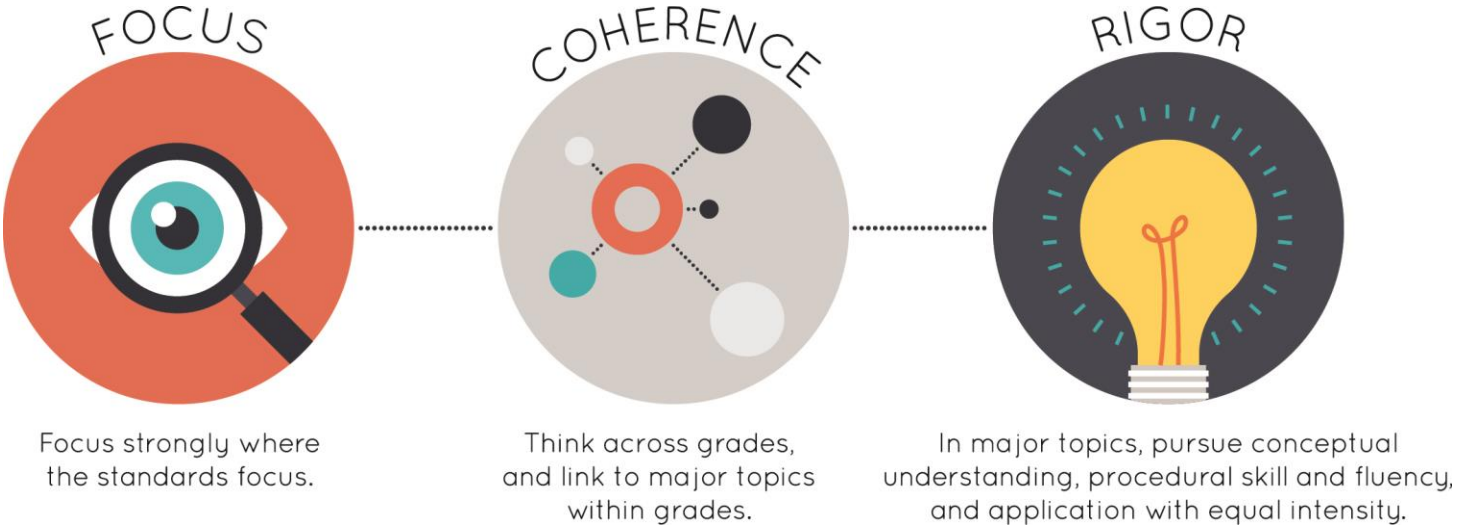
DEPARTMENT of EDUCATION
Louisiana Believes

Instructional Materials Evaluation Tool for Alignment in Mathematics Grades K – 12 (IMET)

FULL CURRICULUM
Instructional Materials

Strong mathematics instruction contains the following elements:



Title: **Illustrative Mathematics**

Course: **Algebra I, Algebra II, Geometry**

Publisher: **Kendall Hunt**

Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Focus on Major Work (Non-negotiable)	
2. Consistent, Coherent Content (Non-negotiable)	
3. Rigor and Balance (Non-negotiable)	
4. Focus and Coherence via Practice Standards (Non-negotiable)	
5. Alignment Criteria for Standards for Mathematical Content	
6. Alignment Criteria for Standards for Mathematical Practice	
7. Indicators of Quality	

Each set of submitted materials was evaluated for alignment with the standards beginning with a review of the indicators for the non-negotiable criteria. If those criteria were met, a review of the other criteria ensued.

Tier 1 ratings receive a "Yes" in Column 1 for Criteria 1 – 7.
Tier 2 ratings receive a "Yes" in Column 1 for all non-negotiable criteria, but at least one "No" for the remaining criteria.
Tier 3 ratings receive a "No" in Column 1 for at least one of the non-negotiable criteria.

Click below for complete grade-level reviews:

Grade 9 (Tier 1) Grade 10 (Tier 1) Grade 11 (Tier 1)

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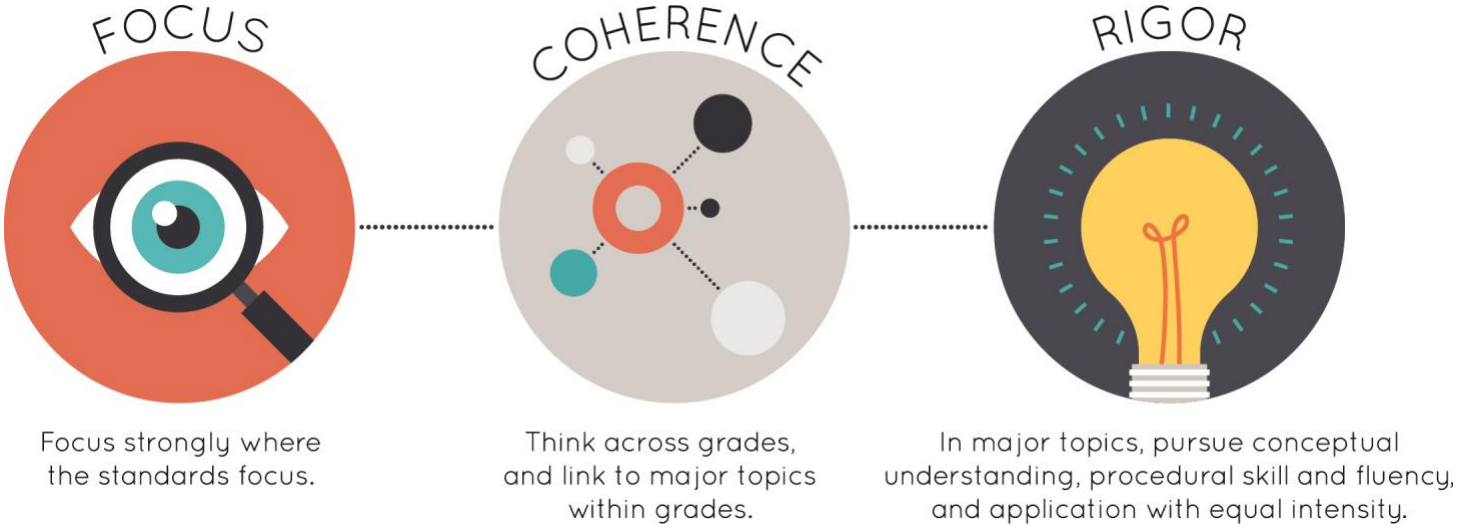

Title: **Illustrative Math, Algebra 1**

Grade/Course: **9**

Publisher: **Kendall Hunt**

Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Focus on Major Work (Non-negotiable)	
2. Consistent, Coherent Content (Non-negotiable)	
3. Rigor and Balance (Non-negotiable)	
4. Focus and Coherence via Practice Standards (Non-negotiable)	
5. Alignment Criteria for Standards for Mathematical Content	
6. Alignment Criteria for Standards for Mathematical Practice	
7. Indicators of Quality	

To evaluate instructional materials for alignment with the standards and determine tiered rating, begin with **Section I: Non-negotiable Criteria**.

- Review the **required**[1] Indicators of Superior Quality for each **Non-negotiable** criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, materials receive a "Yes" for that **Non-negotiable** Criterion.
- If there is a "No" for any of the **required** Indicators of Superior Quality, materials receive a "No" for that **Non-negotiable** Criterion.
- Materials must meet **Non-negotiable** Criterion 1 and 2 for the review to continue to **Non-negotiable** Criteria 3 and 4. Materials must meet all of the **Non-negotiable** Criteria 1-4 in order for the review to continue to Section II.
- If materials receive a "No" for any **Non-negotiable** Criterion, a rating of Tier 3 is assigned and the review does not continue.

If all Non-negotiable Criteria are met, then continue to **Section II: Additional Criteria of Superior Quality.**

- Review the **required** Indicators of Superior Quality for each criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, then the materials receive a "Yes" for the additional criteria.
- If there is a "No" for any **required** Indicator of Superior Quality, then the materials receive a "No" for the additional criteria.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

[1] **Required Indicators of Superior Quality** are labeled "**Required**" and shaded yellow. Remaining indicators that are shaded white are included to provide additional information to aid in material selection and do not affect tiered rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Section I: Non-negotiable Criteria of Superior Quality **Materials must meet all of the Non-negotiable Criteria 1-4 in order for the review to continue to Section II.**			
Non-negotiable **1. FOCUS ON MAJOR WORK[2]:** Students and teachers using the materials as designed devote the large majority[3] of time to the major work of the grade/course. ☒ Yes ☐ No	**Required** **1a)** Materials should devote the large majority of class time to the major work of each grade/course. Each grade/course must meet the criterion; do not average across two or more grades.	**Yes**	The materials devote a large majority of the time to the major work of the grade. There are 132 lessons, of which 97 (73%) are devoted to the major work of the grade. Of the 97 lessons, 37 are focus on the major standards and 60 utilize supporting and additional work to address them. For example, Unit 1 focuses on the Interpreting Categorical and Quantitative Data (ID) standards, which are considered additional work standards. This unit accounts for 16 lessons. In Unit 2, 23 of the 26 lessons are devoted to major standards A.REI.D.12, A.REI.D.10, A.CED.A.3, A.CED.A.4, A.REI.B.3, and A.REI.B.4. In Unit 5, Lesson 6, students calculate the average rate of change of functions (Major F.IF.B.6). In Unit 7, Lesson 10, students solve quadratic equations (Major A.REI.B.4b).
	Required **1b)** In any one grade/course, instructional materials should spend minimal time on content outside of the appropriate grade/course. Previous grade/course content should be used only for scaffolding instruction. In assessment materials, there are no chapter tests, unit tests, or other such assessment components that make students or teachers responsible for any topics before the grade/course in which they are introduced in the Standards.	**Yes**	The materials spend the appropriate amount of time on course level work, while assessing course level standards. Mid and End of Unit assessments assess major standards that are addressed within the lessons. For example, Unit 2, End of Unit Assessment, questions 3, 4, and 5 align to major standard A.REI.D.12. This standard is covered in Unit 2, Lessons 22 - 26. In Unit 5, End of Unit assessment questions 1, 2, 3, and 5 assess major standard A.SSE.1. This standard is covered during Lessons 4, 7, 17, and 18. In addition, lessons which include supporting content are clearly marked and standards from previous grades are used to scaffold grade-level standards. For example, the warm up problem for Unit 2, Lesson 19, builds on the 7th grade standard 7.EE.B.4b while the remaining problems address major work of the grade (i.e., standards A.REI.B.3 and A.CED.A.1). There are

[2] For more on the major work of the grade, see Focus by Grade Level.

[3] The materials should devote at least 65% and up to approximately 85% of class time to the major work of the grade with Grades K–2 nearer the upper end of that range, i.e., 85%.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			instances where students work outside the scope of the grade on prior content. However, these lessons are listed as optional and are not distracting to the major work of the grade. A minimum amount of previous content is used to scaffold instruction. For example, in Unit 1, Lesson 5, finding median and/or mean and interquartile range (6.SP.B.5) is reviewed to teach comparing measures of central tendencies of different data sets (S.ID.A.2). In Unit 1, Lessons 6 - 8, students work with spreadsheets. In Unit 5, Lesson 14, students work with positive and negative numbers (7.EE.B.3). In Unit 2, Lesson 11, distributive property is revisited (6.EE.A.3) to build towards addressing rearranging equations without changing their values (A.CED.A.4).
Non-negotiable **2. CONSISTENT, COHERENT CONTENT** Each course's instructional materials are coherent and consistent with the content in the Standards. ☒ Yes ☐ No	**Required** **2a)** Materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year.	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. Multiple lessons which contain supporting content also contain and connect to the major work of the grade. In Unit 3, Lesson 4, students determine the line of best fit for data in context (S.ID.B.6) and interpret the slope and y-intercept (S.ID.C.7). In Unit 4, Lesson 12, students graph piecewise functions in Activity 12.3 (Supporting F.IF.C.7b) and Activity 12.4 has students graph from key features (Supporting F.IF.C.7). This supporting content is taught after Activity 12.2 and the Are You Ready for More? portion address the major content of relating the domain of a function to its graph (Major F.IF.B.5) and problem #3 brings in major content again having students evaluate in function notation (Major F.IF.A.2). In Unit 5, Lesson 4, Activity 4.3, standards are interwoven creating direct connections. Students engage in the work of supporting standards by writing functions (Supporting F.BF.A.1) and interpreting parameters (Supporting F.LE.B.5) leading to the major work of creating equations in two variables (Major A.CED.A.2). In Unit 6, Lesson 14, students interpret statements that use function notation in terms of a context, interpret key features of a function, and graph functions,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			connecting supporting standards F.IF.C.7 to major standards F.IF.A.2 and F.IF.B.4.
	Required **2b)** Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade/course, in cases where these connections are natural and important.	**Yes**	The materials include problems and activities that connect two or more clusters in a domain and/or two or more domains in the course level where these connections are natural and important. Materials are coherent and consistent with multiple opportunities for students to engage in problems and activities involving two or more clusters in a domain, or two or more domains in a course. For example, in Unit 2, Lesson 26, students work within the context of trail mix to represent constraints (A.CED.A.3), describe quantities for descriptive purposes (N.Q.A.3), and graph inequalities (A.REI.D.12). In Unit 6, Lesson 7, students relate the domain of a quadratic function to its graph (F.IF.B.5), write a function that describes a relationship from a table (F.BF.A.1), and graph quadratic functions (F.IF.C.7). In Unit 5, Lesson 21, Activity 21.2, clusters and domains are connected. In the lesson, students determine what type of model could be used (F.LE.A.1), write functions (F.LE.A.2), and use a model to predict population (S.ID.B.6a). These connections are continued in the discussion for Activity 21.3 which discusses millions being an appropriate measure for population (N.Q.A.3). In Unit 6, Lesson 17, Activity 17.2 and Activity 17.5, students write quadratic functions (F.BF.A) and analyze the effects on the equation of the graph being altered (F.BF.B).
Non-negotiable **3. RIGOR AND BALANCE:** Each grade's instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by helping students develop conceptual understanding, procedural skill and fluency, and	**Required** **3a)** ***Attention to Conceptual Understanding:*** Materials develop conceptual understanding of key mathematical concepts, especially where called for explicitly in specific content standards or cluster headings by amply featuring high-quality conceptual problems and discussion questions.	**Yes**	The materials develop the conceptual understanding of key mathematical concepts. Throughout the curriculum, standards written at a conceptual level of rigor are addressed in a manner that builds conceptual understanding. For example, in Unit 2, Lesson 13, Activity 13.1, students determine which system could match a graphical representation and explain how they know (A.REI.D.10). The explaining portion of this example ensures that students understand mathematical topics and address the standards conceptually as in accordance with the rigor document. In Unit 3, Lesson 8, conceptual

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
application. ☒ Yes ☐ No			standards S.ID.C.7, S.ID.C.8, and S.ID.C.9 are addressed conceptually as students interpret the line of best fit and correlation coefficients within the context of problems. In Unit 5, Lesson 7, students interpret parts of an equation in relationship to the amount of medicine ingested by a person (A.SSE.A.1a). Lessons have built in activities to develop conceptual understanding through discussion prompts and scaffolding questions. For example, in Unit 7, Lesson 20, students complete a class discussion to determine if the sum or product of irrational and rational numbers are either rational or irrational (N.RN.B.3). Also in Unit 7, Lessons 21, Activities 21.2 and 21.3 students experiment with adding and multiplying rational and irrational numbers to determine if sums and products are rational or irrational. These cases are then analyzed using variables and given an explanation of what makes a sum or product rational or irrational, students are asked to explain how they know if the sum or product is rational or irrational (N.RN.B.3).
	Required **3b) *Attention to Procedural Skill and Fluency:*** The materials are designed so that students attain the fluencies and procedural skills required by the Standards. Materials give attention throughout the year to individual standards that set an expectation of procedural skill and fluency. In grades K-6, materials provide repeated practice toward attainment of fluency standards. In higher grades, sufficient practice with algebraic operations is provided in order for students to have the foundation for later work in algebra.	**Yes**	The materials are designed so that students attain the fluencies and procedural skills required by the standards. Sufficient practice with algebraic operations provides students with the foundation for later work in Algebra. For example, in Unit 2, Lesson 8, Practice #1, students solve an equation for a certain variable and then substitute values into the equations and in Unit 2, Lesson 8, Practice #2, students solve an equation for x and then solve the same equation for y (A.CED.A.4). In Unit 2, Lesson 9, questions 9.2, 9.3, and 9.4 present the opportunity for students to build fluency and procedural skill for standard A.CED.A.4. In Unit 3, Lesson 7, students compute the correlation coefficient (S.ID.C.8). In Unit 6, Lesson 13, students identify the effect on a graph by replacing F(x) with F(x+k) (F.BF.B.3). Procedural skill and fluency for standard A.CED.A.4 is also addressed in Unit 4, Lesson 16. In Unit 5, Lesson 18, Practice #1 students determine the associated growth factor for 7 given growth rates, procedurally practicing transforming expressions for

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			exponential functions (A.SSE.B.3c). In Unit 7, Lesson 4, students solve various types of equations including using the Zero Product Property to solve quadratics (A.REI.B.3).
	Required **3c) *Attention to Applications:*** Materials are designed so that teachers and students spend sufficient time working with engaging applications, including ample practice with single-step and multi-step contextual problems, including non-routine problems, that develop the mathematics of the grade/course, afford opportunities for practice, and engage students in problem solving. The problems attend thoroughly to those places in the content Standards where expectations for multi-step and real-world problems are explicit.	**Yes**	The materials are designed so that students spend sufficient time working with engaging applications. For standards that require application as a type of rigor, the activities include contextual problems. In Unit 2, Lesson 22, students represent constraints, solve, graph, and apply linear inequalities to real world situations such as purchasing concert tickets and opening banking accounts (A.CED.A.3, A.REI.D.10, and A.REI.D.12). In Unit 3, Lesson 4, Activity 4.2, students must create a data set from a given video of a real life situation, graph the data set, determine a line of best fit for the data set, and use the line of best fit to predict information from the model (S.ID.B.6a). In Unit 4, Lesson 18, students complete multi-step problems relating knowledge and concepts of functions to cell phone battery life (S.ID.B.6, F.IF.B.6, F.BF.A.1, and S.ID.B.6a). In Unit 7, Lesson 17, Activity 17.3, students are given an equation and picture and must explain how the equation represents the picture. Students are then given a written situation and must write an equation from the context (A.CED.A.1).
	Required **3d) *Balance:*** The three aspects of rigor are not always treated together and are not always treated separately.	**Yes**	It is evident within the materials that the three aspects of rigor are not always treated together and are not always treated separately. Lessons contain problems utilizing combinations of different types of rigor and also problems solely focusing on one component of rigor at a time. Most lessons in the curriculum provide opportunities for students to demonstrate procedural fluency and conceptual understanding in the context of application to real world situations. For example, in Unit 2, Lesson 3, Activity 3.2, students describes relationships in tables and then conceptually match the table to its equation (A.CED.A.2). In Unit 3, Lesson 2, Activity 2.2, students interpret (conceptual understanding) relative frequencies in terms of the types of people who have cats and dogs (application) while

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			calculating various percentages (procedural). (S.ID.B.5). In Unit 3, Lesson 7, Activity 7.3, students conceptually compare correlation coefficients and procedurally use technology to determine the line of best fit (S.ID.B.6). In Unit 5, Lesson 16, students use conceptual understanding to estimate the solution to exponential equations (F.BF.A.1). In Unit 7, Lesson 1, tasks 1.2 and 1.3 students apply conceptual understanding and procedural skill and fluency to a context of creating a picture frame of various proportions to address standards A.CED.A.3 and A.CED.A.1.
Non-negotiable **4. FOCUS AND COHERENCE VIA PRACTICE STANDARDS:** Materials promote focus and coherence by connecting practice standards with content that is emphasized in the Standards. ☒ Yes ☐ No	**Required** **4a)** Materials address the practice standards in such a way as to enrich the content standards of the grade/course; practices strengthen the focus on the content standards instead of detracting from them, in both teacher and student materials.	**Yes**	The materials address the practice standards and enrich the content standards of the grade/course. Lessons throughout the curriculum connect Math Practices Standards (MP) with content standards and provide students with meaningful opportunities to utilize those practices in order to master the standards. For example, in Unit 1, Lesson 12, students make sense of problems (MP1) and reason abstractly (MP2) to determine which scenarios in regards to standard deviation align with given dot plots (S.ID.A.2). In Unit 1, Lesson 13, students make sense of problems and persevere in solving (MP1), reason abstractly and quantitatively (MP2), and attend to precision (MP6) when interpreting standard deviation and determining how outliers in a data set have an effect on the data which address standards S.ID.A.1, S.ID.A.2, and S.ID.A.3. In Unit 4, Lesson 8, the Lesson Narrative explains, “More ambiguity is involved here than in cases students have previously encountered, so they will need to persevere in sense making and problem solving (MP1).” This statement references how the students will engage with functions from different representations in this lesson. In Unit 4, Lesson 15, students attend to precision (MP) by creating equations for a secret code and graphing the code in a piecewise function (F.BF.B.3). In Unit 6, Lesson 2, students look for and make use of structure (MP7) and look for and express regularity in repeated reasoning (MP8) to strengthen the focus on

