sequence charts, and/or other instructional guides to ensure that the Standards for Mathematical Practice are clearly identified throughout the courses of the series.
- Record any instances where MP7 and MP8 are over or under-identified in the curricular materials (e.g. a lesson is marked as aligned to a standard when only a small part addresses that, or vice versa).
- Ensure that both MP7 and MP8 are identified regularly and appropriately throughout each set of course materials in the series.

To check that MP7 and MP8 are being used to enrich the mathematics content and are fully developed to meet the level of expectation for high school:

- Thoroughly reexamine the practice standards MP7 and MP8. This compilation document and this Mathematical Practice Message might be helpful.
- Look at lessons, assessments and any examples/descriptions of anticipated student work. Look for places that require students to:
  - Look for patterns and make generalizations.
  - Look and explain the structure of expressions.
  - Look at and decompose "complicated" into "simpler" things.
    E.g. seeing $\sin^2 x + 2\sin x + 1$ as $u^2 + 2u + 1$.
  - Analyze a problem and look for more than one approach.
  - Look for shortcuts and general methods when calculations/processes are repeated.
  - Describe a general formula, process, or algorithm.
- Look at teacher directions and how teachers are guided to carry out the lessons. In particular, look for places where teachers are expected to:
  - Provide tasks/problems with patterns.
  - Prompt students to look for structure and patterns.
  - Prompt students to describe what they see in the structure/pattern.

Guidance for Indicator 2h: Practice-Content Connections: Seeing Structure and Generalizing (MP7 and MP8)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2h: The materials support the intentional development of seeing structure and generalizing (MPs 7 and 8), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

E.g. Ask a student to explain how his/her expression "4n + 1" can be seen in the tile pattern.
  - Provide time for students to look for patterns, structure, shortcuts, generalizations, etc.
  - Ask probing questions like "Does that always work?" or "Why does that work?"
- Check to see if any materials focus only on the Standards for Mathematical Practice (therefore, they are not being used to enrich the mathematical content). Record any instances where the Standards for Mathematical Practice are not being used to enrich the mathematics content.
- Verify that student engagement with the lessons and assessments would require deep use of the Standards for Mathematical Practice so that across the series students will develop their use of the MPs to the full intent of the standards.
- Record any instances where an MP was identified, however, engagement with the lesson or task would only require minimal or trivial use of the indicated MP.
- If you found that MPs are only located in a specific part of the teacher's manuals (e.g. the teacher-led portion of the lesson), you will need to look at other sections (e.g. independent work, homework, assessments) to ensure that the MPs are intentionally used to enrich the content. **Look not only where the MPs are identified in the materials, but also look at places where they are not identified.**

Prepare for team discussion:

Preparing for discussion—questions to ask yourself:

- Where, and how often, are MP7 and MP8 each present in the materials?
- When do the MPs, when used by the students, enrich the mathematical content in an authentic way and ensure a progression through high school courses to the full intent of the MPs?
- Do the materials provide guidance to teachers in order to develop students' skills identified in MP7 and MP8?

During discussion:

- Are MP7 and MP8 clearly identified throughout the materials?
- Are MP7 and MP8 used to enrich the mathematical content at hand?
- Do expectations for students increase throughout courses and the series?.

Scoring:

2 points:

- The majority of the time MP7 and MP8 are used to enrich the mathematical content.

AND

- Across the series, there are increasing expectations for MP7 and MP8 to the full intent of the standards.

AND

- MP7 and MP8 are clearly identified throughout the materials, with few or no exceptions.

Guidance for Indicator 2h: Practice-Content Connections: Seeing Structure and Generalizing (MP7 and MP8)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2h: The materials support the intentional development of seeing structure and generalizing (MPs 7 and 8), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

1 point:

- There are a few instances where the MP7 and MP8 do not enrich the content.

AND/OR

- The materials do not develop both MP7 and MP8 to the full intent of the standards.

AND/OR

- MP7 and MP8 are fully attended to but are not identified.

AND/OR

- MP7 and MP8 are identified, but there are many examples of over- or under-identification.

0 points:

- MP7 and MP8 rarely occur within the materials.