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			standards A.SSE.A.1, A.SSE.B.3, and F.BF.A.1a when they compare patterns and analyze the data to determine if the data represents a linear, quadratic, or exponential function. Also, in Unit 6, Lesson 8, the Lesson Narrative explains how this lesson is the bridge from students "reasoning concretely and contextually about quadratic equations to reasoning about their representations in ways that are more abstract and formal (MP2)."
Section II: Additional Criteria of Superior Quality			
5. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL CONTENT: Materials foster focus and coherence by linking topics (across domains and clusters) and across grades/courses by staying consistent with the progressions in the Standards. ☒ Yes ☐ No	**Required** **5a)** Materials provide all students extensive work with course-level problems. Review of material from previous grades and courses is clearly identified as such to the teacher, and teachers and students can see what their specific responsibility is for the current year.	**Yes**	The materials provide all students extensive work with course-level problems. The review of material from previous grades and courses is clearly identified, and those lessons which address previous grade level standards are identified as optional. Each lesson includes 4-5 activities that give students rich tasks and various stimuli to engage with through discussion prompts and related questions to answer. Each lesson then includes 4-10 practice problems (some problems have multiple parts within them), some directly pertaining to the lesson and others being spiral review. In Unit 1, Lesson 5, Activities 5.1 and 5.2, students review 6.SP.B.5.c (giving measures of center and variability and describing patterns within data set) as "building on" this standard to address S.ID.A.2, which occurs in Activity 5.3 where students are first asked to find the mean absolute deviation. In Unit 2, Lesson 20, students write and solve inequalities while working with major standards A.CED.A.1, A.CED.A.3, and A.REI.B.3. In Unit 3, Lesson 4, Activity 4.1, students review constructing scatter plots (8.SP.A.1) and later address constructing the scatter plot, determining negative or positive associations, whether the function is linear or nonlinear, and finding the line of best fit (S.ID.B.6). The teacher materials explain, "The purpose of this warm-up is to help students recall information about scatter plots, which will be useful when students expand their understanding in a later activity." In Unit 4, Lesson 5, Activity 5.3 is deemed as an optional activity which uses technology within a lesson where students are

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			working on major standards A-REI.1.A1, F-IF.A.2, and F-IF.B.4. Unit 5, Lesson 14, the preparation states, "This lesson is optional. Its goal is to remind students about what they know of percent change and the different ways of expressing it (a topic from Grade 7), in preparation for the situations they will encounter in upcoming lessons." Unit 5, Lesson 14 addresses 7.EE.B.3.
	Required **5b)** Materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. The materials are designed so that prior knowledge becomes reorganized and extended to accommodate the new knowledge.	**Yes**	The materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. Materials connect prior knowledge from earlier grades in a purposeful manner. The curriculum weaves prior knowledge students should have from previous courses into lessons for this course so connections can be made and knowledge gained in earlier courses can be extended upon in this course. For example, in Unit 1, Lesson 5, students calculate mean absolute deviation, interquartile range, mean, and median for a set of data by building on 6.SP.B.5.c to address S.ID.A.2. In Unit 2, Lesson 2, Activity 2.1 builds on a sixth grade standard (6.RP.A.3.c) while the rest of the activities in that lesson address major standards A.CED.A.2 and A.CED.A.3. The teacher materials state, "The strategies elicited here will be helpful later in the lesson when students calculate prices that involve a percent increase and write an equation to generalize the calculation," which occurs in Activity 2.4. In Unit 4, Lesson 1, students' knowledge of functions having exactly one output for every input is "reactivated" (8.F.A.1). Students are reminded of this knowledge that will be used in later portions of the unit (F.IF.A.1). The teacher materials state, "The goal of this opening activity is to activate, through a familiar context, what students know about functions from middle school." In Unit 6, Lesson 4, students explain using graphs, tables, or calculations that exponential functions eventually grow faster than quadratic functions by building on 6.EE.A.1 to address F.BF.A.1.a, F.IF.C, and F.LE.A.3.
	5c) Materials include learning objectives that are visibly shaped by LSSM cluster headings and/or standards.	**Yes**	The materials include learning objectives that are visibly shaped by LSSM cluster headings and

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			standards. Multiple lessons address standards in the same cluster. The language of the learning targets mirror that of LSSM cluster headings and standards. For example, in Unit 3, Lesson 5, the standard to "Interpret the slope and the intercept of a linear model in the context of the data," (S.ID.C.7) is addressed and the learning target describes the goal of the lesson with almost identical language stating, "I can describe the rate of change and y-intercept for a linear model in everyday language." Unit 4, Lessons 8 and 9 address standards F.IF.B.4 and F.IF.B.6 which are in the same cluster. Additionally, Unit 5, Lesson 15 and 19 also address standards F.IF.B.4 and F.IF.B.6. Unit 2, Lessons 8 and 9, address standards A.CED.A.3 and A.CED.A.4, while Unit 7, Lessons 1 and 2 address A.CED.A.1 and A.CED.A.3 in the "create equations that describe numbers or relationships" cluster of the Creating Equations Domain. In Unit 4, Lesson 13, students analyze functions using different notations using absolute error data (F.IF.C). In Unit 6, Lesson 11, students graph a quadratic function in factored form by interpreting the structure of expressions (A.SSE.A). In Unit 6, Lesson 4, the cluster "analyze functions using different representations" is addressed while the learning target states, "I can explain using graphs, tables, or calculations that exponential functions eventually grow faster than quadratic functions." This indicates the representations of graphs, tables, and calculations will be utilized when analyzing quadratic functions.
6. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL PRACTICE: Aligned materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards rather than detract from the focus and include additional content/skills to teach	**Required** **6a)** Materials attend to the full meaning of each practice standard. Over the course of any given year of instruction, each mathematical practice standard is meaningfully present in the form of assignments, activities, or problems that stimulate students to develop the habits of mind described in the practice standard. Alignments to practice standards are accurate.	**Yes**	The materials attend to the full meaning of each practice standard. Math practice standards are aligned to standards and are present in various forms to develop habits of mind described in the practice standards. Practice standards are explicitly pointed out in teacher materials. For example, in Unit 1, Lesson 3, standards S.ID.A.1 and S.ID.A.2 are addressed and included in the teacher notes as, "When students create and interpret a data display, they are reasoning abstractly and quantitatively (MP2) because they are creating a display and

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
which are not included in the Standards. ☒ Yes ☐ No			interpreting the meaning of the quantities in the display. Additionally, students make use of structure (MP7) to notice differences in distributions with the same shape, but different centers." In Unit 2, Lesson 1, students plan a pizza party, determine variables and constraints, and determine an estimated cost utilizing MP4 (Model with Mathematics) by applying math to solve an everyday problem. In Unit 3, Lesson 4, "Students reason abstractly by making sense of slope and intercept in context (MP2)" while addressing standards S.ID.B.6 and S.ID.C.7. In Unit 4, lesson 16, students examine the structure of equations to isolate specific variables to determine the inverse (A.CED.A.4). Material guidance clarifies, "To do so, students need to analyze the structure of one equation, use it to reverse the process that defines the function, and see if the reversal leads to the other equation (MP7)". In Unit 7, Lesson 3, students solve quadratic equations (A.REI.B.4) using any method. Material guidance states, "Students' approaches likely vary in efficiency and effectiveness" and "Students who use technology to solve the equations engage in choosing tools strategically (MP5)." In addition, in Unit 7, Lesson 11, students utilize MP7 to find structure and solve the equations. Although equations become increasingly more difficult, students can continue to find the structure of expressions being squared.
	Required **6b)** Materials provide sufficient opportunities for students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards (cf. MP.3). Materials engage students in problem solving as a form of argument, attending thoroughly to places in the Standards that explicitly set expectations for multi-step problems.	**Yes**	The materials provide sufficient opportunities for students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards. Throughout the course, students critique the reasoning of other students. Students often construct viable arguments to explain their reasoning. For example, in Unit 2, Lesson 7, Activity 7.2, students must explain "acceptable moves" to their partner used in solving equations and what makes them acceptable. The partner must listen to and critique their partner's explanation of their moves. In Unit 3, Lesson 7, students work with correlation coefficient (S.ID.C.8) to critique the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			reasoning of others. Materials state, "Tell students that for each scatter plot, one partner finds the associated correlation coefficient and explains why they think it goes with that scatter plot. The other partner's job is to listen and make sure they agree. If they don't agree, the partners discuss until they come to an agreement." In Unit 5, Lesson 6, students explain their reasoning and critique their peers to complete a card sort to match descriptions to graphs (F.IF.B.4). In Unit 5, Lesson 19, Activity 19.2, students are invited to "share the rationales for their decisions and their ideas for improving the clarity of the graph" which attends to MP3. In Unit 6, Lesson 7, Activity 7.1, students in groups determine which graph does not belong. There is not one right answer, but students must defend why they chose a certain graph for being different than the others.
	6c) There are teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical development.	**No**	The materials do not include teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical development. The materials do not provide full explanations for the teacher concerning the math practices, but rather there are brief explanations of math practices for each lesson. The practice standards are identified within the material alongside a brief description of where and how the math practice is addressed within the material. For example, in Unit 2 Lesson 13, "Students practice looking for and making use of structure as they identify the variables or expressions to substitute and ways to perform substitutions efficiently (MP7)." In Unit 3, Lesson 1, the Lesson Narrative states, "In the Information Gap activity, students must make sense of problems and persevere in solving them (MP1) and attend to the precision of their language (MP6) to ask appropriate questions of their peers." In Unit 5, Lesson 7, "Making graphing technology available gives students an opportunity to choose appropriate tools strategically (MP5)." In Unit 6, Lesson 13, the Lesson Narrative states, "Students also practice writing

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			expressions that produce particular graphs. To do so, students make use of the structure in quadratic expressions (MP7) and what they learned about the connections between expressions and graphs."
	6d) Materials explicitly attend to the specialized language of mathematics.	**Yes**	The materials explicitly attend to the specialized language of mathematics. Materials use accurate mathematical terminology and point out vocabulary throughout the material. For example, in Unit 1, Lesson 4, students complete Activity 1 by determining which distribution set does not belong. Students must explain their choice within small groups and to the entire class. The teacher then refines their informal vocabulary by introducing precise math vocabulary, which is continuously used throughout discussion portions of the lesson. In Unit 1, Lesson 12, the Lesson Narrative provides a definition for standard deviation and shows glossary entries. This definition is reinforced throughout the activities of the lesson and provided once again in the student lesson summary. Also, in Unit 4, Lesson 1, Activities 2 and 3 students describe relationships using the language of function, independent variable, and dependent variable. In Unit 4, Lesson 4, materials instruct teachers to help students attend to precision by using precise language. "When students articulate what they notice and wonder, they have an opportunity to attend to precision in the language they use to describe what they see (MP6). They might first use less formal or imprecise language, and then restate their observation with more precise language in order to communicate more clearly." in Unit 6, Lesson 2, the activity synthesis for Activity 2.3 defines the terms quadratic, quadratic relationship, and quadratic expression and explains the difference between a quadratic relationship and a linear relationship.
7. INDICATORS OF QUALITY: Quality materials should exhibit the indicators outlined here in order to give teachers and students the	**Required** **7a)** There is variety in what students produce. For example, students are asked to produce answers and solutions, but also, in a grade-appropriate way,	**Yes**	Students are asked to produce answers in a variety of ways. Students must produce answers, solutions, arguments, explanations, diagrams, and various mathematical models. In Unit 2, Lesson 5, Activity 5.3 students produce values, interpolated data

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
tools they need to meet the expectations of the Standards. ☒ Yes ☐ No	arguments and explanations, diagrams, mathematical models, etc.		points, an equation, a graph, and extrapolated data points, all in one task. Also, in Unit 2, Lesson 18, Activity 18.2, students translate inequalities written in words into mathematical expressions, while in Activity 18.3, students trade their responses and explain to each other what they think their partner's statements mean while making adjustments based on the critiques their partner gives them. In Unit 4, Lesson 18, Activity 18.2, students share predictions and explanations of a cell phone battery life table and also compare their strategies with strategies of other students. In Unit 4, Lesson 10, students solve a card sort, tables, graphs, and problems related to domain and range (F.IF.B.5). In Unit 7, Lesson 2, students solve quadratic equations using a variety of methods (A.REI.B.4).
	Required **7b)** There are separate teacher materials that support and reward teacher study including, but not limited to: discussion of the mathematics of the units and the mathematical point of each lesson as it relates to the organizing concepts of the unit, discussion on student ways of thinking and anticipating a variety of student responses, guidance on lesson flow, guidance on questions that prompt students thinking, and discussion of desired mathematical behaviors being elicited among students.	**Yes**	The materials provide separate teacher materials that support and reward teacher study. Materials provide an overview of the mathematics in each unit and how it relates to prior and future units in the narrative that is provided in the teacher materials. The scope and sequence details how long each unit and lesson should take and also provides a chart on unit dependency. Instructional routines used throughout the material are described under the Instructional Routine tab. In each lesson, the Preparation tab provides teachers an overview of the lesson (Lesson Narrative), Learning Goals, Required Preparation, Learning Targets, Glossary Entries, and Standards. Each Lesson contains instructions for each activity, student responses, activity synthesis, and anticipated misconceptions. The activity synthesis provides guiding questions that prompt student thinking and discussion of desired mathematical behaviors. For example, in Unit 3, Lesson 4, the student misconceptions are "Students may struggle with estimating a slope when the scale on the x and y axes are different. Ask students to find the coordinates for a couple of points on or near the line and find the slope between those points." In Unit 5, Lesson 2, teachers can access lesson notes that give directions,

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			explanations, and discussion prompts for every activity, such as guiding discussion questions for students comparing and contrasting tables in Activity 2. In Unit 5, Lesson 14, directions are provided for the teacher to guide the activity, "Select previously identified students to share their expressions for each problem, in the same sequence as shown in the Activity Narrative. Help students make the connections between the different forms, clarifying them in terms of properties of operations."
	7c) Support for English Language Learners and other special populations is thoughtful and helps those students meet the same standards as all other students. The language in which problems are posed is carefully considered.	**Yes**	The materials include support for English Language Learners and other special populations to help them meet the same standards as other students. However, these supports are not provided for every lesson. One example of support for English Language Learner is found in Unit 1, Lesson 4, Speaking, Listening: MLR 7 Compare and Connect where students are asked to prepare a visual display of their sorted cards. As students investigate each other's work, teachers are to ask students to share "what worked well in a particular approach. Listen for and amplify any comments about the use of the words symmetric, skewed, bimodal, bell-shaped, and uniform to compare the two different displays." In Unit 2, Lesson 15 a suggestion for students with disabilities is to make a chart with important terms and diagrams in order for them to better understand vertex form. In Unit 3, Lesson 5, Activity 5.2, a "support for English Language Learners" and "support for Students with Disabilities" box provides the teacher with ways to adjust the activity for those groups. In Unit 6, Lesson 8, the support for Students with Disabilities states, "Representation: Internalize Comprehension. Activate or supply background knowledge. Some students may benefit from additional support to learn how to draw appropriate diagrams. Consider providing access to some blank, or partially completed diagrams to start with." In Unit 6, Lesson 14, there are supports for English Language Learners in Activities 14.2, 14.3, and 14.4 and supports for Students with Disabilities in

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Activities 14.2 and 14.4. In Unit 7, Lesson 1, Activity 2, a routine is explained for a teacher to allow an ELL student to see other groups' "frames" to compare, and after the student is given quiet time to think, have them vocalize comparisons and contrasts.
	7d) 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.	**Yes**	The underlying design of the materials distinguishes between problems and exercises. The Warm-Up and Activity portion of each lesson features detailed problems that provide students with guided instruction to help them form connections between previously learned material and new skills. Each lesson provides a Practice Problems document where students can apply new knowledge and complete the practice exercises. For example, in Unit 1, Lesson 3, students learn about shapes of distributions of data (S.ID.A.1 and S.ID.A.2) and apply those newly learned skills in the practice problems. In Unit 4, Lesson 6, students look at two graphs and describe the differences (F.IF.B.4) and learn new mathematics during the lesson. In Unit 7, Lesson 4, there 9 practice problems. Five are from the Unit 7, Lesson 4, one is from Unit 7, Lesson 2, one is from Unit 7, Lesson 3, one is from Unit 5, Lesson 6, and one is from Unit 6, Lesson 2. In this same lesson, there are four activities with a total of 16 problems that are interwoven into the content of the activities to support new learning. To build mastery, in Unit 7, Lesson 20, students practice determining whether solutions are irrational or rational (N.RN.B.3) in order to apply what they have already learned.
	7e) Lessons are appropriately structured and scaffolded to support student mastery.	**Yes**	Lessons are appropriately structured and scaffolded to support student mastery. Lessons provide structured questions that guide teachers and students through intentional pathways toward conceptual understanding and student mastery of the content. In Unit 2, Lesson 14, questions are listed to provide scaffolding for understanding of solving quadratics by elimination (A.REI.C.6). Students are asked, "In this case, what happens when the equations are added? Why might it be helpful to do so? (The expressions with x add up to

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			0, so it's removed from the equation, making it possible to solve for y.)" and "How does finding the value of y help with solving the system? (Once we know the value of one variable, we can use it to find the value of the other, by substituting it back into one of the equations and solving that equation.)" and "How can we be sure that x=1 and y=2 simultaneously make both equations true and is a solution to the system? (We can substitute those values into the equations and see if the equations are true. We can also graph the system and see if it intersects at (1,2) .)" In Unit 3, Lesson 7, the warmup 7.1 prompts students to compare four scatter plots displaying data with linear and nonlinear trends, while Activity 7.2 is a card sort where "students are given cards displaying scatter plots of data that can be fit by linear models with varying accuracy. Cards show data that is random, poorly fit by a linear model, well fit by a linear model, and data that is better fit by another type of function, such as quadratic or exponential. Students should begin to recognize these differences and the connection to the correlation coefficient." In Unit 5, Lesson 4 warm up, a Notice and Wonder protocol is used to make observations about completed tables. Activity 2 then has students explain "decay" with multiple examples. In Activity 3, students complete a table, write an equation from it and then, in the "Are You Ready for More?" portion, students are asked a more challenging application question. In Unit 5, Lesson 9, the warmup 9.1 addresses a common misconception of 2x and x2 while Activity 9.3 uses the exponential equation y=abx which relates to 2x from the warmup. In Unit 6, Lesson 15, an activity synthesis states, "Invite students to show that the expressions defining functions r and p are equivalent. Consider pointing out that at the moment it is easier to show equivalence by going from vertex form to standard form than from standard form to vertex form. In a future unit, we will look at how to do the latter." The activity synthesis also lists questions to guide the discussion (F.IF.C.8) .

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	7f) Materials support the uses of technology as called for in the Standards.	**Yes**	The materials support the use of technology as called for in the Standards. Teachers are instructed to allow student use of different types of technology, such as graphing calculators and software programs. Math tools such as spreadsheets, graphing calculators and scientific calculators are provided within the online curriculum. For example, in Unit 1, Lesson 9, students use Geogebra (provided in the Math Tools) to create graphic representations of data and must calculate statistics using technology (S.ID.A.2). In Unit 1, Lesson 10, the preparation materials suggest students be allowed to use Geogebra or another spreadsheet software. In Unit 2, Lesson 12, the activity synthesis states, "Making graphing technology available gives students an opportunity to choose appropriate tools strategically (MP5)" to graph systems of equations (A.CED.A.3). Graphing Technology is also listed as required material in the lesson preparation. In Unit 6, Lesson 14, the preparation materials suggest using Desmos (provided in the Math Tools).
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality. ***Tier 2 ratings*** receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality. ***Tier 3 ratings*** receive a "No" for at least one of the Non-negotiable Criteria.			
Compile the results for Sections I and II to make a final decision for the material under review.			
Section	**Criteria**		
I: Non-negotiable Criteria of Superior Quality[4]	1. Focus on Major Work	**Yes**	The materials devote the majority of the time to the major work of the grade. Materials spend the appropriate amount of time on course level work, while assessing course level standards.
	2. Consistent, Coherent Content	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. The problems and activities connect two or more clusters in a domain and/or two or more domains in the grade level where these connections are natural

[4] Must score a "Yes" for all Non-negotiable Criteria to receive a Tier I or Tier II rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			and important.
	3. Rigor and Balance	**Yes**	The materials reflect the balances in the standards and help students meet all of the Standards rigorous expectations. In addition, the materials are designed so that students attain the fluencies and procedural skills required and spend sufficient time working with conceptual understanding and engaging applications.
	4. Focus and Coherence via Practice Standards	**Yes**	The materials address the practice standards in ways that enrich the content standards of the course.
II: Additional Criteria of Superior Quality[5]	5. Alignment Criteria for Standards for Mathematical Content	**Yes**	The materials foster focus and coherence by linking topics across domains and clusters and across grades/courses, staying consistent with the progressions within the Standards.
	6. Alignment Criteria for Standards for Mathematical Practice	**Yes**	The materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards.
	7. Indicators of Quality	**Yes**	The materials provide teachers and students with a variety of tools needed to meet the expectations of the Standards.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

[5] Must score a "Yes" for all Additional Criteria of Superior Quality to receive a Tier I rating.

Instructional materials are one of the most important tools educators use in the classroom to enhance student learning. It is critical that they fully align to state standards—what students are expected to learn and be able to do at the end of each grade level or course—and are high quality if they are to provide meaningful instructional support.

The Louisiana Department of Education is committed to ensuring that every student has access to high-quality instructional materials. In Louisiana all districts are able to purchase instructional materials that are best for their local communities since those closest to students are best positioned to decide which instructional materials are appropriate for their district and classrooms. To support local school districts in making their own local, high-quality decisions, the Louisiana Department of Education leads online reviews of instructional materials.

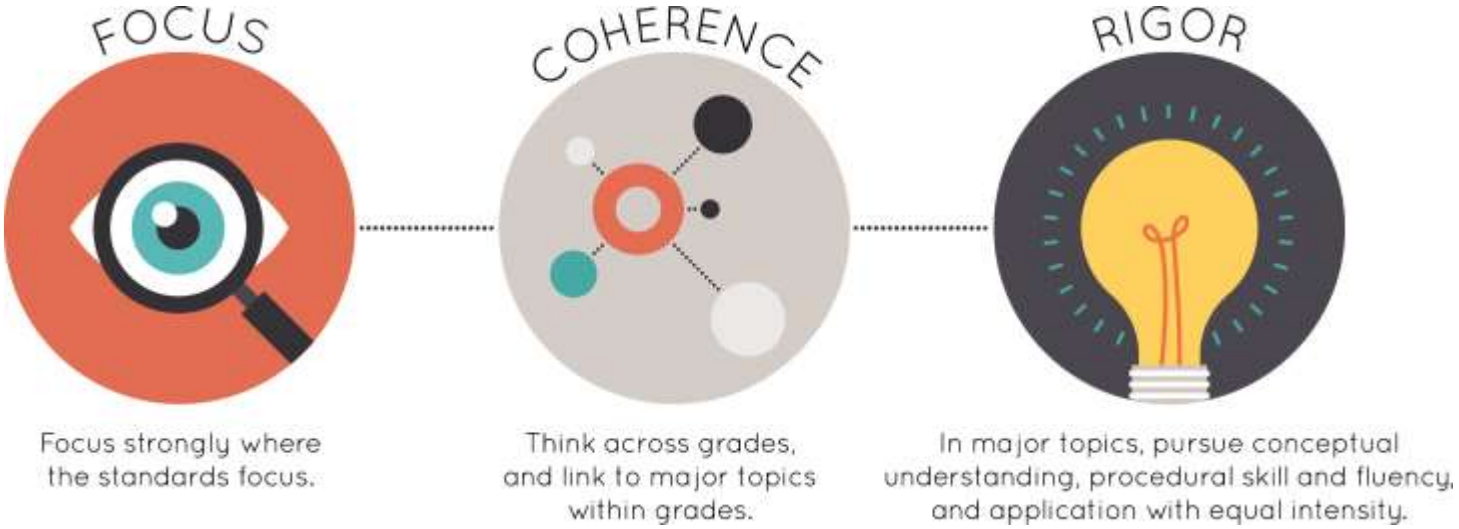
Instructional materials are reviewed by a committee of Louisiana educators. Teacher Leader Advisors (TLAs) are a group of exceptional educators from across Louisiana who play an influential role in raising expectations for students and supporting the success of teachers. Teacher Leader Advisors use their robust knowledge of teaching and learning to review instructional materials.

The 2019-2020 Teacher Leader Advisors are selected from across the state and represent the following parishes and school systems: Ascension, Beauregard, Bossier, Caddo, Calcasieu, Caldwell, City of Monroe, Desoto, East Baton Rouge, Einstein Charter Schools, Iberia, Jefferson, Jefferson Davis, KIPP New Orleans, Lafayette, Lafourche, Lincoln, Livingston, LSU Lab School, Orleans, Orleans/Lusher Charter School, Ouachita, Plaquemines, Pointe Coupee, Rapides, Richland, RSD Choice Foundation, St. John the Baptist, St. Charles, St. James, St. Landry, St. Mary, St. Tammany, Tangipahoa, Vermillion, Vernon, West Baton Rouge, West Feliciana, and Zachary. This review represents the work of current classroom teachers with experience in grades 6-12.

Appendix I.

Publisher Response

Strong mathematics instruction contains the following elements:



Title: **Illustrative Math, Algebra 1**

Grade/Course: **9**

Publisher: **Kendall Hunt**

Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Focus on Major Work (Non-negotiable)	
2. Consistent, Coherent Content (Non-negotiable)	
3. Rigor and Balance (Non-negotiable)	
4. Focus and Coherence via Practice Standards (Non-negotiable)	
5. Alignment Criteria for Standards for Mathematical Content	
6. Alignment Criteria for Standards for Mathematical Practice	
7. Indicators of Quality	

To evaluate instructional materials for alignment with the standards and determine tiered rating, begin with **Section I: Non-negotiable Criteria**.

- Review the **required**[1] Indicators of Superior Quality for each **Non-negotiable** criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, materials receive a "Yes" for that **Non-negotiable** Criterion.
- If there is a "No" for any of the **required** Indicators of Superior Quality, materials receive a "No" for that **Non-negotiable** Criterion.
- Materials must meet **Non-negotiable** Criterion 1 and 2 for the review to continue to **Non-negotiable** Criteria 3 and 4. Materials must meet all of the **Non-negotiable** Criteria 1-4 in order for the review to continue to Section II.
- If materials receive a "No" for any **Non-negotiable** Criterion, a rating of Tier 3 is assigned and the review does not continue.

If all Non-negotiable Criteria are met, then continue to **Section II: Additional Criteria of Superior Quality.**

- Review the **required** Indicators of Superior Quality for each criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, then the materials receive a "Yes" for the additional criteria.
- If there is a "No" for any **required** Indicator of Superior Quality, then the materials receive a "No" for the additional criteria.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

[1] **Required Indicators of Superior Quality** are labeled "**Required**" and shaded yellow. Remaining indicators that are shaded white are included to provide additional information to aid in material selection and do not affect tiered rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
Section I: Non-negotiable Criteria of Superior Quality **Materials must meet all of the Non-negotiable Criteria 1-4 in order for the review to continue to Section II.**				
Non-negotiable **1. FOCUS ON MAJOR WORK[2]:** Students and teachers using the materials as designed devote the large majority[3] of time to the major work of the grade/course. ☒ Yes ☐ No	**Required** **1a)** Materials should devote the large majority of class time to the major work of each grade/course. Each grade/course must meet the criterion; do not average across two or more grades.	**Yes**	The materials devote a large majority of the time to the major work of the grade. There are 132 lessons, of which 97 (73%) are devoted to the major work of the grade. Of the 97 lessons, 37 are focus on the major standards and 60 utilize supporting and additional work to address them. For example, Unit 1 focuses on the Interpreting Categorical and Quantitative Data (ID) standards, which are considered additional work standards. This unit accounts for 16 lessons. In Unit 2, 23 of the 26 lessons are devoted to major standards A.REI.D.12, A.REI.D.10, A.CED.A.3, A.CED.A.4, A.REI.B.3, and A.REI.B.4. In Unit 5, Lesson 6, students calculate the average rate of change of functions (Major F.IF.B.6). In Unit 7, Lesson 10, students solve quadratic equations (Major A.REI.B.4b).	
	Required **1b)** In any one grade/course, instructional materials should spend minimal time on content outside of the appropriate grade/course. Previous grade/course content should be used only for scaffolding instruction. In assessment materials, there are no chapter tests, unit tests, or other such assessment components that make students or teachers responsible for any topics before the grade/course in which they are introduced in the Standards.	**Yes**	The materials spend the appropriate amount of time on course level work, while assessing course level standards. Mid and End of Unit assessments assess major standards that are addressed within the lessons. For example, Unit 2, End of Unit Assessment, questions 3, 4, and 5 align to major standard A.REI.D.12. This standard is covered in Unit 2, Lessons 22 - 26. In Unit 5, End of Unit assessment questions 1, 2, 3, and 5 assess major standard A.SSE.1. This standard is covered during Lessons 4, 7, 17, and 18. In addition, lessons which include supporting content are clearly marked and standards from previous grades are used to scaffold grade-level standards. For example, the warm up problem for Unit 2, Lesson 19, builds on the 7th grade standard 7.EE.B.4b while the remaining problems address major work of the grade (i.e., standards A.REI.B.3 and A.CED.A.1). There are	

[2] For more on the major work of the grade, see Focus by Grade Level.
[3] The materials should devote at least 65% and up to approximately 85% of class time to the major work of the grade with Grades K–2 nearer the upper end of that range, i.e., 85%.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			instances where students work outside the scope of the grade on prior content. However, these lessons are listed as optional and are not distracting to the major work of the grade. A minimum amount of previous content is used to scaffold instruction. For example, in Unit 1, Lesson 5, finding median and/or mean and interquartile range (6.SP.B.5) is reviewed to teach comparing measures of central tendencies of different data sets (S.ID.A.2). In Unit 1, Lessons 6 - 8, students work with spreadsheets. In Unit 5, Lesson 14, students work with positive and negative numbers (7.EE.B.3). In Unit 2, Lesson 11, distributive property is revisited (6.EE.A.3) to build towards addressing rearranging equations without changing their values (A.CED.A.4).	
Non-negotiable **2. CONSISTENT, COHERENT CONTENT** Each course's instructional materials are coherent and consistent with the content in the Standards. ☒ Yes ☐ No	**Required** **2a)** Materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year.	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. Multiple lessons which contain supporting content also contain and connect to the major work of the grade. In Unit 3, Lesson 4, students determine the line of best fit for data in context (S.ID.B.6) and interpret the slope and y-intercept (S.ID.C.7). In Unit 4, Lesson 12, students graph piecewise functions in Activity 12.3 (Supporting F.IF.C.7b) and Activity 12.4 has students graph from key features (Supporting F.IF.C.7). This supporting content is taught after Activity 12.2 and the Are You Ready for More? portion address the major content of relating the domain of a function to its graph (Major F.IF.B.5) and problem #3 brings in major content again having students evaluate in function notation (Major F.IF.A.2). In Unit 5, Lesson 4, Activity 4.3, standards are interwoven creating direct connections. Students engage in the work of supporting standards by writing functions (Supporting F.BF.A.1) and interpreting parameters (Supporting F.LE.B.5) leading to the major work of creating equations in two variables (Major A.CED.A.2). In Unit 6, Lesson 14, students interpret statements that use function notation in terms of a context, interpret key features of a function, and graph functions,	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			connecting supporting standards F.IF.C.7 to major standards F.IF.A.2 and F.IF.B.4.	
	Required **2b)** Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade/course, in cases where these connections are natural and important.	**Yes**	The materials include problems and activities that connect two or more clusters in a domain and/or two or more domains in the course level where these connections are natural and important. Materials are coherent and consistent with multiple opportunities for students to engage in problems and activities involving two or more clusters in a domain, or two or more domains in a course. For example, in Unit 2, Lesson 26, students work within the context of trail mix to represent constraints (A.CED.A.3), describe quantities for descriptive purposes (N.Q.A.3), and graph inequalities (A.REI.D.12). In Unit 6, Lesson 7, students relate the domain of a quadratic function to its graph (F.IF.B.5), write a function that describes a relationship from a table (F.BF.A.1), and graph quadratic functions (F.IF.C.7). In Unit 5, Lesson 21, Activity 21.2, clusters and domains are connected. In the lesson, students determine what type of model could be used (F.LE.A.1), write functions (F.LE.A.2), and use a model to predict population (S.ID.B.6a). These connections are continued in the discussion for Activity 21.3 which discusses millions being an appropriate measure for population (N.Q.A.3). In Unit 6, Lesson 17, Activity 17.2 and Activity 17.5, students write quadratic functions (F.BF.A) and analyze the effects on the equation of the graph being altered (F.BF.B).	
Non-negotiable **3. RIGOR AND BALANCE:** Each grade's instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by helping students develop conceptual understanding,	**Required** **3a)** ***Attention to Conceptual Understanding:*** Materials develop conceptual understanding of key mathematical concepts, especially where called for explicitly in specific content standards or cluster headings by amply featuring high-quality conceptual problems and discussion questions.	**Yes**	The materials develop the conceptual understanding of key mathematical concepts. Throughout the curriculum, standards written at a conceptual level of rigor are addressed in a manner that builds conceptual understanding. For example, in Unit 2, Lesson 13, Activity 13.1, students determine which system could match a graphical representation and explain how they know (A.REI.D.10). The explaining portion of this example ensures that students understand mathematical topics and address the standards conceptually as in accordance with the rigor document. In Unit 3, Lesson 8, conceptual	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
procedural skill and fluency, and application. ☒ Yes ☐ No			standards S.ID.C.7, S.ID.C.8, and S.ID.C.9 are addressed conceptually as students interpret the line of best fit and correlation coefficients within the context of problems. In Unit 5, Lesson 7, students interpret parts of an equation in relationship to the amount of medicine ingested by a person (A.SSE.A.1a). Lessons have built in activities to develop conceptual understanding through discussion prompts and scaffolding questions. For example, in Unit 7, Lesson 20, students complete a class discussion to determine if the sum or product of irrational and rational numbers are either rational or irrational (N.RN.B.3). Also in Unit 7, Lessons 21, Activities 21.2 and 21.3 students experiment with adding and multiplying rational and irrational numbers to determine if sums and products are rational or irrational. These cases are then analyzed using variables and given an explanation of what makes a sum or product rational or irrational, students are asked to explain how they know if the sum or product is rational or irrational (N.RN.B.3).	
	Required **3b)** ***Attention to Procedural Skill and Fluency:*** The materials are designed so that students attain the fluencies and procedural skills required by the Standards. Materials give attention throughout the year to individual standards that set an expectation of procedural skill and fluency. In grades K-6, materials provide repeated practice toward attainment of fluency standards. In higher grades, sufficient practice with algebraic operations is provided in order for students to have the foundation for later work in algebra.	**Yes**	The materials are designed so that students attain the fluencies and procedural skills required by the standards. Sufficient practice with algebraic operations provides students with the foundation for later work in Algebra. For example, in Unit 2, Lesson 8, Practice #1, students solve an equation for a certain variable and then substitute values into the equations and in Unit 2, Lesson 8, Practice #2, students solve an equation for x and then solve the same equation for y (A.CED.A.4). In Unit 2, Lesson 9, questions 9.2, 9.3, and 9.4 present the opportunity for students to build fluency and procedural skill for standard A.CED.A.4. In Unit 3, Lesson 7, students compute the correlation coefficient (S.ID.C.8). In Unit 6, Lesson 13, students identify the effect on a graph by replacing F(x) with F(x+k) (F.BF.B.3). Procedural skill and fluency for standard A.CED.A.4 is also addressed in Unit 4, Lesson 16. In Unit 5, Lesson 18, Practice #1 students determine the associated growth factor for 7 given growth rates, procedurally practicing transforming expressions for	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			exponential functions (A.SSE.B.3c). In Unit 7, Lesson 4, students solve various types of equations including using the Zero Product Property to solve quadratics (A.REI.B.3).	
	Required **3c) *Attention to Applications:*** Materials are designed so that teachers and students spend sufficient time working with engaging applications, including ample practice with single-step and multi-step contextual problems, including non-routine problems, that develop the mathematics of the grade/course, afford opportunities for practice, and engage students in problem solving. The problems attend thoroughly to those places in the content Standards where expectations for multi-step and real-world problems are explicit.	**Yes**	The materials are designed so that students spend sufficient time working with engaging applications. For standards that require application as a type of rigor, the activities include contextual problems. In Unit 2, Lesson 22, students represent constraints, solve, graph, and apply linear inequalities to real world situations such as purchasing concert tickets and opening banking accounts (A.CED.A.3, A.REI.D.10, and A.REI.D.12). In Unit 3, Lesson 4, Activity 4.2, students must create a data set from a given video of a real life situation, graph the data set, determine a line of best fit for the data set, and use the line of best fit to predict information from the model (S.ID.B.6a). In Unit 4, Lesson 18, students complete multi-step problems relating knowledge and concepts of functions to cell phone battery life (S.ID.B.6, F.IF.B.6, F.BF.A.1, and S.ID.B.6a). In Unit 7, Lesson 17, Activity 17.3, students are given an equation and picture and must explain how the equation represents the picture. Students are then given a written situation and must write an equation from the context (A.CED.A.1).	
	Required **3d) *Balance:*** The three aspects of rigor are not always treated together and are not always treated separately.	**Yes**	It is evident within the materials that the three aspects of rigor are not always treated together and are not always treated separately. Lessons contain problems utilizing combinations of different types of rigor and also problems solely focusing on one component of rigor at a time. Most lessons in the curriculum provide opportunities for students to demonstrate procedural fluency and conceptual understanding in the context of application to real world situations. For example, in Unit 2, Lesson 3, Activity 3.2, students describes relationships in tables and then conceptually match the table to its equation (A.CED.A.2). In Unit 3, Lesson 2, Activity 2.2, students interpret (conceptual understanding) relative frequencies in terms of the types of people who have cats and dogs (application) while	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			calculating various percentages (procedural). (S.ID.B.5). In Unit 3, Lesson 7, Activity 7.3, students conceptually compare correlation coefficients and procedurally use technology to determine the line of best fit (S.ID.B.6). In Unit 5, Lesson 16, students use conceptual understanding to estimate the solution to exponential equations (F.BF.A.1). In Unit 7, Lesson 1, tasks 1.2 and 1.3 students apply conceptual understanding and procedural skill and fluency to a context of creating a picture frame of various proportions to address standards A.CED.A.3 and A.CED.A.1.	
Non-negotiable **4. FOCUS AND COHERENCE VIA PRACTICE STANDARDS:** Materials promote focus and coherence by connecting practice standards with content that is emphasized in the Standards. ☒ Yes ☐ No	**Required** **4a)** Materials address the practice standards in such a way as to enrich the content standards of the grade/course; practices strengthen the focus on the content standards instead of detracting from them, in both teacher and student materials.	**Yes**	The materials address the practice standards and enrich the content standards of the grade/course. Lessons throughout the curriculum connect Math Practices Standards (MP) with content standards and provide students with meaningful opportunities to utilize those practices in order to master the standards. For example, in Unit 1, Lesson 12, students make sense of problems (MP1) and reason abstractly (MP2) to determine which scenarios in regards to standard deviation align with given dot plots (S.ID.A.2). In Unit 1, Lesson 13, students make sense of problems and persevere in solving (MP1), reason abstractly and quantitatively (MP2), and attend to precision (MP6) when interpreting standard deviation and determining how outliers in a data set have an effect on the data which address standards S.ID.A.1, S.ID.A.2, and S.ID.A.3. In Unit 4, Lesson 8, the Lesson Narrative explains, “More ambiguity is involved here than in cases students have previously encountered, so they will need to persevere in sense making and problem solving (MP1).” This statement references how the students will engage with functions from different representations in this lesson. In Unit 4, Lesson 15, students attend to precision (MP) by creating equations for a secret code and graphing the code in a piecewise function (F.BF.B.3). In Unit 6, Lesson 2, students look for and make use of structure (MP7) and look for and express regularity in repeated reasoning (MP8) to strengthen the focus on	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			standards A.SSE.A.1, A.SSE.B.3, and F.BF.A.1a when they compare patterns and analyze the data to determine if the data represents a linear, quadratic, or exponential function. Also, in Unit 6, Lesson 8, the Lesson Narrative explains how this lesson is the bridge from students "reasoning concretely and contextually about quadratic equations to reasoning about their representations in ways that are more abstract and formal (MP2)."	
Section II: Additional Criteria of Superior Quality				
5. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL CONTENT: Materials foster focus and coherence by linking topics (across domains and clusters) and across grades/courses by staying consistent with the progressions in the Standards. ☒ Yes ☐ No	**Required** **5a)** Materials provide all students extensive work with course-level problems. Review of material from previous grades and courses is clearly identified as such to the teacher, and teachers and students can see what their specific responsibility is for the current year.	**Yes**	The materials provide all students extensive work with course-level problems. The review of material from previous grades and courses is clearly identified, and those lessons which address previous grade level standards are identified as optional. Each lesson includes 4-5 activities that give students rich tasks and various stimuli to engage with through discussion prompts and related questions to answer. Each lesson then includes 4-10 practice problems (some problems have multiple parts within them), some directly pertaining to the lesson and others being spiral review. In Unit 1, Lesson 5, Activities 5.1 and 5.2, students review 6.SP.B.5.c (giving measures of center and variability and describing patterns within data set) as "building on" this standard to address S.ID.A.2, which occurs in Activity 5.3 where students are first asked to find the mean absolute deviation. In Unit 2, Lesson 20, students write and solve inequalities while working with major standards A.CED.A.1, A.CED.A.3, and A.REI.B.3. In Unit 3, Lesson 4, Activity 4.1, students review constructing scatter plots (8.SP.A.1) and later address constructing the scatter plot, determining negative or positive associations, whether the function is linear or nonlinear, and finding the line of best fit (S.ID.B.6). The teacher materials explain, "The purpose of this warm-up is to help students recall information about scatter plots, which will be useful when students expand their understanding in a later activity." In Unit 4, Lesson 5, Activity 5.3 is deemed as an optional activity which uses technology within a lesson where students are	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			working on major standards A-REI.1.A1, F-IF.A.2, and F-IF.B.4. Unit 5, Lesson 14, the preparation states, "This lesson is optional. Its goal is to remind students about what they know of percent change and the different ways of expressing it (a topic from Grade 7), in preparation for the situations they will encounter in upcoming lessons." Unit 5, Lesson 14 addresses 7.EE.B.3.	
	Required **5b)** Materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. The materials are designed so that prior knowledge becomes reorganized and extended to accommodate the new knowledge.	**Yes**	The materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. Materials connect prior knowledge from earlier grades in a purposeful manner. The curriculum weaves prior knowledge students should have from previous courses into lessons for this course so connections can be made and knowledge gained in earlier courses can be extended upon in this course. For example, in Unit 1, Lesson 5, students calculate mean absolute deviation, interquartile range, mean, and median for a set of data by building on 6.SP.B.5.c to address S.ID.A.2. In Unit 2, Lesson 2, Activity 2.1 builds on a sixth grade standard (6.RP.A.3.c) while the rest of the activities in that lesson address major standards A.CED.A.2 and A.CED.A.3. The teacher materials state, "The strategies elicited here will be helpful later in the lesson when students calculate prices that involve a percent increase and write an equation to generalize the calculation," which occurs in Activity 2.4. In Unit 4, Lesson 1, students' knowledge of functions having exactly one output for every input is "reactivated" (8.F.A.1). Students are reminded of this knowledge that will be used in later portions of the unit (F.IF.A.1). The teacher materials state, "The goal of this opening activity is to activate, through a familiar context, what students know about functions from middle school." In Unit 6, Lesson 4, students explain using graphs, tables, or calculations that exponential functions eventually grow faster than quadratic functions by building on 6.EE.A.1 to address F.BF.A.1.a, F.IF.C, and F.LE.A.3.	
	5c) Materials include learning objectives that are visibly shaped by LSSM cluster headings and/or standards.	**Yes**	The materials include learning objectives that are visibly shaped by LSSM cluster headings and	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			standards. Multiple lessons address standards in the same cluster. The language of the learning targets mirror that of LSSM cluster headings and standards. For example, in Unit 3, Lesson 5, the standard to "Interpret the slope and the intercept of a linear model in the context of the data," (S.ID.C.7) is addressed and the learning target describes the goal of the lesson with almost identical language stating, "I can describe the rate of change and y-intercept for a linear model in everyday language." Unit 4, Lessons 8 and 9 address standards F.IF.B.4 and F.IF.B.6 which are in the same cluster. Additionally, Unit 5, Lesson 15 and 19 also address standards F.IF.B.4 and F.IF.B.6. Unit 2, Lessons 8 and 9, address standards A.CED.A.3 and A.CED.A.4, while Unit 7, Lessons 1 and 2 address A.CED.A.1 and A.CED.A.3 in the "create equations that describe numbers or relationships" cluster of the Creating Equations Domain. In Unit 4, Lesson 13, students analyze functions using different notations using absolute error data (F.IF.C). In Unit 6, Lesson 11, students graph a quadratic function in factored form by interpreting the structure of expressions (A.SSE.A). In Unit 6, Lesson 4, the cluster "analyze functions using different representations" is addressed while the learning target states, "I can explain using graphs, tables, or calculations that exponential functions eventually grow faster than quadratic functions." This indicates the representations of graphs, tables, and calculations will be utilized when analyzing quadratic functions.	
6. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL PRACTICE: Aligned materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards rather than detract from the focus and include additional content/skills to teach	**Required** **6a)** Materials attend to the full meaning of each practice standard. Over the course of any given year of instruction, each mathematical practice standard is meaningfully present in the form of assignments, activities, or problems that stimulate students to develop the habits of mind described in the practice standard. Alignments to practice standards are accurate.	**Yes**	The materials attend to the full meaning of each practice standard. Math practice standards are aligned to standards and are present in various forms to develop habits of mind described in the practice standards. Practice standards are explicitly pointed out in teacher materials. For example, in Unit 1, Lesson 3, standards S.ID.A.1 and S.ID.A.2 are addressed and included in the teacher notes as, "When students create and interpret a data display, they are reasoning abstractly and quantitatively (MP2) because they are creating a display and	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
which are not included in the Standards. ☒ Yes ☐ No			interpreting the meaning of the quantities in the display. Additionally, students make use of structure (MP7) to notice differences in distributions with the same shape, but different centers." In Unit 2, Lesson 1, students plan a pizza party, determine variables and constraints, and determine an estimated cost utilizing MP4 (Model with Mathematics) by applying math to solve an everyday problem. In Unit 3, Lesson 4, "Students reason abstractly by making sense of slope and intercept in context (MP2)" while addressing standards S.ID.B.6 and S.ID.C.7. In Unit 4, lesson 16, students examine the structure of equations to isolate specific variables to determine the inverse (A.CED.A.4). Material guidance clarifies, "To do so, students need to analyze the structure of one equation, use it to reverse the process that defines the function, and see if the reversal leads to the other equation (MP7)". In Unit 7, Lesson 3, students solve quadratic equations (A.REI.B.4) using any method. Material guidance states, "Students' approaches likely vary in efficiency and effectiveness" and "Students who use technology to solve the equations engage in choosing tools strategically (MP5)." In addition, in Unit 7, Lesson 11, students utilize MP7 to find structure and solve the equations. Although equations become increasingly more difficult, students can continue to find the structure of expressions being squared.	
	Required **6b)** Materials provide sufficient opportunities for students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards (cf. MP.3). Materials engage students in problem solving as a form of argument, attending thoroughly to places in the Standards that explicitly set expectations for multi-step problems.	**Yes**	The materials provide sufficient opportunities for students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards. Throughout the course, students critique the reasoning of other students. Students often construct viable arguments to explain their reasoning. For example, in Unit 2, Lesson 7, Activity 7.2, students must explain "acceptable moves" to their partner used in solving equations and what makes them acceptable. The partner must listen to and critique their partner's explanation of their moves. In Unit 3, Lesson 7, students work with correlation coefficient (S.ID.C.8) to critique the	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			reasoning of others. Materials state, “Tell students that for each scatter plot, one partner finds the associated correlation coefficient and explains why they think it goes with that scatter plot. The other partner’s job is to listen and make sure they agree. If they don’t agree, the partners discuss until they come to an agreement.” In Unit 5, Lesson 6, students explain their reasoning and critique their peers to complete a card sort to match descriptions to graphs (F.IF.B.4). In Unit 5, Lesson 19, Activity 19.2, students are invited to “share the rationales for their decisions and their ideas for improving the clarity of the graph” which attends to MP3. In Unit 6, Lesson 7, Activity 7.1, students in groups determine which graph does not belong. There is not one right answer, but students must defend why they chose a certain graph for being different than the others.	
	6c) There are teacher-directed materials that explain the role of the practice standards in the classroom and in students’ mathematical development.	**No**	The materials do not include teacher-directed materials that explain the role of the practice standards in the classroom and in students’ mathematical development. The materials do not provide full explanations for the teacher concerning the math practices, but rather there are brief explanations of math practices for each lesson. The practice standards are identified within the material alongside a brief description of where and how the math practice is addressed within the material. For example, in Unit 2 Lesson 13, “Students practice looking for and making use of structure as they identify the variables or expressions to substitute and ways to perform substitutions efficiently (MP7).” In Unit 3, Lesson 1, the Lesson Narrative states, “In the Information Gap activity, students must make sense of problems and persevere in solving them (MP1) and attend to the precision of their language (MP6) to ask appropriate questions of their peers.” In Unit 5, Lesson 7, “Making graphing technology available gives students an opportunity to choose appropriate tools strategically (MP5).” In Unit 6, Lesson 13, the Lesson Narrative states, “Students also practice writing	"The IM writing team is working to understand the expectations for this indicator, and plan to edit the next version of the curriculum in a way that will meet the indicator."