AND/OR

- MP7 and MP8 are not identified, and the materials do not develop either MP7 or MP8 to the full intent of the standards.

AND/OR

- MP7 and MP8 are not used to enrich the content.

AND/OR

- MP7 and MP8 are regularly treated as separate from the mathematics content.

Additional notes

Here are the possible outcomes:

Identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	**2**
	Not used to enrich the math content and provide progression to the full intent of the standards	1
Fail to identify all MPs	Used to enrich the math content and provides progression to the full intent of the standards	1
	Not used to enrich the math content and provide progression to the full intent of the standards	0
Identify MPs accurately for only	Used to enrich the math content and provides progression to the full intent of the standards	1

Guidance for Indicator 2h: Practice-Content Connections: Seeing Structure and Generalizing (MP7 and MP8)

Criterion: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice.

Indicator 2h: The materials support the intentional development of seeing structure and generalizing (MPs 7 and 8), in connection to the high school content standards, as required by the Standards for Mathematical Practice.

one of the standards studied in this indicator	Not used to enrich the math content and provide a progression to the full intent of the standards	0

Guidance for Indicators 3a-3e: Use and Design Facilitate Student Learning

Criterion: Materials are well designed and take into account effective lesson structure and pacing.

Indicators 3a – 3e:
3a. The underlying design of the materials distinguishes between problems and exercises. In essence, the difference is that in solving problems, students learn new mathematics, whereas in working exercises, students apply what they have already learned to build mastery. Each problem or exercise has a purpose. **3b. Design of assignments is not haphazard: tasks are given in intentional sequences.** **3c. There is variety in how students are asked to present the mathematics. For example, students are asked to produce answers and solutions, but also, arguments and explanations, diagrams, mathematical models, etc.** **3d. Manipulatives, both virtual and physical, are faithful representations of the mathematical objects they represent and when appropriate are connected to written methods.** **3e. The visual design (whether in print or digital) is not distracting or chaotic, but supports students in engaging thoughtfully with the subject.**
Evidence Collection:

Guidance for Indicators 3a-3e: Use and Design Facilitate Student Learning

Criterion: Materials are well designed and take into account effective lesson structure and pacing.

3a and 3b

- Review lessons, sample problems, student practice pages, and homework assignments.
- Review any teacher information provided on lesson purpose.
- Review selection, sequence, and use of manipulatives with problems/student exercises.
- Focus on the coherence between the sample problems within each lesson and the student practice/ assignments that follow.
- Use the questions below to gather evidence to inform the rating of these indicators.
  - Do the problems within the lesson allow students to learn new mathematics at an appropriate pace for the given course level?
  - Do the practice pages that follow allow students to utilize the new mathematics in order to further develop their knowledge of the new content?
  - Do all problems and exercises have a purpose toward developing the new content of the lesson?
  - Are there any instances of new mathematics in the "exercises" that was not part of the "problems"?
  - Are there any instances where the sequencing of assignments is haphazard in development, i.e. abstract before concrete, unnatural flow of material, etc.?

3c

- Review lessons, sample problems, practice problems, homework problems, and assessment questions for types of student products.
- Focus on the variety of ways students are asked to demonstrate mathematical learning.
- Use the questions below to gather evidence to inform the rating of this indicator.
  - Are students asked to produce many types of answers throughout the work they do?
  - Are students asked to produce models, practice fluency, create arguments, justify their answers, attend to mathematical practices, and make real-world connections?

3d

- Review student, teacher, digital, and additional materials.
- Focus on whether manipulatives are appropriately used and explained.
  - Use the questions below to gather evidence to inform the rating of this indicator.

Guidance for Indicators 3a-3e: Use and Design Facilitate Student Learning

Criterion: Materials are well designed and take into account effective lesson structure and pacing.

- Are the manipulatives consistent representations of the mathematical objects?
- Are the manipulatives connected to written methods?

3e

- Examine the visual design and layout of teacher and student materials.
- Focus on the materials' visual appearance and ability to support student engagement.
- Use the questions below to gather evidence to inform the rating of this indicator.
  - Do the materials maintain a consistent layout for each lesson?
  - Are the pictures and models supportive of student learning and engagement without being visually distracting?