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			expressions that produce particular graphs. To do so, students make use of the structure in quadratic expressions (MP7) and what they learned about the connections between expressions and graphs."	
	6d) Materials explicitly attend to the specialized language of mathematics.	**Yes**	The materials explicitly attend to the specialized language of mathematics. Materials use accurate mathematical terminology and point out vocabulary throughout the material. For example, in Unit 1, Lesson 4, students complete Activity 1 by determining which distribution set does not belong. Students must explain their choice within small groups and to the entire class. The teacher then refines their informal vocabulary by introducing precise math vocabulary, which is continuously used throughout discussion portions of the lesson. In Unit 1, Lesson 12, the Lesson Narrative provides a definition for standard deviation and shows glossary entries. This definition is reinforced throughout the activities of the lesson and provided once again in the student lesson summary. Also, in Unit 4, Lesson 1, Activities 2 and 3 students describe relationships using the language of function, independent variable, and dependent variable. In Unit 4, Lesson 4, materials instruct teachers to help students attend to precision by using precise language. "When students articulate what they notice and wonder, they have an opportunity to attend to precision in the language they use to describe what they see (MP6). They might first use less formal or imprecise language, and then restate their observation with more precise language in order to communicate more clearly." in Unit 6, Lesson 2, the activity synthesis for Activity 2.3 defines the terms quadratic, quadratic relationship, and quadratic expression and explains the difference between a quadratic relationship and a linear relationship.	
7. INDICATORS OF QUALITY: Quality materials should exhibit the indicators outlined here in order to give teachers and students the	**Required** **7a)** There is variety in what students produce. For example, students are asked to produce answers and solutions, but also, in a grade-appropriate way,	**Yes**	Students are asked to produce answers in a variety of ways. Students must produce answers, solutions, arguments, explanations, diagrams, and various mathematical models. In Unit 2, Lesson 5, Activity 5.3 students produce values, interpolated data	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
tools they need to meet the expectations of the Standards. ☒ Yes ☐ No	arguments and explanations, diagrams, mathematical models, etc.		points, an equation, a graph, and extrapolated data points, all in one task. Also, in Unit 2, Lesson 18, Activity 18.2, students translate inequalities written in words into mathematical expressions, while in Activity 18.3, students trade their responses and explain to each other what they think their partner's statements mean while making adjustments based on the critiques their partner gives them. In Unit 4, Lesson 18, Activity 18.2, students share predictions and explanations of a cell phone battery life table and also compare their strategies with strategies of other students. In Unit 4, Lesson 10, students solve a card sort, tables, graphs, and problems related to domain and range (F.IF.B.5). In Unit 7, Lesson 2, students solve quadratic equations using a variety of methods (A.REI.B.4).	
	Required **7b)** There are separate teacher materials that support and reward teacher study including, but not limited to: discussion of the mathematics of the units and the mathematical point of each lesson as it relates to the organizing concepts of the unit, discussion on student ways of thinking and anticipating a variety of student responses, guidance on lesson flow, guidance on questions that prompt students thinking, and discussion of desired mathematical behaviors being elicited among students.	**Yes**	The materials provide separate teacher materials that support and reward teacher study. Materials provide an overview of the mathematics in each unit and how it relates to prior and future units in the narrative that is provided in the teacher materials. The scope and sequence details how long each unit and lesson should take and also provides a chart on unit dependency. Instructional routines used throughout the material are described under the Instructional Routine tab. In each lesson, the Preparation tab provides teachers an overview of the lesson (Lesson Narrative), Learning Goals, Required Preparation, Learning Targets, Glossary Entries, and Standards. Each Lesson contains instructions for each activity, student responses, activity synthesis, and anticipated misconceptions. The activity synthesis provides guiding questions that prompt student thinking and discussion of desired mathematical behaviors. For example, in Unit 3, Lesson 4, the student misconceptions are "Students may struggle with estimating a slope when the scale on the x and y axes are different. Ask students to find the coordinates for a couple of points on or near the line and find the slope between those points." In Unit 5, Lesson 2, teachers can access lesson notes that give directions,	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			explanations, and discussion prompts for every activity, such as guiding discussion questions for students comparing and contrasting tables in Activity 2. In Unit 5, Lesson 14, directions are provided for the teacher to guide the activity, "Select previously identified students to share their expressions for each problem, in the same sequence as shown in the Activity Narrative. Help students make the connections between the different forms, clarifying them in terms of properties of operations."	
	7c) Support for English Language Learners and other special populations is thoughtful and helps those students meet the same standards as all other students. The language in which problems are posed is carefully considered.	**Yes**	The materials include support for English Language Learners and other special populations to help them meet the same standards as other students. However, these supports are not provided for every lesson. One example of support for English Language Learner is found in Unit 1, Lesson 4, Speaking, Listening: MLR 7 Compare and Connect where students are asked to prepare a visual display of their sorted cards. As students investigate each other's work, teachers are to ask students to share "what worked well in a particular approach. Listen for and amplify any comments about the use of the words symmetric, skewed, bimodal, bell-shaped, and uniform to compare the two different displays." In Unit 2, Lesson 15 a suggestion for students with disabilities is to make a chart with important terms and diagrams in order for them to better understand vertex form. In Unit 3, Lesson 5, Activity 5.2, a "support for English Language Learners" and "support for Students with Disabilities" box provides the teacher with ways to adjust the activity for those groups. In Unit 6, Lesson 8, the support for Students with Disabilities states, "Representation: Internalize Comprehension. Activate or supply background knowledge. Some students may benefit from additional support to learn how to draw appropriate diagrams. Consider providing access to some blank, or partially completed diagrams to start with." In Unit 6, Lesson 14, there are supports for English Language Learners in Activities 14.2, 14.3, and 14.4 and supports for Students with Disabilities in	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			Activities 14.2 and 14.4. In Unit 7, Lesson 1, Activity 2, a routine is explained for a teacher to allow an ELL student to see other groups' "frames" to compare, and after the student is given quiet time to think, have them vocalize comparisons and contrasts.	
	7d) 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.	**Yes**	The underlying design of the materials distinguishes between problems and exercises. The Warm-Up and Activity portion of each lesson features detailed problems that provide students with guided instruction to help them form connections between previously learned material and new skills. Each lesson provides a Practice Problems document where students can apply new knowledge and complete the practice exercises. For example, in Unit 1, Lesson 3, students learn about shapes of distributions of data (S.ID.A.1 and S.ID.A.2) and apply those newly learned skills in the practice problems. In Unit 4, Lesson 6, students look at two graphs and describe the differences (F.IF.B.4) and learn new mathematics during the lesson. In Unit 7, Lesson 4, there 9 practice problems. Five are from the Unit 7, Lesson 4, one is from Unit 7, Lesson 2, one is from Unit 7, Lesson 3, one is from Unit 5, Lesson 6, and one is from Unit 6, Lesson 2. In this same lesson, there are four activities with a total of 16 problems that are interwoven into the content of the activities to support new learning. To build mastery, in Unit 7, Lesson 20, students practice determining whether solutions are irrational or rational (N.RN.B.3) in order to apply what they have already learned.	
	7e) Lessons are appropriately structured and scaffolded to support student mastery.	**Yes**	Lessons are appropriately structured and scaffolded to support student mastery. Lessons provide structured questions that guide teachers and students through intentional pathways toward conceptual understanding and student mastery of the content. In Unit 2, Lesson 14, questions are listed to provide scaffolding for understanding of solving quadratics by elimination (A.REI.C.6). Students are asked, "In this case, what happens when the equations are added? Why might it be helpful to do so? (The expressions with x add up to	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			0, so it's removed from the equation, making it possible to solve for y.)" and "How does finding the value of y help with solving the system? (Once we know the value of one variable, we can use it to find the value of the other, by substituting it back into one of the equations and solving that equation.)" and "How can we be sure that x=1 and y=2 simultaneously make both equations true and is a solution to the system? (We can substitute those values into the equations and see if the equations are true. We can also graph the system and see if it intersects at (1,2) .)" In Unit 3, Lesson 7, the warmup 7.1 prompts students to compare four scatter plots displaying data with linear and nonlinear trends, while Activity 7.2 is a card sort where "students are given cards displaying scatter plots of data that can be fit by linear models with varying accuracy. Cards show data that is random, poorly fit by a linear model, well fit by a linear model, and data that is better fit by another type of function, such as quadratic or exponential. Students should begin to recognize these differences and the connection to the correlation coefficient." In Unit 5, Lesson 4 warm up, a Notice and Wonder protocol is used to make observations about completed tables. Activity 2 then has students explain "decay" with multiple examples. In Activity 3, students complete a table, write an equation from it and then, in the "Are You Ready for More?" portion, students are asked a more challenging application question. In Unit 5, Lesson 9, the warmup 9.1 addresses a common misconception of 2x and x2 while Activity 9.3 uses the exponential equation y=abx which relates to 2x from the warmup. In Unit 6, Lesson 15, an activity synthesis states, "Invite students to show that the expressions defining functions r and p are equivalent. Consider pointing out that at the moment it is easier to show equivalence by going from vertex form to standard form than from standard form to vertex form. In a future unit, we will look at how to do the latter." The activity synthesis also lists questions to guide the discussion (F.IF.C.8) .	

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
	7f) Materials support the uses of technology as called for in the Standards.	**Yes**	The materials support the use of technology as called for in the Standards. Teachers are instructed to allow student use of different types of technology, such as graphing calculators and software programs. Math tools such as spreadsheets, graphing calculators and scientific calculators are provided within the online curriculum. For example, in Unit 1, Lesson 9, students use Geogebra (provided in the Math Tools) to create graphic representations of data and must calculate statistics using technology (S.ID.A.2). In Unit 1, Lesson 10, the preparation materials suggest students be allowed to use Geogebra or another spreadsheet software. In Unit 2, Lesson 12, the activity synthesis states, "Making graphing technology available gives students an opportunity to choose appropriate tools strategically (MP5)" to graph systems of equations (A.CED.A.3). Graphing Technology is also listed as required material in the lesson preparation. In Unit 6, Lesson 14, the preparation materials suggest using Desmos (provided in the Math Tools).	
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality. ***Tier 2 ratings*** receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality. ***Tier 3 ratings*** receive a "No" for at least one of the Non-negotiable Criteria.				
Compile the results for Sections I and II to make a final decision for the material under review.				
Section	**Criteria**			
I: Non-negotiable Criteria of Superior Quality[4]	1. Focus on Major Work	**Yes**	The materials devote the majority of the time to the major work of the grade. Materials spend the appropriate amount of time on course level work, while assessing course level standards.	
	2. Consistent, Coherent Content	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. The problems and activities connect two or more clusters in a domain and/or two or more domains in	

[4] Must score a "Yes" for all Non-negotiable Criteria to receive a Tier I or Tier II rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES	PUBLISHER RESPONSE
			the grade level where these connections are natural and important.	
	3. Rigor and Balance	**Yes**	The materials reflect the balances in the standards and help students meet all of the Standards rigorous expectations. In addition, the materials are designed so that students attain the fluencies and procedural skills required and spend sufficient time working with conceptual understanding and engaging applications.	
	4. Focus and Coherence via Practice Standards	**Yes**	The materials address the practice standards in ways that enrich the content standards of the course.	
II: Additional Criteria of Superior Quality[5]	5. Alignment Criteria for Standards for Mathematical Content	**Yes**	The materials foster focus and coherence by linking topics across domains and clusters and across grades/courses, staying consistent with the progressions within the Standards.	
	6. Alignment Criteria for Standards for Mathematical Practice	**Yes**	The materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards.	
	7. Indicators of Quality	**Yes**	The materials provide teachers and students with a variety of tools needed to meet the expectations of the Standards.	
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**				

[5] Must score a "Yes" for all Additional Criteria of Superior Quality to receive a Tier I rating.

Appendix II.

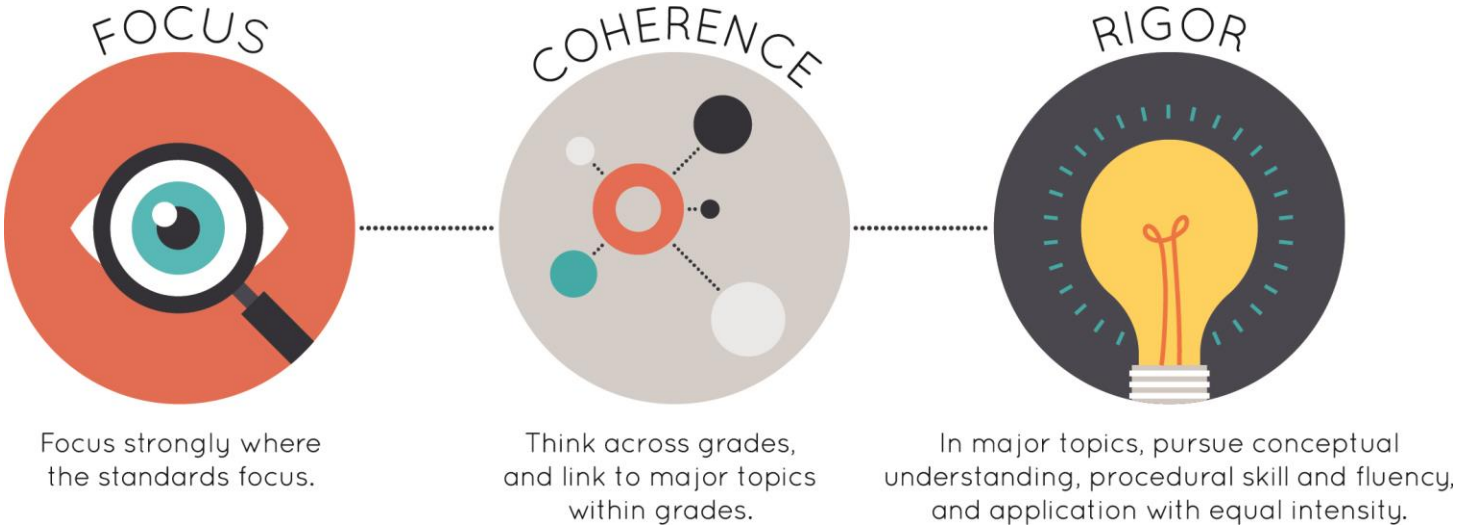
Public Comments

There were no public comments submitted.

Instructional Materials Evaluation Tool for Alignment in Mathematics Grades K – 12 (IMET)

FULL CURRICULUM
Instructional Materials

Strong mathematics instruction contains the following elements:



Title: **Illustrative Math**

Grade/Course: **Geometry**

Publisher: **Kendall Hunt**

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Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Focus on Major Work (Non-negotiable)	
2. Consistent, Coherent Content (Non-negotiable)	
3. Rigor and Balance (Non-negotiable)	
4. Focus and Coherence via Practice Standards (Non-negotiable)	
5. Alignment Criteria for Standards for Mathematical Content	
6. Alignment Criteria for Standards for Mathematical Practice	
7. Indicators of Quality	

To evaluate instructional materials for alignment with the standards and determine tiered rating, begin with **Section I: Non-negotiable Criteria**.

- Review the **required**[1] Indicators of Superior Quality for each **Non-negotiable** criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, materials receive a "Yes" for that **Non-negotiable** Criterion.
- If there is a "No" for any of the **required** Indicators of Superior Quality, materials receive a "No" for that **Non-negotiable** Criterion.
- Materials must meet **Non-negotiable** Criterion 1 and 2 for the review to continue to **Non-negotiable** Criteria 3 and 4. Materials must meet all of the **Non-negotiable** Criteria 1-4 in order for the review to continue to Section II.
- If materials receive a "No" for any **Non-negotiable** Criterion, a rating of Tier 3 is assigned, and the review does not continue.

If all Non-negotiable Criteria are met, then continue to **Section II: Additional Criteria of Superior Quality.**

- Review the **required** Indicators of Superior Quality for each criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, then the materials receive a "Yes" for the additional criteria.
- If there is a "No" for any **required** Indicator of Superior Quality, then the materials receive a "No" for the additional criteria.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

[1] **Required Indicators of Superior Quality** are labeled "**Required**" and shaded yellow. Remaining indicators that are shaded white are included to provide additional information to aid in material selection and do not affect tiered rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Section I: Non-negotiable Criteria of Superior Quality **Materials must meet all of the Non-negotiable Criteria 1-4 in order for the review to continue to Section II.**			
Non-negotiable **1. FOCUS ON MAJOR WORK[2]:** Students and teachers using the materials as designed devote the large majority[3] of time to the major work of the grade/course. ☒ Yes ☐ No	**Required** **1a)** Materials should devote the large majority of class time to the major work of each grade/course. Each grade/course must meet the criterion; do not average across two or more grades.	**Yes**	The materials devote a majority of time to the major work of the grade. Including the optional lessons and eight modeling prompts that address the major work of the grade, 65% are devoted to major standards for the grade. Unit 8 is devoted to additional standards such as probability standards S.CP.A.1-5 and S.CP.B.6-7.
	Required **1b)** In any one grade/course, instructional materials should spend minimal time on content outside of the appropriate grade/course. Previous grade/course content should be used only for scaffolding instruction. In assessment materials, there are no chapter tests, unit tests, or other such assessment components that make students or teachers responsible for any topics before the grade/course in which they are introduced in the Standards.	**Yes**	The materials spend the appropriate amount of time on course level work while assessing course-level standards. A minimum amount of previous content is used to scaffold instruction. Assessments align to appropriate on-level standards and assess standards taught in the unit. For example, in Unit 1, Lesson 9, Activity 9.2, students analyze a model to determine which store is most responsible for a delivery location using perpendicular bisectors (G.CO.D.13). In the questions accompanying the activity, students are asked to analyze the accuracy of a model tying in previously learned Algebra I skills (N.Q.A.3). Also, in Unit 5, Lesson 4, Activity 4.2, students complete a table analyzing expressions and factors used (A.SSE.A.1.a)

[2] For more on the major work of the grade, see Focus by Grade Level.
[3] The materials should devote at least 65% and up to approximately 85% of class time to the major work of the grade with Grades K–2 nearer the upper end of that range, i.e., 85%.

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			to develop a pattern relating scale factor and area (G.SRT.A.1.b).
Non-negotiable **2. CONSISTENT, COHERENT CONTENT** Each course's instructional materials are coherent and consistent with the content in the Standards. ☒ Yes ☐ No	**Required** **2a)** Materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year.	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. Multiple lessons introduce supporting content within the context of major content using appropriate connections. For example, in Unit 3, Lesson 3, Activity 3.3, groups of students are given different scale factors to dilate a quadrilateral (G.CO.A.2). Students then fill in a table to analyze side lengths of the pre-image versus image of the dilation (G.SRT.A.1.b). Also, in Unit 6, Lesson 4, Activity 4.2, students analyze a given graph of a circle to determine if certain points are on the circle. Students must understand the definition of a point and circle (G.CO.A.1) and understand how to verify if a point is on the circle algebraically (G.GPE.B.4).
	Required **2b)** Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade/course, in cases where these connections are natural and important.	**Yes**	The materials include problems and activities that connect two or more clusters in a domain and/or two or more domains in the grade level where these connections are natural and important. In addition, the content connects domains and clusters so that they are not taught in isolation. For example, in Unit 5, Lesson 14, students calculate the volume of pyramids and cones then draw and label a pyramid for an ice

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			sculpture. These two tasks address and connect LSSM G.MG.3 and G.GMD.3 of the Geometric Measurement and Dimension (G-GMD) and Modeling with Geometry (G-GM) domains . In Unit 4, Lesson, 10, Activity 10.2, students make informal arguments relating the perimeter of an inscribed polygon to the circumference of the circle in which it is inscribed (LSSM G.GMD.A.1). In order to complete the activity, students must use the trigonometric ratios to solve for missing side lengths of the triangle inside the polygons (LSSM G-SRT.C). The activity connects the Geometric Measurement and Dimensions (G-GMD) and the Similarity, Right Triangles, and Trigonometric (G-SRT) domains.
Non-negotiable **3. RIGOR AND BALANCE:** Each grade's instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by helping students develop conceptual understanding, procedural skill and fluency, and application. ☒ Yes ☐ No	**Required** **3a)** ***Attention to Conceptual Understanding:*** Materials develop conceptual understanding of key mathematical concepts, especially where called for explicitly in specific content standards or cluster headings by amply featuring high-quality conceptual problems and discussion questions.	**Yes**	The materials develop the conceptual understanding of key mathematical concepts. Lessons include activities that develop conceptual understanding through discussion prompts and scaffolding questions. Several lessons require students to explain how they arrive at a solution or their rationale for using a certain method. For example, in Unit 3, Lesson 8, Activity 8.3, students prove a variety of statements such as "All circles are similar" (G.C.A.1). In Unit 7, Lesson 2, Activity 2.2, students use an applet to "Make a conjecture about the relationship between an inscribed angle and the central angle that defines the same arc" (G.C.A.2). In Unit 8, Lesson 8, students answer questions such as "If

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			Event A is "the card is black" and Event B is "the card is a king," does the equation hold? Explain or show your reasoning. If Event A is "the card is a face card" and Event B is "the card is a spade," does the equation hold? Explain or show your reasoning." (S.CP.A.3).
	Required **3b) *Attention to Procedural Skill and Fluency:*** The materials are designed so that students attain the fluencies and procedural skills required by the Standards. Materials give attention throughout the year to individual standards that set an expectation of procedural skill and fluency. In grades K-6, materials provide repeated practice toward attainment of fluency standards. In higher grades, sufficient practice with algebraic operations is provided in order for students to have the foundation for later work in algebra.	**Yes**	The materials are designed so that students attain the fluencies and procedural skills required by the standards. There is sufficient practice for standards that are written at a procedural level. For example, in Unit 1, Lesson 4, students "Use straightedge and compass moves to construct at least 2 equilateral triangles of different sizes" (G.CO.D.13). In Unit 6, Lesson 10, Activity 10.3, students graph lines on a coordinate plane and prove that those lines form a parallelogram (G.GPE.B.4.) In Unit 6, Lesson 6, Activity 6.2, the teacher guide explains that "In this activity, students are introduced to completing the square for an equation of a circle. They look at a pre-written version of the first few steps, analyzing what was done and why. Then, they finish the process using skills from previous activities and determine the center and radius of the circle" (G.GPE.A.1).
	Required **3c) *Attention to Applications:*** Materials are designed so that teachers and students spend sufficient time working with engaging applications, including ample practice with single-step and multi-step contextual problems, including non-routine problems, that develop	**Yes**	The materials are designed so that students spend sufficient time working with engaging applications. For standards that require 'application' as a type of rigor, activities include contextual problems. In Unit 4, Lesson 10, Activity 10.3, students

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	the mathematics of the grade/course, afford opportunities for practice, and engage students in problem solving. The problems attend thoroughly to those places in the content Standards where expectations for multi-step and real-world problems are explicit.		use right triangles to answer the following questions: "An airplane travels 150 miles horizontally during a decrease of 35,000 feet vertically. What is the angle of descent? How long is the plane's path?" (G.SRT.C.8) In Unit 5, Lesson 17, Activity 17.2, students are given the following problem: "The feathers in a pillow have a total mass of 59 grams. The pillow is in the shape of a rectangular prism measuring 51 cm by 66 cm by 7 cm. What is the density of feathers in kilograms per cubic meter?" (G.MG.A.2) In Unit 4, Lesson 7, Activity 7.3, students must use trigonometric ratios to find and compare the heights of buildings (G.SRT.8). Then, in Unit 5, Lesson 17, Activity 17.3, students find the volume of cylindrical aquariums and calculate the population density of the fish living in the aquarium (G.GMD.A.3 and G.MG.A.2).
	Required **3d) *Balance:*** The three aspects of rigor are not always treated together and are not always treated separately.	**Yes**	It is evident in the materials that the three aspects of rigor are not always treated together and are not always treated separately. Lessons provide opportunities for students to demonstrate procedural fluency and conceptual understanding in the context of application to real-world situations. The levels of rigor are intertwined throughout the curriculum. For example, in Unit 4, Lesson 9, Activity 9.3, students calculate the angles of a leaning ladder and must use trigonometry to determine if it is possible to adjust the ladder to a safe angle using specific criteria for a safe angle and then must explain

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			their thinking (G.MG.A.3, G.SRT.C.8). In Unit 8, Lesson 9, Activity 9.2, students use two-way frequency tables to calculate probabilities for a pharmaceutical company's new medicine in order to determine whether the new medicine has an impact on symptoms (S.CP.A.4). In Unit 2, Lesson 1, Activity 1.3, students procedurally draw a triangle, find the midpoint, and rotate the triangle, and then conceptually make conjectures and justify them (G.CO.A.5). In Unit 7, Lesson 2, Activity 2.2, the teacher guide explains, "In this activity, students identify and describe the relationship between central and inscribed angles that define the same arc," having students conceptualize this relationship by exploring with GeoGebra (G.C.A.2).
Non-negotiable **4. FOCUS AND COHERENCE VIA PRACTICE STANDARDS:** Materials promote focus and coherence by connecting practice standards with content that is emphasized in the Standards. ☒ Yes ☐ No	**Required** **4a)** Materials address the practice standards in such a way as to enrich the content standards of the grade/course; practices strengthen the focus on the content standards instead of detracting from them, in both teacher and student materials.	**Yes**	The materials address the practice standards and enrich the content standards of the grade/course. Lessons throughout the curriculum connect Mathematical Practices Standards (MP) with content standards and provide students meaningful opportunities to utilize those practices to master standards. In Unit 5, Lesson 3, Activity 3.1, students "articulate what they notice and wonder, they have an opportunity to attend to precision in the language they use to describe what they see" (MP6, G.SRT.A.1). In Unit 4, Lesson 5, the Lesson Narrative states, "The goal is to discover the multiple ways students may have for thinking about

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			using the ratios they've computed, and to understand how students connect those ratios to the right triangles they represent (MP7, G.SRT.C.6)."
Section II: Additional Criteria of Superior Quality			
5. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL CONTENT: Materials foster focus and coherence by linking topics (across domains and clusters) and across grades/courses by staying consistent with the progressions in the Standards. ☒ Yes ☐ No	**Required** **5a)** Materials provide all students extensive work with course-level problems. Review of material from previous grades and courses is clearly identified as such to the teacher, and teachers and students can see what their specific responsibility is for the current year.	**Yes**	The materials provide all students with extensive work with course-level problems. Review of material from previous grades and courses is clearly identified, and lessons that only address previous grade-level standards are identified as optional. Each lesson includes 4-5 activities that give students rich tasks and various stimuli to engage with thorough discussion prompts and related questions to answer. Each lesson then includes 4-10 practice problems (some problems have multiple parts within them), some directly pertaining to the lesson, and others being spiral review. In Unit 2, Lesson 6, students apply the Side-Angle-Side Triangle Congruence Theorem to prove the base angles of an isosceles triangle are congruent (LSSM G-CO.B.8, G-CO.C.10). After completing the lesson, students complete the Practice portion of the lesson that includes six problems. Problem 2 states, "Tyler has written an incorrect proof to show that quadrilateral ABCD is a parallelogram. He knows segments AB and DC are congruent. He also knows angles ABC and ADC are congruent. Find the mistake in his proof." Students read the proof and find the

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			mistake. In Unit 5, Lesson 9, students use informal arguments to compare the volume of a cylinder to the volume of a prism that has equal height and area of its base. Students apply cylinder volume calculations to a solid of rotation (LSSM GDM.A.1, A.3, & B.4). After completing the lesson, students complete the practice portion of the lesson that includes seven problems. Students solve various problems addressing these course-level standards. For example, Problem 3 states, "Find the volume of each solid. 1. a cylinder with a radius of 4 inches and a height of 3 inches. 2. a cylinder with a radius of 3 inches and a height of 4 inches. 3. a hexagonal prism whose base has area 30.5 square centimeters and whose height is 6.5 centimeters. 4. a prism whose base is a right triangle with leg lengths 6 feet and 7 feet."
	Required **5b)** Materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. The materials are designed so that prior knowledge becomes reorganized and extended to accommodate the new knowledge.	**Yes**	The materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. Materials connect prior knowledge from earlier grades in a purposeful manner. The curriculum weaves prior knowledge students should have from previous courses into lessons for this course so connections can be made and knowledge gained in earlier courses can be extended upon in this course. The teacher guide provides the standards that each lesson builds upon, the standard that each lesson is addressing, as well as standards the lesson is building towards.

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			At times, the warm-up activities are used to activate prior knowledge in order to access current course-level content. For example, in Unit 1 Lesson 19, students create conjectures about angle relationships and "prove" them using what they know about rigid transformations. Students begin the lesson with a warm-up activity that involves determining the angle measures in pairs of intersecting lines and for pairs of angles that make a straight angle (LSSM 7.G.B.5). The teacher guide explains that "these understandings help students develop fluency and will be helpful later in this lesson when students will need to be able to explain why vertical angles are congruent" (LSSM G-CO.C.9). In Unit 3, students use dilations and rigid transformations to justify triangle similarity theorems. Students build on previously learned concepts of congruence and rigid motions. In Lesson 1, students "review the definition of scale factor by comparing an example and a non-example of a scaled image" (Building On LSSM 7.G.A.1, 8.G.A.3), followed by activities in which students practice dilating points and figures (Addressing LSSM G-CO.A.2, G-SRT.A.1). The warm-up activity is used to remind students how measurements in a scaled copy of a figure are related to measurements in the original figure. In the remaining activities, students practice dilating points and figures.

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	5c) Materials include learning objectives that are visibly shaped by LSSM cluster headings and/or standards.	**Yes**	The materials include learning objectives that are visibly shaped by LSSM cluster headings and/or standards. Multiple lessons address standards in the same cluster. The language of the learning targets mirrors that of LSSM cluster headings and/or standards. For example, in Unit 7, Lesson 4, the student-facing objective is "I can prove a theorem about opposite angles in quadrilaterals inscribed in circles." This learning objective reflects the language and intent of LSSM G-C.A.3 (Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.) In Unit 8, Lesson 10, Using Probability to Determine Whether Events Are Independent, students find and use probabilities to recognize dependent and independent events, which address LSSM S-CP.A.3, 4, & 5. Student facing objectives state, "I can collect data and use it to estimate probabilities," and "I can use probabilities to decide if events are independent." The purpose of the lesson and the learning objectives reflect the language and intent of Cluster A of the Statistics and Probability: Conditional Probability and the Rules of Probability (S-CP) domain which states, "Understand independence and conditional probability and use them to interpret data."