Team Discussion:

Preparing for discussion—questions to ask yourself:

3a

- What is the difference between "problems" and "exercises" within the materials?
- How do the materials encourage students to apply new mathematics learned in the exercises?

3b

- Is there a natural progression from the "problems" to student assignments?
- Is there a natural progression within student assignments leading to full understanding and mastery of new mathematics?

3c

- What are the different types of products students must provide?
- Do student products range from fluency to higher-level thinking?

3d

- Are manipulatives presented? If so, do they represent mathematical objects while connecting to written methods?

3e

- What visual designs distract students? What visual designs create student engagement?

During discussion:

3a

- Discuss the difference between problems and exercises within the structure of the materials. Note the terminology the series uses to differentiate.
- Discuss the effectiveness of problems in allowing students to learn new mathematics at an appropriate pace. Note specific instances where these problems do not serve the purpose intended within the lesson.
- Discuss the effectiveness of the exercises in allowing students to apply learned mathematics in order to build knowledge. Note specific instances where these exercises do not serve the purpose intended within the lesson.
- Note any instances of new mathematics being presented within the student exercises.

Guidance for Indicators 3a-3e: Use and Design Facilitate Student Learning

Criterion: Materials are well designed and take into account effective lesson structure and pacing.

3b

- Note any instances of unnatural sequencing within student assignments.

3c

- Discuss the types of products students are asked to create and determine if there is variety. Note if students are asked to create products at various levels of thinking.

3d

- Discuss the effectiveness of manipulatives as faithful representations of the mathematical objects. Note if manipulatives connect to written methods.

3e

- Discuss whether the visual design has a consistent layout in both the teacher and student materials. Note if the design is distracting or chaotic.

Scoring:

2 points:

3a

- Materials distinguish between problems and exercises within each lesson.
- Students are learning new mathematics within each lesson and then applying what they have learned in order to build knowledge.
- There are no, or very few, instances of new mathematics being presented in the student exercises.
- All, or most, problems or exercises have a purpose.

3b

- Exercises within student assignments are intentionally sequenced to build understanding and knowledge.

3c

- Students are asked to demonstrate their learning using a variety of products.

3d

- Manipulatives are present, faithful representations of mathematical objects and are connected to written methods.

1 point:

3a

- Distinguishing between problems and exercises within lessons is confusing or difficult.
- A lack of cohesiveness sometimes exists between the problems and exercises within lessons.
- There are some instances of new mathematics being presented in the student exercises.
- There are some instances of problems or exercises not serving a purpose within lessons.

3b

- Some instances of confusion in student assignment sequencing and design exist.

3c

- Students are asked to demonstrate their learning using products with some variety.

Guidance for Indicators 3a-3e: Use and Design Facilitate Student Learning

Criterion: Materials are well designed and take into account effective lesson structure and pacing.

3d

- Manipulatives are present but do not consistently represent mathematical objects and/or are not connected to written methods.

0 points:

3a

- It is not possible to distinguish between problems and exercises within lessons.
- There is a consistent lack of cohesiveness between the problems and exercises within lessons.
- There are many instances of new mathematics being presented in the student exercises.
- Many instances exist of problems or exercises not serving a purpose within lessons.

3b

- Many instances of confusion in student assignment sequencing and design exist.

3c

- There is no variety in what students are asked to produce.

3d

- Manipulates are not present or do not accurately represent mathematical objects.

Note: No score is given for indicator 3e (visual design). Only qualitative evidence is provided.

Guidance for Indicators 3f-3l: Teacher Planning and Learning for Success with CCSS
Criterion: Materials support teacher learning and understanding of the Standards.