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6. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL PRACTICE: Aligned materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards rather than detract from the focus and include additional content/skills to teach which are not included in the Standards. ☒ Yes ☐ No	**Required** **6a)** Materials attend to the full meaning of each practice standard. Over the course of any given year of instruction, each mathematical practice standard is meaningfully present in the form of assignments, activities, or problems that stimulate students to develop the habits of mind described in the practice standard. Alignments to practice standards are accurate.	**Yes**	The materials attend to the full meaning of each practice standard. Math practice standards are aligned to standards and are present in various forms to develop habits of mind described in the practice standards. Practice standards are explicitly pointed out in the teaching materials. For example, in Unit 1, Lesson 15, students describe the reflections that take a figure onto itself. The Lesson Narrative states, "Students make use of structure when they discuss which lines of symmetry apply to a type of shape generally, rather than limiting their thinking to a given example" (MP.7). In Unit 3, Lesson 15, students engage in an Info-Gap routine. The structure of this routine requires students to make sense of problems (MP.1) by determining what information is necessary and then ask for the information needed to solve it. In partners, one student receives the problem card, and the other student receives the data card. The student with the problem card reads the problem, decides what information is needed to solve the problem, and then asks the partner with the data card for that specific information. The student explains how they are using the information to solve the problem, and then both students solve the problem independently before coming together to discuss the problem. In Activity 15.2, one problem card states, "Find the lengths of sides XY, PR, and QR. Do not round." The Data Card provides

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			different pieces of data that may or may not be used to solve the problem. In Unit 6, Lesson 4, students repeatedly test whether points are on a circle by finding the distance between the points and the circle's center. The Lesson Narrative states, "As students carry out their testing, they look for and express regularity in repeated reasoning (MP.8), eventually writing a generalized equation for a circle." In Unit 7, Lesson 3, students use the relationship between tangent lines and radii to calculate angle measures and prove geometric theorems. The Lesson Narrative states, "Students use these findings to show that an angle circumscribed about a circle is supplementary to the central angle defined by the points where the angle is tangent to the circle. As students write an explanation of this property, they are reasoning abstractly and quantitatively" (MP.2). In Unit 8, Lesson 3, students create organized lists, tables, and tree diagrams and use them to calculate probabilities (LSSM S-CP.A.1). As students choose to use an organized list, table, or tree diagram to determine the sample space, they utilize MP.5 (Use appropriate tools strategically).
	Required **6b)** Materials provide sufficient opportunities for students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards (cf. MP.3). Materials engage students in problem solving as a form of argument, attending thoroughly to places in	**Yes**	The materials provide sufficient opportunities for students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards. Throughout the course, students critique the reasoning of other

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	the Standards that explicitly set expectations for multi-step problems.		students. Students often construct viable arguments to explain their reasoning. For example, in Unit 6, Lesson 11, students prove that the slopes of perpendicular lines are opposite reciprocals and use slopes of perpendicular lines to solve problems. During the lesson, students construct a viable argument by proving their conjecture is true for all lines (LSSM G-GPE.B.5). Specifically, Activity 11.3, states, "Students use transformation arguments to prove that the slopes of perpendicular lines that pass through the origin are opposite reciprocals. The proof is extended to all pairs of non-vertical and non-horizontal perpendicular lines in the whole class synthesis." In Unit 8, Lesson 6, students use the addition rule to find probabilities (LSSM S-CP.B.7). In the warm-up activity, a table is displayed that includes information about people at a neighborhood park. The first portion of the problem states, "Andre says the number of people wearing sneakers or wearing a hat is 21 because there are a total of 10 people wearing a hat and a total of 11 people wearing sneakers. Is Andre correct? Explain your reasoning." Students respond by identifying the error and constructing a viable argument as they explain the correct reasoning.
	6c) There are teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical development.	**No**	The materials do not include teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical

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			development. The materials do not provide full explanations for the teacher concerning the purpose and intent of the practice standards, but rather a brief explanation of the math practices for each lesson. The practice standards are identified within the material alongside a brief description of where and how the math practice is addressed within the material. For example, in Unit 4, Lesson 11, the lesson narrative states, “Students should work with their groups to determine what information they need, how they calculated this information in the specific cases, and how they can express those repeated procedures in a generalized formula (MP.8).” In Unit 5, Lesson 10, Activity 10.3 states, “Students have the opportunity to look for and make use of structure (MP7) as they identify fundamental characteristics of these solids regardless of their obliqueness or cross-sectional shape.” In Unit 5, Lesson 16, Activity 16.2 states, “Students analyze the relationship between the dimensions and the surface area of a solid with a fixed volume. As students identify patterns in the results of their classmates' calculations, they are making sense of the problem and persevering to solve it (MP.1).”
	6d) Materials explicitly attend to the specialized language of mathematics.	**Yes**	The materials explicitly attend to the specialized language of mathematics. Materials use accurate mathematical terminology and point out vocabulary

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			throughout the material. For example, in Unit 3, Lesson 1, students dilate a figure given a scale factor and a center. The Lesson Narrative states, “When students are drawing a dilation they must both measure precisely and pay attention to which of the labeled points are being used as the center” (LSSM G-SRT.A.1). The lesson begins with the definition of scale factor learned in previous grades, as well as important concepts about scale drawings including, “the ratio distance between two points in the original figure to the distance between two corresponding points in the scaled figure is constant” and “the corresponding angles are congruent”, emphasizing the importance of attending to the specialized language of mathematics. In Unit 1, Lesson 2, students follow instructions and use precise mathematical language to describe a construction. The lesson narrative states, “The purpose of this lesson is to give students practice writing and following precise instructions with straightedge and compass moves as they create interesting designs… students attend to precision when they refer to figures in their construction using mathematical terms and labeled points” (LSSM G.-CO.A.1). At the start of the lesson, students engage in a Math Talk routine. Students are shown one problem then are given a few minutes to think about an answer and strategy. The teacher selects students to share different

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			strategies, recording the various explanations for all students to see. This routine is followed by a whole-class discussion. In the first problem, students are shown two circles, followed by 4 statements. Students explain how each statement is true. Sample responses are provided, such as "EA=EB because both segments are radii of circles with the same radius, AB," and "FA and AB are both radii of the same circle centered at A, FA=AB. That means triangle ABF is equilateral."
7. INDICATORS OF QUALITY: Quality materials should exhibit the indicators outlined here in order to give teachers and students the tools they need to meet the expectations of the Standards. ☒ Yes ☐ No	**Required** **7a)** There is variety in what students produce. For example, students are asked to produce answers and solutions, but also, in a grade-appropriate way, arguments and explanations, diagrams, mathematical models, etc.	**Yes**	Students are asked to produce answers in a variety of ways. Students produce answers, solutions, arguments, explanations, diagrams, and various mathematical models. For example, in Unit 1, Lesson 12, Practice, students draw a translated quadrilateral in Problem 2, give two possible locations of a point based on certain criteria in Problem 5, and provide a numerical response as they find the measure of an angle in Problem 7 (LSSM G-CO.A.4). In Unit 3, Lesson 11, Activity 11.2, students answer the following question, "Does a line parallel to one side of a triangle always create similar triangles? (LSSM G-SRT.B.4). In their response, students first create several examples, then find any additional information and label it on the diagram, and then write an argument to support their conjecture. In Unit 6, Lesson 15, Activity 15.2, students find points on a line, calculate solutions using a given formula, answer a

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			constructed response question, and then write an expression (LSSM G-GPE.B.6).
	Required **7b)** There are separate teacher materials that support and reward teacher study including, but not limited to: discussion of the mathematics of the units and the mathematical point of each lesson as it relates to the organizing concepts of the unit, discussion on student ways of thinking and anticipating a variety of student responses, guidance on lesson flow, guidance on questions that prompt students thinking, and discussion of desired mathematical behaviors being elicited among students.	**Yes**	The materials provide separate teacher materials that support and reward teacher study. Materials provide an overview of the mathematics in each Unit and how it relates to prior and future units in the narrative provided in the teacher materials. The scope and sequence details how long each unit and lesson should take and also provides a chart on unit dependency. Instructional routines used throughout the material are described under the Instructional Routine tab. In each lesson, the Preparation tab provides teachers an overview of the lesson (Lesson Narrative), Learning Goals, Required Preparation, Learning Targets, Glossary Entries, and Standards. Each lesson contains instructions for each activity, student responses, activity synthesis, and anticipated misconceptions. The activity synthesis provides guiding questions that prompt student thinking and discussion of desired mathematical behaviors. Other guiding documents include teacher support for Design Principles, What is a "Problem-based Curriculum," A Typical IM Lesson, How to Use the Materials, Mathematical Modeling Prompts, Information for Families, Supporting English-Language Learners, Supporting Students with Disabilities, Diagnostic Assessments, Cool Downs, Summative Assessments, and Screencast Tutorials.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Prompts are provided throughout the lessons to guide teachers in instruction. For example, in Unit 4, Lesson 5, Activity 5.2, provides Anticipated Misconceptions which states, "If students are struggling to make reasonable estimates for angle measures, refer them to their right triangle table." In Activity 5.3, teachers are provided guidance that states, "Monitor for students who: use the information from the right triangle table as constants of proportionality and work with y=kx relationships; use the information from the right triangle table as ratios and find a scale factor that scales them up to the size of the given triangle; use the information from the right triangle table as values, and guess and check to find a side length that results in the right value."
	7c) Support for English Language Learners and other special populations is thoughtful and helps those students meet the same standards as all other students. The language in which problems are posed is carefully considered.	**Yes**	The materials include support for English Language Learners and other special populations to help them meet the same standards as other students. However, these supports are not provided for every lesson. For example, in Unit 6, Lesson 13, Activity 13.2, students "solve a system consisting of a linear equation and a quadratic equation in 2 variables by estimating the solutions on a graph, and then verifying the solutions algebraically." The Support for Students with Disabilities instructs the teacher as follows: "Speaking: MLR 8 Discussion Supports. Use this routine to support whole-class discussion. As students share their strategies for

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			verifying that the points are on both the line and the circle, ask students to restate what they heard using precise mathematical language. Consider providing students time to restate what they hear to a partner before selecting one or two students to share with the class. Ask the original speaker if their peer was accurately able to restate their thinking. Call students' attention to any words or phrases that helped to clarify the original explanation, such as, 'each point is exactly five units away from the center (3,2).' This provides more students with an opportunity to produce language as they interpret the reasoning of others. Design Principle(s): Support sense-making." In Unit 8, Lesson 8, Activity 8.1, "the mathematical purpose of this activity is to explore, formally define, and begin to develop an understanding of conditional probability." The lesson's Support for Students with Disabilities instructs as follows: "Representation: Internalize Comprehension. Use virtual or concrete manipulatives to connect symbols to concrete objects or values. Provide students with a standard deck of cards to see the different suits and the cards that are red and black. Allow groups of students to manipulate the cards to illustrate the probabilities in the problems. Supports accessibility for Visual-spatial processing; Conceptual processing."

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	7d) 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.	**Yes**	The underlying design of the materials distinguishes between problems and exercises. The Warm-Up and Activity portion of each lesson features detailed problems that provide students with guided instruction to form connections from previously learned material to the new skill. Each lesson also provides a Practice Problems document where students can apply new knowledge and complete the practice exercises. For example, in Unit 2, Lesson 5, students write proofs that segments of the same length are congruent (LSSM G-CO.B.6). Students begin with a warm-up activity to think about the definition of "congruence." The warm-up is followed by Activity 5.2 in which students work to prove segments of the same length are congruent. Students must solve the following problems: "Prove the conjecture: If AB is a segment in the plane and CD is a segment in the plane with the same length as AB, then AB is congruent to CD;" and, "Prove or disprove the following claim, 'If EF is a piece of string in the plane, and GH is a piece of string in the plane with the same length as EF, then EF is congruent to GH'." After students try to solve the problems, they share pieces of the proof until the whole class agrees that the proofs are sufficiently detailed and convincing. The teacher helps students "determine when they should refer to rays versus segments to solidify the idea that the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			segments aren't congruent until they have used the fact that they are the same length." The activities lead students to the theorem that "If two segments have the same length, then they are congruent." Students then apply this concept to zig zags. The lesson ends with a Lesson Synthesis, Cool-down, and Lesson Summary. Students then apply the newly learned math as they independently work through seven problems in the Practice portion of the lesson.
	7e) Lessons are appropriately structured and scaffolded to support student mastery.	**Yes**	Lessons are appropriately structured and scaffolded to support student mastery. The units are structured in a way to build upon skills and concepts built during earlier courses and are scaffolded from unit to unit, building on skills and concepts developed within the course. For example, in Unit 1, students use previous knowledge of angle properties and angle-preserving and length-preserving properties of rigid transformations to create rigid transformations using construction tools without a coordinate grid. Students also apply previous understanding of the concept of functions as they describe transformations using the language of functions. By the end of some lessons, students create conjectures about angle relationships and "prove" them using what they know about rigid transformations. This first unit not only connects to prior learning but prepares students for the units that follow. Lessons provide structured

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			questions that guide teachers and students through intentional pathways toward conceptual understanding and student mastery of content. For example, in Unit 2, students first develop an understanding of congruence and then apply these concepts to prove theorems about triangle congruence. This knowledge is built upon as they apply the same concepts as they create proofs about quadrilaterals and parallelograms. In Lesson 1, students first understand that "corresponding points are connected in the same order after a transformation. Next, students learn that "in 'congruent' triangles, corresponding parts must also be congruent," which is then followed by an activity in which the students "identify corresponding parts in congruent triangles." The lesson ends with a synthesis in which they "write down their reasoning for why corresponding parts of congruent figures must be congruent. (If the figures are congruent, then you can move one exactly on top of the other, which means all vertices and edges line up. Since that's what it means to be congruent, all those parts have to be congruent.)" (LSSM G-CO.A.5, G-CO.B.6). More specifically, in Activity 1.2, students are shown two congruent triangles and then answer questions such as, "Find a sequence of rigid motions that takes triangle ABC to triangle DEF." and What is the image of segment BC after the transformation?" In Activity 1.3 students draw a triangle, find

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			the midpoint of the long side of the triangle, rotate the triangle 180 degrees using the midpoint as the center of rotation, label the corresponding parts and mark what is congruent. Students then make a conjecture and justify it by answering the following questions, "What type of quadrilateral have you formed? What is the definition of that type of quadrilateral type? and Why must the quadrilateral you have fit the definition?" During the Cool Down, students complete the following problem in order to "practice reasoning based on corresponding parts of figures they know to be congruent." The problem states, "Triangle A'B'C' is a reflection of triangle ABC across line BC. Prove that ray BC is the angle bisector of angle ABA'."
	7f) Materials support the uses of technology as called for in the Standards.	**Yes**	The materials support the uses of technology as called for in the Standards. Materials instruct teachers to allow students to use different types of technology, such as graphing calculators and software programs. There are math tools such as spreadsheets, graphing calculators, and scientific calculators provided within the online curriculum. For example, In Unit 6, Lesson 7, Distances and Parabolas, under Required Preparation in the Teacher's Guide, it states, "Devices are required for the digital version of the activity Into Focus." The Lesson Narrative states, "One of the activities in this lesson works best when each student has access

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			to devices that can run the Desmos applet because students will benefit from seeing the relationship in a dynamic way." In the lesson, students utilize technology as they analyze a set of points that are the same distance from a given point and a given line and then practice using distance calculations to test if particular points lie on given parabolas (LSSM G-GPE.B.4). In Unit 5, Lesson 14, students use scientific calculators as they calculate volumes of pyramids and cones and work backward to find possible dimensions of a pyramid or cone (LSSM G-GMD.A.3). The teacher guide lists the scientific calculator in the Required Preparation portion, and it also specifies which activities to allow students to use the calculators during the lesson.
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality. ***Tier 2 ratings*** receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality. ***Tier 3 ratings*** receive a "No" for at least one of the Non-negotiable Criteria.			
Compile the results for Sections I and II to make a final decision for the material under review.			
Section	**Criteria**	**Yes/No**	**Final Justification/Comments**
I: Non-negotiable Criteria of Superior Quality[4]	1. Focus on Major Work	**Yes**	The materials devote a large majority of the time to the major work of the grade. Materials spend the appropriate amount of time on course level work while assessing course-level standards.
	2. Consistent, Coherent Content	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. Materials include problems and activities that connect two or more clusters in a domain and/or

[4] Must score a "Yes" for all Non-negotiable Criteria to receive a Tier I or Tier II rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			two or more domains in the grade level where these connections are natural and important.
	3. Rigor and Balance	**Yes**	The materials reflect the balances in the standards and help students meet all of the Standard's rigorous expectations. In addition, the materials are designed so that students attain the fluencies and procedural skills required and spend sufficient time working with conceptual understanding and engaging applications.
	4. Focus and Coherence via Practice Standards	**Yes**	The materials address the practice standards in ways that enrich the content standards of the course.
II: Additional Criteria of Superior Quality[5]	5. Alignment Criteria for Standards for Mathematical Content	**Yes**	The materials foster focus and coherence by linking topics across domains and clusters and across grades/courses, staying consistent with the progressions within the Standards.
	6. Alignment Criteria for Standards for Mathematical Practice	**Yes**	The materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards.
	7. Indicators of Quality	**Yes**	The materials provide teachers and students with a variety of tools needed to meet the expectations of the Standards.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

[5] Must score a "Yes" for all Additional Criteria of Superior Quality to receive a Tier I rating.

Instructional materials are one of the most important tools educators use in the classroom to enhance student learning. It is critical that they fully align to state standards—what students are expected to learn and be able to do at the end of each grade level or course—and are high quality if they are to provide meaningful instructional support.

The Louisiana Department of Education is committed to ensuring that every student has access to high-quality instructional materials. In Louisiana all districts are able to purchase instructional materials that are best for their local communities since those closest to students are best positioned to decide which instructional materials are appropriate for their district and classrooms. To support local school districts in making their own local, high-quality decisions, the Louisiana Department of Education leads online reviews of instructional materials.

Instructional materials are reviewed by a committee of Louisiana educators. Teacher Leader Advisors (TLAs) are a group of exceptional educators from across Louisiana who play an influential role in raising expectations for students and supporting the success of teachers. Teacher Leader Advisors use their robust knowledge of teaching and learning to review instructional materials.

The 2019-2020 Teacher Leader Advisors are selected from across the state and represent the following parishes and school systems: Ascension, Beauregard, Bossier, Caddo, Calcasieu, Caldwell, City of Monroe, Desoto, East Baton Rouge, Einstein Charter Schools, Iberia, Jefferson, Jefferson Davis, KIPP New Orleans, Lafayette, Lafourche, Lincoln, Livingston, LSU Lab School, Orleans, Orleans/Lusher Charter School, Ouachita, Plaquemines, Pointe Coupee, Rapides, Richland, RSD Choice Foundation, St. John the Baptist, St. Charles, St. James, St. Landry, St. Mary, St. Tammany, Tangipahoa, Vermillion, Vernon, West Baton Rouge, West Feliciana, and Zachary. This review represents the work of current classroom teachers with experience in grades 6-12.

Appendix I.

Publisher Response

The publisher had no response.

Appendix II.

Public Comments

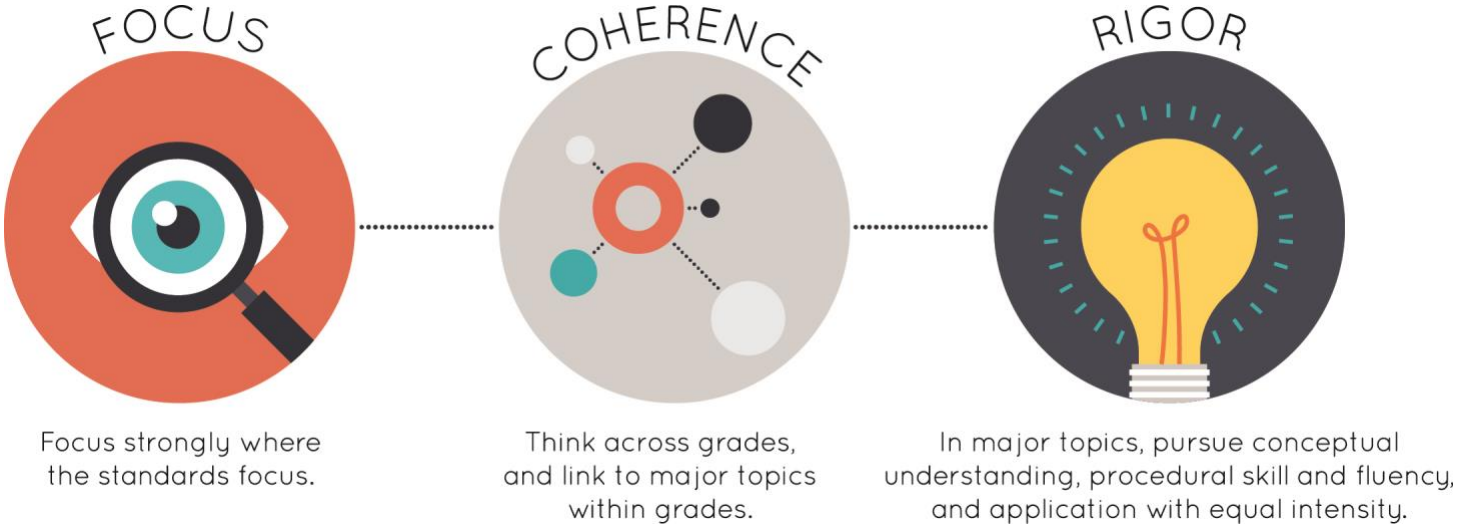
There were no public comments submitted.

DEPARTMENT of EDUCATION
Louisiana Believes

Instructional Materials Evaluation Tool for Alignment in Mathematics Grades K – 12 (IMET)

FULL CURRICULUM
Instructional Materials

Strong mathematics instruction contains the following elements:



Title: **Illustrative Math, Algebra II**

Grade/Course: **11**

Publisher: **Kendall Hunt**

Copyright: **2019**

Overall Rating: **Tier I, Exemplifies quality**

Tier I, Tier II, Tier III Elements of this review:

STRONG	WEAK
1. Focus on Major Work (Non-negotiable)	
2. Consistent, Coherent Content (Non-negotiable)	
3. Rigor and Balance (Non-negotiable)	
4. Focus and Coherence via Practice Standards (Non-negotiable)	
5. Alignment Criteria for Standards for Mathematical Content	
6. Alignment Criteria for Standards for Mathematical Practice	
7. Indicators of Quality	

To evaluate instructional materials for alignment with the standards and determine tiered rating, begin with **Section I: Non-negotiable Criteria**.