Indicators 3f – 3l:
3f. Materials support teachers in planning and providing effective learning experiences by providing quality questions to help guide students' mathematical development. **3g. Materials contain a teacher's edition with ample and useful annotations and suggestions on how to present the content in the student edition and in the ancillary materials. Where applicable, materials include teacher guidance for the use of embedded technology to support and enhance student learning.** **3h. Materials contain a teacher's edition that contains full, adult-level explanations and examples of the more advanced mathematics concepts and the mathematical practices so that teachers can improve their own knowledge of the subject, as necessary.** **3i. Materials contain a teacher's edition that explains the role of the specific mathematics standards in the context of the overall series.** **3j. Materials provide a list of lessons in the teacher's edition, cross-referencing the standards addressed and providing an estimated instructional time for each lesson, chapter and unit (i.e., pacing guide).** **3k. Materials contain strategies for informing students, parents, or caregivers about the mathematics program and suggestions for how they can help support student progress and achievement.** **3l. Materials contain explanations of the instructional approaches of the program and identification of the research-based strategies.**
Evidence Collection:
Look at both print and digital (if accessible) teacher's materials for: **3f** ● Any overview sections and/or annotations that contain narrative information about the math content and/or quality questions to help guide students' mathematical development. **3g** ● Any overview sections and/or annotations that contain narrative information about the math content and/or ancillary documents that will assist the teacher in presenting the student material. Also look for embedded technology links that will enhance the learning for all students. **3h** ● Annotations on how to present the information in the student editions to assist in full understanding of the standards and other supports that will assist a teacher in developing their own understanding allowing for seamless transitions of that knowledge to student learning. **3i** ● Chapter or lesson overviews that explain the progression of the content and how this specific course connects to previous and upcoming courses. **3j – 3l** ● Beginning sections of the entire book, unit, chapter, lesson that contains overview sections, teacher instruction pages, or ancillary supports that contain: o A narrative mathematical explanation of the math content in each topic paying attention to key instruction that will inform others that may be assisting the child in their progress at school.

Guidance for Indicators 3f-3l: Teacher Planning and Learning for Success with CCSS
Criterion: Materials support teacher learning and understanding of the Standards.

- Teacher instruction pages for any identified research-based strategies.
- Pacing guides with number of days of instruction and how many minutes of instruction are contained in each of those days.

After you have located the needed materials in the teacher's and/or digital materials:

3f

- Read the guiding questions to ensure that they would truly lead to a students' mathematical development and would allow for deeper thinking.

3g

- If technology support is embedded, it is overarching and accessible to most.
- Knowledge of content that is included is accurate and understandable and gives true assistance to all educators using the materials.

3i

- There is information given to allow for coherence, not just a single course above or below, but there are multiple course levels, if applicable, to allow a teacher to make prior connections and teach for connections to future content.

3j – 3l

- Looking at the standards being taught in the lessons, chapters, units and the timeline given to teach those standards, ensure that it is reasonable and useful for the educator.

Team Discussion:

- Discuss the ease of finding the needed resources and the time commitment it would require to gather these resources to ensure that they would be useful.
- Discuss the level of support needed in questioning, timeline, content assistance, etc. to ensure the teacher has the needed material to prepare students for the upcoming course's mathematics.

Scoring:

2 points:

3f

- Guiding questions are consistently provided to assist in students' mathematical development.
- All/most questions are of high quality and encourage deep thinking, not just knowledge retrieval.

3g

- Content knowledge is included, where needed, and is accurate, understandable, and gives true assistance to all educators using the text.
- When applicable and would enhance student learning, technology support is embedded, overarching and accessible to most. **If technology support is never included, this indicator cannot get full points.**

3h

- More advanced mathematics concepts are consistently explained and will improve a teacher's deeper understanding of the content.

Guidance for Indicators 3f-3l: Teacher Planning and Learning for Success with CCSS
Criterion: Materials support teacher learning and understanding of the Standards.

- Explanations are accessible to all educators.

3i

- Explanations of the role of the specific course-level mathematics in the context of the overall mathematics materials are offered, at a minimum, in each unit/module.
- Explanations are not **always** given as just one course level below or above but give connections among multiple course levels.

1 point:

3f

- Guiding questions are occasionally provided to assist in students' mathematical development.
- Some questions are of high quality and encourage deep thinking, not just knowledge retrieval.

3g

- Content knowledge is included; however, it is not always where needed and is not always accurate and understandable to give true assistance to all educators using the materials.
- When applicable and would enhance student learning, technology support is embedded and is overarching and accessible to most. However, sometimes technology supports that would enhance the student learning are omitted.

3h

- More advanced mathematics concepts are occasionally explained and will improve a teacher's deeper understanding of the content, but some major explanations are missing or not able to assist an educator in their own knowledge level of the mathematics.
- Some explanations are accessible to all educators.

3i

- Explanations of the role of the specific course-level mathematics in the context of the overall mathematics materials are offered, but the explanations are general and too overarching to assist an educator in truly understanding the role of the specific course-level mathematics in the context of the series.
- Explanations are given, but there are some just one course level below or above.

0 points:

3f

- Guiding questions are never, or rarely, provided to assist in students' mathematical development.
- Questions that are provided require no analysis, all or most require just knowledge retrieval.

3g

- Content knowledge is not included, or if it is, the content knowledge is often not accurate or helpful.
- No technology supports are included.

3h

- More advanced mathematics concepts aren't explained in the teacher's materials, or they are explained at a level that would not deepen a teacher's understanding of the content.
- Explanations are given, but they are difficult to access or use to deepen teachers' knowledge.

3i

- There are few, if any, explanations of the role of the specific course-level mathematics in the context of the overall mathematics materials, and/or the explanations are too general for teachers to see the connections.
- Explanations, if given, are only addressing within course-level connections or just one course level below

or above.

Note: No score is given for indicators 3j (list of lessons), 3k (strategies for informing parents), and 3l (explanations of instructional approaches). Only qualitative evidence is provided.

Guidance for Indicators 3m-3q: Assessment

Criterion: Materials offer teachers resources and tools to collect ongoing data about student progress on the Standards.

Indicators 3m – 3q:
3m. Materials provide strategies for gathering information about students' prior knowledge within and across grade levels/courses. **3n. Materials provide support for teachers to identify and address common student errors and misconceptions.** **3o. Materials provide support for ongoing review and practice, with feedback, for students in learning both concepts and skills.** **3p. Materials offer ongoing assessments:** **i. Assessments clearly denote which standards are being emphasized.** **ii. Assessments provide sufficient guidance to teachers for interpreting student performance and suggestions for follow-up.** **3q. Materials encourage students to monitor their own progress.**
Evidence Collection:
3m ● Review the materials to see if they provide a clear path to assess and monitor students' prior knowledge both within and across grade levels/courses. ● Review the materials to see if they offer supports that might be necessary to ensure students are able to meet the expectations of the grade level/course. **3n** ● Review the materials for highlighting common student errors or misconceptions. ● Review the materials for providing pathways for addressing student errors and misconceptions. ● Review the pathways for addressing students' errors and misconceptions for being mathematically sound (e.g. does not rely on "tricks"). ● Review the materials to see if they provide opportunities to have mathematical conversations to address errors and misconceptions. **3o** ● Review materials to see if they provide for ongoing review, practice, and feedback. ● Review materials to see if feedback addresses both skills and concepts. ● Review materials to see if the amount of ongoing review and practice is reasonable. ● Review materials to see if there are there multiple strategies for providing feedback. **3pi** ● Review assessments to see if they clearly denote which standards are being assessed. **3pii** ● Review assessments to see if the provided guidance can be used to assess the full meaning of the Standards being assessed. ● Review assessments to see if they provide sufficient guidance for the teacher to fully interpret student performance. ● Review assessments to see if they provide follow-up steps/suggestions for the teacher. ● Review assessments to see if provided guidance is easily understood. **3q** ● Review materials to see if/ how they encourage students to monitor their own progress.

Guidance for Indicators 3m-3q: Assessment

Criterion: Materials offer teachers resources and tools to collect ongoing data about student progress on the Standards.

Team Discussion:

Preparing for discussion—questions to ask yourself:

3m

- Where did I find examples to show assessment of prior knowledge?
- Are there key topics missing from prior knowledge assessments?

3n

- Where are examples that show common misconceptions or errors in students' work/understanding?
- How do the materials provide opportunities for the teacher to address common errors or misconceptions?
- Were there opportunities for mathematical discussions when an error or misconception was discovered?
- Were there common misconceptions not addressed in the materials?

3o

- Where did I find examples in the materials to show opportunities to provide productive feedback?
- How do the materials provide opportunities for the teacher to provide quality feedback?
- How do the materials address ongoing review and practice?
- Were there opportunities for the teacher to use multiple strategies for providing feedback?