- Review the **required**[1] Indicators of Superior Quality for each **Non-negotiable** criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, materials receive a "Yes" for that **Non-negotiable** Criterion.
- If there is a "No" for any of the **required** Indicators of Superior Quality, materials receive a "No" for that **Non-negotiable** Criterion.
- Materials must meet **Non-negotiable** Criterion 1 and 2 for the review to continue to **Non-negotiable** Criteria 3 and 4. Materials must meet all of the **Non-negotiable** Criteria 1-4 in order for the review to continue to Section II.
- If materials receive a "No" for any **Non-negotiable** Criterion, a rating of Tier 3 is assigned and the review does not continue.

If all Non-negotiable Criteria are met, then continue to **Section II: Additional Criteria of Superior Quality.**

- Review the **required** Indicators of Superior Quality for each criterion.
- If there is a "Yes" for all **required** Indicators of Superior Quality, then the materials receive a "Yes" for the additional criteria.
- If there is a "No" for any **required** Indicator of Superior Quality, then the materials receive a "No" for the additional criteria.

Tier 1 ratings receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality.
Tier 2 ratings receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality.
Tier 3 ratings receive a "No" for at least one of the Non-negotiable Criteria.

[1] **Required Indicators of Superior Quality** are labeled "**Required**" and shaded yellow. Remaining indicators that are shaded white are included to provide additional information to aid in material selection and do not affect tiered rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
Section I: Non-negotiable Criteria of Superior Quality **Materials must meet all of the Non-negotiable Criteria 1-4 in order for the review to continue to Section II.**			
Non-negotiable **1. FOCUS ON MAJOR WORK[2]:** Students and teachers using the materials as designed devote the large majority[3] of time to the major work of the grade/course. ☒ Yes ☐ No	**Required** **1a)** Materials should devote the large majority of class time to the major work of each grade/course. Each grade/course must meet the criterion; do not average across two or more grades.	**Yes**	The materials devote a majority of the time to the major work of the grade. There 67% of lessons are devoted to the major work of the grade. When omitting the lessons marked optional or outside the scope of the LSSM, 66% lessons are devoted to major standards of the grade. There are two supporting standards that are not addressed in the curriculum (i.e., LSSM F.IF.C.7b and F.IF.C.9).
	Required **1b)** In any one grade/course, instructional materials should spend minimal time on content outside of the appropriate grade/course. Previous grade/course content should be used only for scaffolding instruction. In assessment materials, there are no chapter tests, unit tests, or other such assessment components that make students or teachers responsible for any topics before the grade/course in which they are introduced in the Standards.	**Yes**	The materials spend the appropriate amount of time on course level work while assessing course-level standards. Mid and End of Unit Assessments assess major standards that are addressed within the lessons. For example, Unit 1, End of Unit Assessment, Question 7, students are provided sequence A in a table and sequence B on a coordinate plane then write definitions for the nth term of the sequence (LSSM F.BF.A.2, F.IF.C.9). In Unit 4, End of Unit Assessment, Question 5, students solve equations such as $7 \times 10^n = 700$ (LSSM F.LE.A.4) which is taught in Unit 4, Lesson 14. There are instances where students work outside the scope of the grade on prior content; however, these lessons are listed as optional and do not

[2] For more on the major work of the grade, see Focus by Grade Level.

[3] The materials should devote at least 65% and up to approximately 85% of class time to the major work of the grade with Grades K–2 nearer the upper end of that range, i.e., 85%.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			distract from the major work of the grade. For example, in Unit 2, Lesson 4, students add, subtract, and multiply polynomials (LSSM A.APR.A.1). In Unit 2, Lessons 16, students investigate the surface area of cylinders (LSSM A.CED.A.4). There are no chapter tests, unit tests, or other assessments that make students or teachers responsible for any topics before the course in which they are introduced. The previous content is used to scaffold instruction as seen in Unit 3, Lesson 1, where the Lesson Narrative in the teacher materials explains that "This lesson is optional because it revisits below grade-level content. If the pre-unit diagnostic assessment indicates that your students know this material, this lesson may be safely skipped." The lesson reactivates prior knowledge that will be needed later in the unit to deal with rational exponents (LSSM N.RN.A.1). In Unit 2, Lesson 6, Activity 6.3, students are reminded how to relate functions in factored form to their equivalent counterparts (LSSM A.SSE.B.3). The teacher materials explain that "This activity is an optional practice that not all classes may need. If students struggle with multiplying in the previous activity, this activity may be useful."
Non-negotiable **2. CONSISTENT, COHERENT CONTENT** Each course's instructional materials are coherent and	**Required** **2a)** Materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year.	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. Multiple lessons that contain supporting content also contain

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
consistent with the content in the Standards. ☒ Yes ☐ No			and connect the major work of the grade. In Unit 2, Lesson 19, students explore the end behavior of rational functions (Supporting, LSSM S.ID.B.6) by writing functions in two variables that describe a relationship between two quantities (Major, LSSM F.BF.A.1). In Unit 4, Lesson 3, students determine the value of exponential functions at non-integer number inputs (Supporting, LSSM F.LE.A.2) using properties of integer exponents (Major, LSSM N.RN.A.1). Unit 6, Lesson 8, Activity 8.3, states, "The purpose of this activity is for students to compare different function types with a focus on periodic and non-periodic functions. The card sort allows students to compare a variety of graphs, helping students to construct their understanding of what the graphs of periodic functions can look like in preparation for future lessons that focus on the graphs of cosine and sine." The lesson connects Supporting Cluster LSSM F.IF.C to Major LSSM F.IF.B.4. In Unit 6, Lesson 18, students analyze graphs and their features using appropriate vocabulary such as "amplitude," "midline," and "period" (Major, LSSM F.IF.B.4) and sketch graphs of trigonometric functions (Supporting, LSSM F.IF.C.7e).
	Required **2b)** Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade/course, in cases where these connections are natural and important.	**Yes**	The materials include problems and activities that connect two or more clusters in a domain and/or two or more domains in the course level where these connections are natural and important.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			Materials are coherent and consistent with multiple opportunities for students to engage in problems and activities involving two or more clusters in a domain, or two or more domains in a course. For example, in Unit 6, Lesson 5, Cluster A. Extend the domain of trigonometric functions using the unit circle and Cluster C. Prove and apply trigonometric identities, within the same domain, Functions: Trigonometric Functions (F-TF) are connected. Students are to explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers (LSSM F.TF.A.2) and prove the Pythagorean Identity (LSSM F.TF.C.8). Unit 1, Lesson 8, the Linear, Quadratic, and Exponential Models (LE) and Building Functions (BF) domains are connected. Students are to construct exponential and linear functions (LSSM F.LE.A.2) to write arithmetic and geometric sequences (LSSM F.BF.A.2). In Unit 7, Lesson 3, Activity 7.2, students identify if a given situation represents an experimental study or an observational study and must explain their reasoning (LSSM S.IC.B.3). The discussion questions within the activity lead students to conclude the importance of a random sample (LSSM S.IC.A.1) and connect Cluster B (Make inferences and justify conclusions from sample surveys, experiments, and observational studies) to Cluster A (Understand and evaluate the random processes underlying statistical

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			experiments) within the same domain, Statistics and Probability: making Inferences and Justifying Conclusions (S-IC). In Unit 5, Lesson 10, Activity 10.2, students graph data provided in a table and answer the following questions: "How many books were sold per person in 2010 and 2016? What do these values tell you about book sales?" (LSSM F.IF.C.7, F.BF.A.1b). The lesson connects the domains Interpreting Functions (IF) and Building Functions (BF).
Non-negotiable **3. RIGOR AND BALANCE:** Each grade's instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by helping students develop conceptual understanding, procedural skill and fluency, and application. ☒ Yes ☐ No	**Required** **3a) *Attention to Conceptual Understanding:*** Materials develop conceptual understanding of key mathematical concepts, especially where called for explicitly in specific content standards or cluster headings by amply featuring high-quality conceptual problems and discussion questions.	**Yes**	The materials develop the conceptual understanding of key mathematical concepts. Throughout the curriculum, standards written at a conceptual level of rigor are addressed in a manner that builds conceptual understanding. Several lessons require students to explain how they arrived at a solution or their rationale for using a certain method. For example, in Unit 2, Lesson 20, Activity 20.3, students are instructed to "Revise your equation and then calculate how many of his next consecutive 'at-bats' need to be base hits to raise his batting average to .300. Be prepared to explain how you revised your equation and each of your solving steps." (LSSM A.REI.A.1). In Unit 7, Lesson 3, Activity 3.3, students analyze designs for power systems offered by a company for the population and answer the following question: "Which method do you think is best for estimating the mean area for the entire population? Explain your

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			reasoning." (LSSM S.ID.A.4). In Unit 3, Lesson 10, students are to understand and represent-1 and its multiples (LSSM N.CN.A.1). In Unit 5, Lesson 11, Practice, students sketch functions and show key features (LSSM F.IF.B.4). In Unit 6, Lesson 12, Activity 12.2, Question 1, students are asked to "Complete the table. For each positive angle in the table, add the corresponding point and the segment between it and the origin to the unit circle" then students must answer questions that require analyzing the table representing trigonometric functions as seen on the unit circle (LSSM F.TF.B.5).
	Required **3b)** ***Attention to Procedural Skill and Fluency:*** The materials are designed so that students attain the fluencies and procedural skills required by the Standards. Materials give attention throughout the year to individual standards that set an expectation of procedural skill and fluency. In grades K-6, materials provide repeated practice toward attainment of fluency standards. In higher grades, sufficient practice with algebraic operations is provided in order for students to have the foundation for later work in algebra.	**Yes**	The materials are designed so that students attain the fluencies and procedural skills required by the standards. There is sufficient practice for standards that are written at a procedural level. For example, in Unit 2, Lesson 11, students find intersections of graphs of quadratic and linear functions (LSSM A.REI.C.7). In Unit 3, Lesson 17, Activity 17.3, students solve quadratic equations such as $x^2 - 8x + 13 = 0$ which have complex solutions (LSSM N.CN.C.7). In Unit 2, Lesson 8, students graph polynomial functions (LSSM F.IF.C.7c). In Unit 3, Lesson 18, Activity 18.3, students are given a table with two columns labeled Partner A and B, with each row having the same quadratic equation in different forms. Students are told, "For each row, you and your partner will each solve a quadratic

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			equation. You should each get the same answer. If you disagree, work to reach an agreement." (LSSM N.CN.C.7).
	Required **3c) *Attention to Applications:*** Materials are designed so that teachers and students spend sufficient time working with engaging applications, including ample practice with single-step and multi-step contextual problems, including non-routine problems, that develop the mathematics of the grade/course, afford opportunities for practice, and engage students in problem solving. The problems attend thoroughly to those places in the content Standards where expectations for multi-step and real-world problems are explicit.	**Yes**	The materials are designed so that students spend sufficient time working with engaging applications. In Unit 4, Lesson 4, Activity 4.3, students write exponential functions to represent the amount of caffeine left in a body after so many hours and analyze the graphs of those functions (LSSM F.LE.A.2). In Unit 7, Lesson 10, Activity 10.3, students estimate the proportion of flies with genetic mutations in a group after being presented with a scenario in which a biologist selects 40 flies to sequence at random and finds that 9 of them have the genetic mutation (LSSM S.IC.B.4). In Unit 2, Lesson 20, Activity 20.2, students create an equation to represent the average cost per T-shirt if T-shirts are printed by a particular business (LSSM A.CED.1). In Unit 5, Lesson 8, Activity 8.3, students write a function that describes the relationship between the amount of food and a dog's weight (LSSM F.BF.A.1a). In Unit 6, Lesson 7, Activity 7.2, given a clock face on an unmarked grid, students are asked, "1. The length of the minute hand on a clock is 5 inches and the center of the clock is at (0,0) on a coordinate plane. Determine the coordinates of the end of the minute hand at the following times. Explain or show your reasoning. a) 45 minutes after the hour, b) 10 minutes after the hour, c) 40

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			minutes after the hour" (LSSM F.TF.B.5). Also, in Unit 7, Lesson 8, Activity 8.4 says, "You and some friends are playing a game in which each person rolls a standard number cube they brought. One of your friends seems to be rolling 6 a lot. Your friend rolled 20 times and got a 6 on eight of the rolls. Describe how you could collect data to determine if your friend might be using 'number cubes' that are not fair." (LSSM S.IC.A.2).
	Required **3d) *Balance:*** The three aspects of rigor are not always treated together and are not always treated separately.	**Yes**	It is evident in the materials that the three aspects of rigor are not always treated together and are not always treated separately. Lessons provide opportunities for students to demonstrate procedural fluency and conceptual understanding in the context of application to real-world situations. The levels of rigor are intertwined throughout the curriculum. For example, in Unit 5, Lesson 3, Activity 3.3, students use technology to graph two exponential functions on the same coordinate plane (procedural), analyze Jada and Noah's graphs (conceptual), and explain which graph best fits the data, which addresses LSSM F.BF.A.1 and S.ID.B.6a. In Unit 6, Lesson 6, Activity 6.2, students analyze Andre's work with the Pythagorean Identity and answer the question "Do you agree with Andre? Explain or show your reasoning." (Conceptual, LSSM F.TF.C.8.). In Unit 4, Lesson 1, Activity 1.2, students reason (conceptual understanding) how to scale a

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			passport image in a photo editor (application) while calculating the scale factor (procedural) (LSSM F.LE.A.2). In Unit 4, Lesson 2, Activity 2.2, students are given the following situation: "The tuition at a college was $30,000 in 2012, $31,200 in 2013, and $32,448 in 2014. The tuition has been increasing by the same percentage since the year 2000." Students must interpret the meaning of 30,000 and 1.04 in a given function in #1 (Conceptual, LSSM F.LE.B.5).
Non-negotiable **4. FOCUS AND COHERENCE VIA PRACTICE STANDARDS:** Materials promote focus and coherence by connecting practice standards with content that is emphasized in the Standards. ☒ Yes ☐ No	**Required** **4a)** Materials address the practice standards in such a way as to enrich the content standards of the grade/course; practices strengthen the focus on the content standards instead of detracting from them, in both teacher and student materials.	**Yes**	The materials address the practice standards and enrich the content standards of the grade/course. Lessons throughout the curriculum connect the Mathematical Practice Standards (MP) with content standards and provide students with meaningful opportunities to utilize those practices in order to master the standards. For example, in Unit 4, Lesson 9, Activity 9.2, students look for repeated regularity in numbers to recognize log values and the relationship to exponents (MP.8) and in Activity 9.3, use precise language (MP.6) to answer questions such as, "What do you think logarithm means or does?" (LSSM F.LE.A.4). In Unit 6, Lesson 16, Activity 16.2, students find the period of a function given in equation form by identifying a repeating pattern (MP.8) (LSSM F.TF.B). In Unit 1, Lesson 11, "Preparation," it is stated that "The goal of this lesson is for students to encounter several situations

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			where it makes sense to find the sum of a sequence, defined here as adding up the value of the terms of the sequence… The main activities in this lesson are meant to give students the opportunity to make sense of the problems using the tools they have worked with throughout this unit, such as tables, graphs, and equations (MP.1).” (LSSM F.BF.A.2). In Unit 7, Lesson 6, “Preparation,” it is explained that “ When students make connections between histograms, normal distributions, the mean, and the standard deviation to estimate population proportions, students are reasoning abstractly and quantitatively (MP.2).” (LSSM S.ID.A.4).
Section II: Additional Criteria of Superior Quality			
5. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL CONTENT: Materials foster focus and coherence by linking topics (across domains and clusters) and across grades/courses by staying consistent with the progressions in the Standards. ☒ Yes ☐ No	**Required** **5a)** Materials provide all students extensive work with course-level problems. Review of material from previous grades and courses is clearly identified as such to the teacher, and teachers and students can see what their specific responsibility is for the current year.	**Yes**	The materials provide all students with extensive work with course-level problems. The review of material from previous grades and courses is clearly identified, and those lessons which address previous grade-level standards are identified as optional. Each lesson includes 4-5 activities that give students rich tasks and various stimuli to engage with through discussion prompts and related questions to answer. Each lesson then includes 4-10 practice problems (some problems have multiple parts within them), some directly pertaining to the lesson, and others being spiral review. In Unit 2, Lesson 12, students divide polynomials while working with the major work standards A.APR.B.2

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			and A.APR.B.3. In Unit 1, Lesson 3, Activity 3.1, the teacher guide explains that "The purpose of this warm-up is to informally assess strategies and understandings students currently have for interpreting function notation which they learned about in an earlier course. Students will use function notation when they define sequences with equations in later lessons, so this warm-up is an opportunity for practice" (LSSM F.IF.A.2).
	Required **5b)** Materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. The materials are designed so that prior knowledge becomes reorganized and extended to accommodate the new knowledge.	**Yes**	The materials relate course-level concepts explicitly to prior knowledge from earlier grades and courses. Materials connect prior knowledge from earlier grades in a purposeful manner. The curriculum weaves prior knowledge students should have from previous courses into lessons for this course so connections can be made and knowledge gained in earlier courses can be extended upon in this course. For example, Unit 6, Lesson 2, the Lesson Narrative explains that "The purpose of this lesson is for students to recall how to determine the value of the cosine, sine, and tangent of an angle for a right triangle. This lesson builds on the work in the previous lesson and incorporates the right triangle trigonometric ratios students encountered in a previous course." (Building on LSSM G.SRT.C and building toward LSSM F.TF.A.2). In Unit 3, Lesson 17, the Lesson Narrative explains that "In earlier courses, students developed strategies for solving quadratic equations.