3pi

- Where did I find examples in the materials to show how Standards were denoted on assessments?

3pii

- Where did I find examples in the materials to show how provided guidance was used to score assessments?
- Where did I find information on how to interpret the information gathered from provided guidance?
- Were there suggestions for follow-up with students?
- How can I show how I know the provided guidance can be easily understood and is specific enough to show true understanding and learning?

3o

- What examples/ strategies can I provide to show that the materials encourage students to monitor their own progress?

During discussion:

- Explain the strategy/reasoning used as you collected evidence for this indicator.
- Share any generalizations that you noted as you looked at materials over the course of the series, with specific examples (page numbers noted) to support the generalizations.

Scoring:

2 points:

3m

- Materials include multiple opportunities for teachers to assess/apply students' prior knowledge and connect it to the new learning.
- Students are appropriately monitored to assess key prior knowledge in order to continue with learning or to provide interventions.

Guidance for Indicators 3m-3q: Assessment

Criterion: Materials offer teachers resources and tools to collect ongoing data about student progress on the Standards.

3n

- Materials include multiple opportunities for teachers to notice and correct errors or misconceptions.
- Students are consistently monitored to assess common errors and misconceptions and provide interventions.
- There are opportunities for mathematical discussions to help address common errors and misconceptions.
- No major errors/misconceptions were left unaddressed.

3o

- Materials include regular opportunities for teachers to provide the student with ongoing review and practice of both concepts and skills.
- Materials include regular opportunities for the teacher to provide feedback.
- Materials provide multiple feedback strategies.
- Students are regularly monitored in order for the teacher to provide feedback.

3pi

- Materials include denotations of the standards being assessed in assessments.

3pii

- Materials include sufficient guidance for teachers.
- Materials provide quality suggestions for follow-up.
- Provided guidance can be used to assess the Standards to their full intent.
- Quality guidance for the teacher to interpret assessment data is provided.

1 point:

3m

- Attention to students' prior knowledge is included in some lessons/units/assessments, but connections to new learning are not made.
- There is some opportunity for the teacher to apply prior knowledge to the students' new learning.
- The lessons/units/assessments have some missed opportunities to remediate on errors in prior knowledge.

3n

- Attention to common errors and misconceptions are included in some lessons/units/assessments, but a path for intervening is not provided.
- There are some opportunities for the teacher to identify common errors and misconceptions.
- There are some opportunities for mathematical discussions to address common errors and misconceptions.
- The lessons/units/assessments have missed some opportunities to intervene where common errors or misconceptions occur.
- The requirements outlined in Evidence Collection are met sometimes and/or not thoroughly.

3o

- Attention to ongoing review and practice of concepts and skills is included in some lessons/units/assessments, but a path for productive feedback is not provided.
- Attention to feedback is included in some lessons/units/assessments.
- Feedback strategies are limited.
- The lessons/units/assessments have missed some opportunities to provide feedback about concepts and skills, such as providing feedback only on skills but not concepts.

3pi

Guidance for Indicators 3m-3q: Assessment

Criterion: Materials offer teachers resources and tools to collect ongoing data about student progress on the Standards.

- Standards are clearly denoted in some of the assessments.

3pii

- Some guidance provided is too broad and could lead to multiple interpretations of the assessments.
- Some guidance for follow-up suggestions is provided.
- Some of the provided guidance can be used to assess the Standards to their full intent.
- Some guidance for interpretation of assessment data is provided.

0 points:

3m

- No/minimal opportunities for teachers to assess students' prior knowledge.

3n

- No/minimal opportunities for teachers to identify students' common errors and misconceptions.

3o

- No/minimal opportunities for teachers to provide ongoing review and practice or feedback.

3pi

- No/minimal standards are denoted on assessments.

3pii

- No/minimal guidance is provided.
- No/minimal guidance for teachers to interpret assessment data and/or follow-up is provided.
- Guidance provided is so vague or overly broad that it is not helpful.

Note: No score is given for indicator 3q (monitor own progress). Only qualitative evidence is provided.

Guidance for Indicators 3r-3y: Differentiated Instruction

Criterion: Materials support teachers in differentiating instruction for diverse learners within and across courses.

Indicators 3r – 3y:
3r. Materials provide teachers with strategies to help sequence or scaffold lessons so that the content is accessible to all learners. **3s. Materials provide teachers with strategies for meeting the needs of a range of learners.** **3t. Materials embed tasks with multiple entry-points that can be solved using a variety of solution strategies or representations.** **3u. Materials provide support, accommodations, and modifications for English Language Learners and other special populations that will support their regular and active participation in learning mathematics (e.g., modifying vocabulary words within word problems).** **3v. Materials provide support for advanced students to investigate mathematics content at greater depth.** **3w. Materials provide a balanced portrayal of various demographic and personal characteristics.** **3x. Materials provide opportunities for teachers to use a variety of grouping strategies.** **3y. Materials encourage teachers to draw upon home language and culture to facilitate learning.**
Evidence Collection:
3r – 3t ● Be specific about strategies or materials provided for differentiated instruction. There must be more than a statement at the beginning of the chapter or lesson that is generic or states that the same strategy could be used with every lesson. ● Variance in presenting the lessons is noted as it would apply to meeting the needs of a range of learners. ● Collect evidence of multiple entry points for lessons and/or specific problems with multiple entry points. Problems with multiple entry points are provided and balanced with problems with one solution or one entry point. ● Collect evidence of problems with multiple solutions. Representations are provided for teachers and students. **3u** ● Include evidence of differentiation for all special populations (ELL, other special populations). ● Materials should included specific strategies for support, accommodations, or modifications within the lesson or the problems. ● Vocabulary or concepts may include scaffolding for teachers to present the materials. **3v** ● Collect examples of advanced students working at a greater depth with a standard—not just more problems or problems from higher-level courses. ● Note any areas in the lessons or problems where advanced work is substituted for the on-course level work **3w – 3y** ● Collect examples of various demographic and personal characteristics throughout the chapters. ● Provide examples of the grouping strategies and ways the materials provide for interaction among students. ● Provide examples of home language connections and connections to culture of students to facilitate learning. This may be at the beginning of each chapter or throughout the materials.

Guidance for Indicators 3r-3y: Differentiated Instruction

Criterion: Materials support teachers in differentiating instruction for diverse learners within and across courses.

Team Discussion:

3r – 3t

- How is the instruction differentiated, and what does it look like in lessons or in problems?
- Review the teacher's guide, assessments, and other materials to find all possible places where instructional supports are noted.
- What is the difference between materials that are provided specificly for differentiated instruction or the materials that are general notes about what "could be" implemented?

3u

- What are the needs of special populations? How can problems be modified to ensure work is on course level but accessible to special populations of students?
- What materials would help teachers provide lessons and concepts to help support these students?

3v

- What are the needs of advanced populations of students?
- How can on-course level concepts/problems be investigated at a greater depth and not replaced by above course-level work?

3w – 3y

- How would the materials balance demographics and personal characteristics in the materials?
- What grouping strategies would you expect to find in the materials?
- How could materials balance whole group, small group, and individual instruction?
- Do materials demonstrate home language connections and cultural connections?

Scoring:

2 points:

3r

- The materials provide strategies or differentiation while maintaining rigor, coherence and focus.

3s

- Specific strategies to meet the needs of all learners are included.

3t

- The structure of lessons is flexible and balanced, and it would be easy to adjust the order or to scaffold presentation for learners.
- Many examples of problems with multiple entry points and problems with multiple solutions or representations are present.

3u

- Materials provide support for ELL students or other populations.

3v

- Materials provide multiple opportunities for advanced students to investigate the course-level mathematics at a greater depth.
- There are no instances of advanced students simply doing more problems than their classmates.

1 point:

3r

- The materials provide some strategies or differentiation while maintaining rigor, coherence and focus.
- Some general statements or strategies about differentiation are noted.

3s

- Some general strategies to meet the needs of all learners are included.

Guidance for Indicators 3r-3y: Differentiated Instruction

Criterion: Materials support teachers in differentiating instruction for diverse learners within and across courses.