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			Earlier in this unit, students developed the concept of complex numbers. In this lesson, students connect these ideas by solving quadratic equations whose solutions are non-real complex numbers. Students complete the square to analyze the conditions that lead quadratic equations with real coefficients to have 1 real solution, 2 real solutions, or 2 non-real solutions." (LSSM N.CN.C.7). In Unit 3, Lesson 3, students create roots using fractional exponents based on LSSM 8.EE.A to address LSSM N.RN.A. In Unit 7, Lesson 5, students describe different distributions as previously completed in Algebra 1 for LSSM S.ID.A.1 and S.ID.A.2. Students build on this work in the same lesson by applying concepts of mean and standard deviation to data for LSSM S.ID.A.4. In Unit 5, Lesson 4, Activity 4.1, the teacher guide explains that "Students should be familiar with the properties of reflections from a previous course" when eliciting the idea that functions can be reflected horizontally or vertically in the warm-up (LSSM F.BF.B.3).
	5c) Materials include learning objectives that are visibly shaped by LSSM cluster headings and/or standards.	**Yes**	The materials include learning objectives that are visibly shaped by LSSM cluster headings and standards. Multiple lessons address standards in the same cluster. The language of the learning targets mirrors that of LSSM cluster headings and standards. For example, in Unit 3, Lesson 18, students solve quadratics with complex and real number solutions which align with

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			LSSM A.REI.B.4 and N.CN.C.7 in the domains Reasoning with Equations and Inequalities (A-REI) and Complex Number Systems (N-CN). Unit 5, Lesson 7 addresses transformations of functions standards LSSM F.BF.A.1 in Cluster A (Building a function that models a relationship between two quantities) and LSSM F.BF.B.3 in Cluster B (Building new functions from existing functions). In Unit 3, Lesson 12, students calculate powers of imaginary numbers (LSSM N.CN.A). In Unit 6, Lesson 17, one learning goal listed states: "I can ask questions to figure out how a trigonometric function was transformed." (LSSM F.BF.B.3). In Unit 3, Lesson 9, one learning goal is to "Explain the steps taken to solve radical equations." (LSSM A.REI.A).
6. ALIGNMENT CRITERIA FOR STANDARDS FOR MATHEMATICAL PRACTICE: Aligned materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards rather than detract from the focus and include additional content/skills to teach which are not included in the Standards. ☒ Yes ☐ No	**Required** **6a)** Materials attend to the full meaning of each practice standard. Over the course of any given year of instruction, each mathematical practice standard is meaningfully present in the form of assignments, activities, or problems that stimulate students to develop the habits of mind described in the practice standard. Alignments to practice standards are accurate.	**Yes**	The materials attend to the full meaning of each practice standard. Math practice standards are aligned to standards and are present in various forms to develop habits of mind described in the practice standards. Practice standards are explicitly pointed out in the teaching materials. For example, Unit 4, Lesson 10, Activity 10.2 explains, "This activity extends students' understanding of logarithms to include logarithms in another base. Students analyze patterns in a base 2 logarithm table and notice that it can be interpreted the same way as the base 10 table, except that this time the values in the right column are the exponents in expressions

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			with base 2 (MP7).” In Unit 7, Lesson 2, the Warm-Up explains, “This warm-up prompts students to compare four questions. It gives students a reason to use language precisely (MP6) and provides the opportunity to talk about the characteristics of the items in comparison to one another.” In Unit 3, Lesson 11, the Warm-Up explains that “students have an opportunity to look for repeated reasoning when squaring expressions that involve square roots (MP.8).” In Unit 4, Lesson 9, students discover how logarithms and exponents are related (LSSM F.LE.A.4). The Lesson Narrative explains that “Students begin by making sense of the values in a base 10 logarithm table, looking for patterns, and using their observations to solve exponential equations in base 10 (MP.8).” In Unit 6, Lesson 11, Activity 11.4, students identify intersections of cosine and sine graphs (LSSM F.TF.A.2). The guidance states that students “use the structure of the unit circle to develop strategies for identifying negative radian measurements (MP.7).” In Unit 5, Lesson 5, Activity 5.2, students participate in a card sort by noticing differences in the graphs of even and odd functions. The teacher is encouraged to ensure student groups are utilizing precise language in their descriptions (MP.6).
	Required **6b)** Materials provide sufficient opportunities for students to construct viable arguments and critique the	**Yes**	The materials provide sufficient opportunities for students to construct viable arguments and critique the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
	arguments of others concerning key grade-level mathematics that is detailed in the content standards (cf. MP.3). Materials engage students in problem solving as a form of argument, attending thoroughly to places in the Standards that explicitly set expectations for multi-step problems.		arguments of others concerning key grade-level mathematics that is detailed in the content standards. Throughout the course, students critique the reasoning of other students. Students often construct viable arguments to explain their reasoning. For example, in Unit 2, Lesson 5, Activity 5.3, it is explained that "In this partner activity, students take turns using the structure of equations to match them to either a graph or a description of a graph, building their fluency identifying the horizontal intercepts of a graph of a polynomial from the equation of the polynomial written in factored form. As students trade roles explaining their thinking and listening, they have opportunities to explain their reasoning and critique the reasoning of others (MP.3)." In Unit 1, Lesson 3, Activity 3.2, students are to answer the question, "Elena says that it's not possible to have a sequence of numbers that is *both* arithmetic and geometric. Do you agree with Elena? Explain your reasoning." In Unit 3, Lesson 6, Activity 6.2, students work with square roots (LSSM A.REI.A.2) to critique the reasoning of others. Clare's formulated response is given and students respond to the following: "How would you answer Clare's question? Give reasons that support your answer." In Unit 7, Lesson 6, Activity 6.1, students examine the area under a normal curve (LSSM S.ID.A.4). Teachers are instructed to ask the following question: "Andre said he drew

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			the vertical line x=3.5 and found the area to the left of the line and then doubled it. Will Andre's method work? Explain your reasoning." In Unit 5, Lesson 11, Activity 11.2, students make models to fit data and must explain if the model they produce is a good fit for the model and why or why not (LSSM F.BF.A.1.b). In Unit 1, Lesson 6, Activity 6.2, students are partnered and take turns pairing a sequence to a definition. The student must support their claim, while the partner critiques their reasoning (LSSM F.BF.A.2).
	6c) There are teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical development.	**No**	The materials do not include teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical development. The materials do not provide full explanations for the teacher concerning math practices, but rather there are brief explanations of the math practices for each lesson. The practice standards are identified within the material alongside a brief description of where and how the math practice is addressed within the material. For example, in Unit 4, Lesson 3, the Lesson Narrative explains that "Students construct exponential functions to model the growth of a population and the decay of the amount of medicine in the body. In both cases, they solve problems by interpreting functions (represented both graphically and with expressions) in context, working across different representations of the

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			situations (MP.2).” In Unit 5, Lesson 8, Activity 8.1, it is explained that “By engaging with the image of the arch to first become familiar with a context and the mathematics that might be involved, students are making sense of problems (MP.1).” In Unit 2, Lesson 23, Lesson Narrative, the sequence of the lesson explains that “students explore several cases of an identity where the application of the distribution property leads to an expression with fewer terms than might be expected (MP.8).”
	6d) Materials explicitly attend to the specialized language of mathematics.	**Yes**	The materials explicitly attend to the specialized language of mathematics. Materials use accurate mathematical terminology and point out vocabulary throughout the material. For example, in Unit 2, Lesson 5, Lesson Narrative, it is explained that “This lesson also offers an opportunity for students to use mathematical language about the zeros of a function and the intercepts of graphs.” (LSSM A.APR.B.3). In Unit 3, Lesson 11, Activity 11.4, students begin to understand the idea of complex numbers as introduced in the lesson explained as, “When we add a real number and an imaginary number, we get a complex number.” (LSSM N.CN.A.1). In Unit 1, Lesson 6, the Lesson Narrative provides a definition for arithmetic and geometric sequences. This definition is reinforced throughout the activities of the lesson. In Unit 4, Lesson 14, materials instruct

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			teachers to help students attend to precision by using precise language related to parameters. In the Lesson Narrative, students are instructed to attend "carefully to the parameters of the equations (MP.6)." In Unit 2, Lesson 10, Activity 10.1, the Notice and Wonder protocol is summarized with the teacher being instructed to, "Tell students that this is an example of multiplicity. The multiplicity of a factor is the number of times the factor occurs when a polynomial is written in the factored form" (LSSM A.APR.B.3).
7. INDICATORS OF QUALITY: Quality materials should exhibit the indicators outlined here in order to give teachers and students the tools they need to meet the expectations of the Standards. ☒ Yes ☐ No	**Required** **7a)** There is variety in what students produce. For example, students are asked to produce answers and solutions, but also, in a grade-appropriate way, arguments and explanations, diagrams, mathematical models, etc.	**Yes**	Students are asked to produce answers in a variety of ways. Students must produce answers, solutions, arguments, explanations, diagrams, and various mathematical models. In Unit 6, Lesson 16, Practice, students explain the meaning of numbers given in a trigonometric function (question 2) and identify the period and sketch a graph of a cosine function (question 5) (LSSM F.IFC.7e). In Unit 4, Lesson 5, Activity 5.2, students complete a table or use a spreadsheet to solve application problems related to exponential equations (LSSM F.LE.A.2). In Unit 6, Lesson 6, Activity 6.3, students complete a card sort where "One set of cards shows the value of sine, cosine, or tangent of an unknown angle. The other set of cards shows a quadrant number on the unit circle. Students then select one of their possible matches and calculate the

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			values of the two other trigonometric ratios" (LSSM F.TF.C.8). In Unit 2, Lesson 2, Activity 2.3, the teacher guide states, "The purpose of this activity is for students to write a polynomial to model a simple investment situation. Students have the opportunity to decide to use a table, equation, graph, or a combination of the three to make sense of and reason about the situation (MP.5)" (LSSM A.REI.D.11). Also, in Unit 5, Lesson 10, Activity 10.2, students analyze a given table, and then plot a graph, answer a question about a given value and provide an explanation for their answer, and complete a table and graph given a new function (LSSM F.IF.C).
	Required **7b)** There are separate teacher materials that support and reward teacher study including, but not limited to: discussion of the mathematics of the units and the mathematical point of each lesson as it relates to the organizing concepts of the unit, discussion on student ways of thinking and anticipating a variety of student responses, guidance on lesson flow, guidance on questions that prompt students thinking, and discussion of desired mathematical behaviors being elicited among students.	**Yes**	The materials provide separate teacher materials that support and reward teacher study. Materials provide an overview of the mathematics in each unit and how it relates to prior and future units in the narrative that is provided in the teacher materials. The scope and sequence details how long each unit and lesson should take and also provides a chart on unit dependency. Instructional routines used throughout the material are described under the Instructional Routine tab. In each lesson, the Preparation tab provides teachers an overview of the lesson (Lesson Narrative), Learning Goals, Required Preparation, Learning Targets, Glossary Entries, and Standards. Each Lesson contains instructions for each activity, student responses, activity synthesis, and

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			anticipated misconceptions. The activity synthesis provides guiding questions that prompt student thinking and discussion of desired mathematical behaviors. For example, in Unit 4, Lesson 6, the Preparation tab provides a link to pre-printed slips (required materials) cut from copies of the blackline masters and states "Print the blackline master for the Info Gap activity so that there is 1 copy for every 2 students. Cut the cards into sets for students to use during the activity." The Unit 2, Lesson 7, Preparation tab states "Acquire devices that can run Desmos (recommended) or other graphing technology. It is ideal if each student has their own device. (Desmos is available under Math Tools.)" In Unit 3 Lesson 4, Activity 4.2, the student misconceptions are "If students have trouble writing the expressions using radicals, help them make connections to their previous understanding of relationships between cubes and cube roots." In Unit 5, Lesson 4, Activity 4.3, directions are provided for the teacher to guide the activity, "Arrange students in groups of 2. Display the graph of function and the prompt…. Make a prediction about what the graph will look like. Allow students 1 minute of quiet think time, then invite students to briefly discuss their predictions with their partner. Tell students that they will confirm their prediction in the activity." In the Course Guide, teachers can read a narrative

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			explaining the organization of units and where connections should occur. In Unit 3, Lesson 3, teachers can access lesson notes that give directions, explanations, and discussion prompts for every activity such as guiding discussion questions for students finding square and cube roots by hand in Activity 3.1.
	7c) Support for English Language Learners and other special populations is thoughtful and helps those students meet the same standards as all other students. The language in which problems are posed is carefully considered.	**Yes**	The materials include support for English Language Learners and other special populations to help them meet the same standards as other students. However, these supports are not provided for every lesson. For example, Unit 7, Lesson 5, Activity 5.2, the teacher's lesson has Support for Students with Disabilities and instructs them to "Read the directions for taking the measurements aloud. Demonstrate measuring your own hand and how to estimate the measurement to the nearest tenth of a centimeter. Students who both listen to and read the information will benefit from extra processing time." In Unit 4, Lesson 9, Activity 9.1, Support for English Language Learners instructs the teacher to "Display sentence frames to support students when they explain their strategy. For example, "First, I _____ because . . ." or "I noticed _____ so I . . . " Some students may benefit from the opportunity to rehearse what they will say with a partner before they share with the whole class." In Unit 2, Lesson 2, Activity 2.2, support for English Language Learners in "Reading, Writing,

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			Speaking: MLR3 Clarify, Critique, Correct explains that before students share their explanations for the last question, present an ambiguous response. For example, 'I can use base powers and replace the numbers with variables to find the answer.' Ask students to identify the error, critique the reasoning, and write a correct explanation. As students discuss with a partner, listen for students who identify and clarify the ambiguous language in the statement. Invite students to share their critiques and corrected explanations with the class. Listen for and amplify the language students use to explain the process of using powers of 10 to rewrite an equation. This helps students evaluate, and improve on, the written mathematical arguments of others, as they understand the relationship of polynomial expressions and powers of 10."
	7d) 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.	**Yes**	The underlying design of the materials distinguishes between problems and exercises. The Warm-Up and Activity portion of each lesson features detailed problems that provide students with guided instruction to help them form connections between previously learned material and new skill. Each lesson provides a Practice Problems document where students can apply new knowledge and complete the practice exercises. For example, in Unit 1, Lesson 11, Activity 11.2, students "represent a situation with a sequence where it makes sense to add

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			the terms of the sequence together in order to answer a question about the situation." (LSSM A-SSE.B.4). In the Practice of the same lesson, students find the sums of several sequences as in the following problem: "A geometric sequence starts with 10, 5, . . . Explain how you would calculate the value of the 100th term." In Unit 4, Lesson 7, Activity 7.2, students complete a table with exponential expressions (LSSM F.LE.B.5) to learn new mathematics during the lesson. Students practice this skill within the Practice exercises. In Unit 6, Lesson 2, students determine sine, cosine, and tangent for a right triangle to apply what they have already learned to build mastery (LSSM F.TF.C.8). In Unit 5, Lesson 8, there are six problems in the Practice portion of the lesson. Three are from Unit 5, Lesson 8 content, one is from Unit 5, Lesson 4, one is from Unit 5, Lesson 5, and one is from Unit 5, Lesson 7. This same lesson includes 4 activities with a total of 9 problems interwoven into the content of the activities to implement the new learning.
	7e) Lessons are appropriately structured and scaffolded to support student mastery.	**Yes**	Lessons are appropriately structured and scaffolded to support student mastery. Lessons provide structured questions that guide teachers and students through intentional pathways toward conceptual understanding and student mastery of content. For example, in Unit 4, Lesson 10, Warm Up (Activity 10.1), "students work in groups of 2 and take turns reading and

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			interpreting logarithmic equations. Although the logarithms students have seen so far are in base 10, here they encounter simple logarithms in base 2 and base 5, which prompt them to transfer their understanding about the structure of base-10 logarithms to these other bases." In the same lesson, Activity 10.2 students evaluate logs with base 2 (LSSM F.LE.A.4). In Unit 7, Lesson 5, Activity 5.1, students look at examples and non-examples of normal distributions to answer the question, "What do you think the elements are of a definition of normal distribution?" In the same lesson, Activity 5.2, students measure the distance from their thumb to their smallest finger, record the class data, create a dot plot or histogram, and "describe the distribution you drew using terms such as: 'symmetric,' 'approximately symmetric,' 'skewed left,' 'skewed right,' 'approximately uniform,' 'uniform,' 'bell-shaped,' or 'bimodal.' Estimate the center of your distribution." (LSSM S.ID.A.4). In Unit 3, Lesson 15, Lesson Synthesis, the following questions are listed to provide scaffolding multiplying complex numbers (LSSM N.CN.C.7): "Tell students that these are the Info Gap problems with all the given information filled in. Ask, "What was similar about solving these problems? What was different?" Give students 1 minute of quiet think time and 1 minute to share with a partner before inviting

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			students to share similarities and differences. Highlight connections between the type of information that was given and the resulting equations that students had to solve. In particular, the first problem does not require solving a quadratic, but the other two do." In Unit 5, Lesson 3, the Warm Up states, "Arrange students in groups of 2. Display the graph for all to see. Tell partners that their job is to be prepared to explain how to transform the graph to look like any of the other graphs using horizontal and vertical translations. After quiet work time, ask students to compare their responses to their partner's and decide if they are both correct, even if they are different. Follow with a whole-class discussion." (LSSM F.BF.B.3). In Unit 5, Lesson 4, the lesson begins with a warm up where students use the "Notice and Wonder" protocol to make observations about given equations. Activity 4.2 then has students experiment with the result of performing operations on integers. In Activity 4.3, students experiment with the result of performing operations on polynomials. Lastly, in Activity 4.4, students hypothesize about missing pieces of polynomials given a certain type of answer they are trying to produce. Also, in Unit 2, there are two lessons (8 and 9) about end behavior. Lesson 8 introduces the concept of end behavior and asks students to generalize and compare/contrast the end behaviors

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			of given functions. In Lesson 9, students create functions to achieve a desired end behavior.
	7f) Materials support the uses of technology as called for in the Standards.	**Yes**	The materials support the use of technology as called for in the Standards. Teachers are instructed to allow student use of different types of technology, such as graphing calculators and software programs. Math tools such as spreadsheets, graphing calculators, and scientific calculators are provided within the online curriculum. For example, in Unit 4, Lesson 9, the Lesson Narrative states, "Note that in this lesson and the following, students are learning to make sense of logarithms, so use of technology to evaluate logarithms is not recommended. In later lessons, students will have opportunities to use a calculator to find log values." Unit 5, Lesson 2, (Moving Functions) explains that the required materials include graphing technology to address LSSM F.BF.B.3. In Unit 2, Lesson 6, Activity 6. 4, students use Desmos to "graph two related cubic polynomials to investigate the effect on input-output pairs of a function when the function is multiplied by a constant." (LSSM A.SSE.B.3). In Unit 5, Lesson 10, Activity 10. 2, the activity Launch states, "Provide access to devices that can run Desmos or other graphing technology." In this activity, students combine functions by graphing (LSSM F.IF.C.7). Graphing Technology is also listed as Required

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			Material in the lesson preparation. In Unit 7, Lesson 14, the teacher guide's Preparation portion says, "Students will need tools to find the area under a normal curve that is more extreme than a certain value. Acquire devices that can run GeoGebra (recommended) or other statistical technology. It is ideal if each student has their own device" (LSSM S.ID.A.4).
FINAL EVALUATION ***Tier 1 ratings*** receive a "Yes" for all Non-negotiable Criteria and a "Yes" for each of the Additional Criteria of Superior Quality. ***Tier 2 ratings*** receive a "Yes" for all Non-negotiable Criteria, but at least one "No" for the Additional Criteria of Superior Quality. ***Tier 3 ratings*** receive a "No" for at least one of the Non-negotiable Criteria.			
Compile the results for Sections I and II to make a final decision for the material under review.			
Section	**Criteria**		
I: Non-negotiable Criteria of Superior Quality[4]	1. Focus on Major Work	**Yes**	The materials devote the majority of the time to the major work of the grade. Materials spend the appropriate amount of time on course level work, while assessing course level standards.
	2. Consistent, Coherent Content	**Yes**	The materials connect supporting content to major content in meaningful ways so that focus and coherence are enhanced throughout the year. The problems and activities connect two or more clusters in a domain and/or two or more domains in the grade level where these connections are natural and important.
	3. Rigor and Balance	**Yes**	The materials reflect the balances in the standards and help students meet all of the Standards rigorous expectations. In

[4] Must score a "Yes" for all Non-negotiable Criteria to receive a Tier I or Tier II rating.

CRITERIA	INDICATORS OF SUPERIOR QUALITY	MEETS METRICS (YES/NO)	JUSTIFICATION/COMMENTS WITH EXAMPLES
			addition, the materials are designed so that students attain the fluencies and procedural skills required and spend sufficient time working with conceptual understanding and engaging applications.
	4. Focus and Coherence via Practice Standards	**Yes**	The materials address the practice standards in ways that enrich the content standards of the course.
II: Additional Criteria of Superior Quality[5]	5. Alignment Criteria for Standards for Mathematical Content	**Yes**	The materials foster focus and coherence by linking topics across domains and clusters and across grades/courses, staying consistent with the progressions within the Standards.
	6. Alignment Criteria for Standards for Mathematical Practice	**Yes**	The materials make meaningful and purposeful connections that enhance the focus and coherence of the Standards.
	7. Indicators of Quality	**Yes**	The materials provide teachers and students with a variety of tools needed to meet the expectations of the Standards.
FINAL DECISION FOR THIS MATERIAL: **Tier I, Exemplifies quality**			

[5] Must score a "Yes" for all Additional Criteria of Superior Quality to receive a Tier I rating.

Instructional materials are one of the most important tools educators use in the classroom to enhance student learning. It is critical that they fully align to state standards—what students are expected to learn and be able to do at the end of each grade level or course—and are high quality if they are to provide meaningful instructional support.

The Louisiana Department of Education is committed to ensuring that every student has access to high-quality instructional materials. In Louisiana all districts are able to purchase instructional materials that are best for their local communities since those closest to students are best positioned to decide which instructional materials are appropriate for their district and classrooms. To support local school districts in making their own local, high-quality decisions, the Louisiana Department of Education leads online reviews of instructional materials.

Instructional materials are reviewed by a committee of Louisiana educators. Teacher Leader Advisors (TLAs) are a group of exceptional educators from across Louisiana who play an influential role in raising expectations for students and supporting the success of teachers. Teacher Leader Advisors use their robust knowledge of teaching and learning to review instructional materials.

The 2019-2020 Teacher Leader Advisors are selected from across the state and represent the following parishes and school systems: Ascension, Beauregard, Bossier, Caddo, Calcasieu, Caldwell, City of Monroe, Desoto, East Baton Rouge, Einstein Charter Schools, Iberia, Jefferson, Jefferson Davis, KIPP New Orleans, Lafayette, Lafourche, Lincoln, Livingston, LSU Lab School, Orleans, Orleans/Lusher Charter School, Ouachita, Plaquemines, Pointe Coupee, Rapides, Richland, RSD Choice Foundation, St. John the Baptist, St. Charles, St. James, St. Landry, St. Mary, St. Tammany, Tangipahoa, Vermillion, Vernon, West Baton Rouge, West Feliciana, and Zachary. This review represents the work of current classroom teachers with experience in grades 6-12.

Appendix I.

Publisher Response

The publisher had no response.

Appendix II.

Public Comments

There were no public comments submitted.