3t

- Rigid structure of lessons makes it difficult to adjust the order or to scaffold presentation for learners.
- There are some examples of problems with multiple entry points or problems with multiple solutions or representations.

3u

- Materials provide some support for ELL students or other populations.
- Some general statements about ELL students are provided, or a few strategies are provided at the beginning of a chapter or at one place in the book.

3v

- Materials provide some opportunities for advanced students to investigate the course-level mathematics at a greater depth.
- Materials provide course level problems — problems are not at a greater depth for advanced students.
- There are some instances of advanced students simply doing more problems than their classmates.

0 points

3r

- The materials do not provide for differentiated instruction**.**
- The materials give lower course level lessons or provide the same strategy for each lesson.

3s

- There are few, or no, general strategies to meet the needs of all learners included.

3t

- Rigid structure of lessons prohibits adjusting the order or scaffolding presentation for learners.
- There are few, or no, examples of multiple entry point problems or problems with multiple solutions or representations.

3u

- Materials provide very little, if any, support for ELL students or other populations.

3v

- Materials provide very few, if any, opportunities for advanced students to investigate the course-level mathematics at a greater depth.
- There are many instances of advanced students simply doing more problems than their classmates.

Note: No score is given for indicators 3w (balanced portrayal), 3x (grouping strategies), and 3y (home language and culture). Only qualitative evidence is provided.

Guidance for Indicators 3z-3ad: Effective Technology Use

Criterion: Materials support effective use of technology to enhance student learning. Digital materials are accessible and available in multiple platforms.

Indicators 3z – 3ad:

3z. Materials integrate technology such as interactive tools, virtual manipulatives/objects, and/or dynamic mathematics software in ways that engage students in the Mathematical Practices.

3aa. Digital materials (either included as supplementary to a textbook or as part of a digital curriculum) are web-based and compatible with multiple internet browsers (e.g., Internet Explorer, Firefox, Google Chrome, etc.). In addition, materials are "platform neutral" (i.e., are compatible with multiple operating systems such as Windows and Apple and are not proprietary to any single platform) and allow the use of tablets and mobile devices.

3ab. Materials include opportunities to assess student mathematical understandings and knowledge of procedural skills using technology.

3ac. Materials can be easily customized for individual learners.

i. **Digital materials include opportunities for teachers to personalize learning for all students, using adaptive or other technological innovations.**
ii. **Materials can be easily customized for local use. For example, materials may provide a range of lessons to draw from on a topic.**

3ad. Materials include or reference technology that provides opportunities for teachers and/or students to collaborate with each other (e.g. websites, discussion groups, webinars, etc.).

Evidence Collection:

3z

- Are videos, virtual manipulatives, interactive tools, and/or games available to students?
- How do any relevant materials engage students in "doing" math?
  - Determine alignment to the course-level content standards and Mathematical Practices.

3aa

- Are any instructional technology resources web-based and compatible with multiple internet browsers?
- Are materials accessible on both Windows and Apple platforms?
- Do student resources (including assistive technology for students with disabilities) work on tablets and other mobile devices as well as PCs?

3ab

- Determine if online assessments are available. Are these adaptive (questions change based on student answers) or fixed form (same questions for all students)?
- Are teachers able to create their own assessments (i.e., selecting from a bank of items and/or objectives)?
- Do assessment items assess both mathematical understanding and procedural skill/fluency? How?

3ac

- Are teachers able to manipulate or construct learning experiences for students?
- Can digital materials be differentiated based on individual students' needs?
- Are teachers able to customize digital materials for local use (student and/or community interests)?

3ad

- Do the digital materials provide opportunities for online collaboration? Is this collaboration between teacher and student? Or student to student? (i.e., discussion groups, webinars, e-mail, messaging)

Team discussion:

- Be able to explain the strategy/reasoning used as you collected evidence for this indicator.
- Be able to share any generalizations formulated while reviewing course-level materials, with specific examples (resources/page numbers noted) to support the generalizations.

Guidance for Indicators 3z-3ad: Effective Technology Use

Criterion: Materials support effective use of technology to enhance student learning. Digital materials are accessible and available in multiple platforms.

Scoring:
Note: None of these indicators are scored. Only qualitative evidence is provided.