**Instructional Materials Alignment Rubric: Kentucky Academic Standards for Mathematics**

**Rationale**

Curriculum design and review is a continuous process. Flexibility when determining the detail of the design and shape of the curriculum is given to each school in the Commonwealth so the teaching and learning is meaningful and beneficial to the particular communities of learners. The design of each district/school’s curriculum allows teachers to make interpretations in response to the particular needs, interests and talents of individuals and groups of students. While Kentucky’s Academic Standards define the minimum content that must be taught, it is not a regimented curriculum.

In Kentucky, traditionally, districts have created a range of curriculum resources and components, ranging from pacing guides and maps to very detailed plans outlining specific instructional resources (books, articles, manipulatives) as well as specific common assessments for units and courses.

While the standards do define the content (or the WHAT), they do not prescribe HOW to teach or assess them. Instead, that is the function of the curriculum. Likewise, what is published on the KDE webpage as Kentucky’s Academic Standards defines the WHAT. Local districts need to define the HOW.

Since the standards are incorporated into state regulation, all standards must be addressed in an aligned curriculum.

**Purpose of this rubric**

Instructional Materials Alignment Rubric is to guide districts and schools in assessing existing or purchasing new instructional materials to determine what revisions may be needed to ensure alignment to the current Kentucky Academic Standards for Mathematics K-12.

Prior to conducting this review the evaluator or evaluating team should assemble all of the materials necessary for the review. It is essential for evaluators to have materials for all courses covered by the program in question, as some criteria cannot be rated without having access to each course. In addition, each evaluator should have a reference copy of the Kentucky Academic Standards for Mathematics.

Before conducting the review, it is important to develop a protocol for process. The protocol should include having evaluators study the Instructional Materials Alignment Rubric. Additionally, it will also be helpful for evaluators to get a sense of the overall program before beginning the process.

These are the criteria on which your instructional materials will be evaluated:

* **Part A:** **Kentucky Academic Standards for Mathematics & Grade Level Expectations\***
* **Non-Negotiable 1: Freedom from Obstacles to Focus**
* **Non-Negotiable 2: Focus and Coherence**
* **Alignment Criterion 1: Cognitive Demand and Balance**

**Alignment Criterion 2: Standards for Mathematical Practice**

**Alignment Criterion 3: Access to Standards for All Learners**

* **Part B: Organization and Presentation**
* **Key Criteria for Inquiry, Research, and Application of Learning**
* **Key Criteria for Technical Skill Development**
* **Key Criteria for Connections to Literacy**
* **Key Criteria for Organizational Quality**

| **Part A:** **Kentucky Academic Standards for Mathematics & Grade Level Expectations** |
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| **Non-Negotiable 1: Freedom from Obstacles to Focus**  **Materials must reflect the basic architecture of the Standards by not assessing the topics listed below before the grade level where they first appear in the Standards.** |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate the table of contents, all chapter tests, all unit tests, and other such assessment components (including rubrics) to ensure alignment with the information below.   * Symmetry of shapes, including line/reflection symmetry, rotational symmetry. (Introduced in the KAS in grade 4) * Statistical distributions, including center, variation, clumping, outliers, mean, median, mode, range, quartiles; and statistical association or trends, including two-way tables, bivariate measurement data, scatter plots, trend line, line of best fit, correlation. (Introduced in the KAS in grade 6) * Probability, including chance, likely outcomes, probability models. (Introduced in the KAS in grade 7) * Coordinate transformations or formal definition of congruence or similarity. (Introduced in the KAS in grade 8) |  |

| **Scoring** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Non-Negotiable 2: Focus and Coherence**  Materials must focus coherently on the content standards in a way that is consistent with the Kentucky Academic Standards for Mathematics. |
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| **NN Metric 2A: In any single course, students spend a large majority of their instructional time on grade-level standards.** |
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| **How to Find the Evidence** | **Evidence:** |
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| Familiarize yourself with the grade level standards. Evaluate the table of contents and any pacing guides. Do not stop there; also evaluate units, chapters, lessons, homework assignments, and assessments. (Evaluate both student and teacher materials.)  For example: In a Geometry course, student work should involve significant work with applications/modeling and problems that require the use of algebra skills. |  |

| **Scoring NN Metric 2A:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **NN Metric 2 B: Materials follow a progression consistent with that outlined within the Kentucky Academic Standards for Mathematics. Content from previous or future grades does not unduly interfere with on-grade-level content.** |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate the table of contents and any pacing guides. Evaluate units, chapters, and lessons in student and teacher materials to ensure that the content progressions in the materials follow the Coherence/Vertical Alignment within the *KAS for Mathematics*. Consider how off-grade-level content, if present, is addressed.  For example: In a course designated as a high school course, determine if there are problems at a level of sophistication appropriate to high school (beyond mere review of middle school topics) that involve the application of knowledge and skills from grades 6–8. |  |

| **Scoring NN Metric 2B:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **NN Metric 2 C: Lessons that only include content from previous grades are clearly identified as such to the teacher.** |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate units, chapters, and lessons to identify any lessons that only include content from previous grades.  Check whether these lessons are identified as such.  As part of this metric, check to see that every cluster in the grade-level standards is reflected in the materials. If any grade-level clusters are absent for the grade being evaluated, then Metric 2C is Not Met. |  |

| **Scoring NN Metric 2C:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Alignment Criterion 1: Cognitive Demand and Balance**  Materials must reflect the balance among conceptual understanding, procedural skill and fluency, and application within mathematics to help students meet the expectations of the Kentucky Academic Standards for Mathematics. |
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| **AC Metric 1A:** The materials support the development of students’ conceptual understanding of essential ideas, especially where called for in specific content standards or cluster headings. |
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| **How to Find the Evidence** | **Evidence:** |
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| Identify clusters or standards from the domains and clusters for the grade being evaluated that relate specifically to conceptual understanding of essential ideas to use throughout the questions associated with this metric. | Where the standards explicitly require students to understand concepts, do the assignments that students work on build that understanding, and do assessment tasks reveal whether students understand the mathematics in question? Evaluate lessons, chapter/unit assessments, and homework assignments, paying attention to work aligned to standards that explicitly call for understanding or interpreting.  Do the materials feature high-quality conceptual problems and conceptual discussion questions? Evaluate lessons, chapter/unit assessments, and homework assignments.  Do the materials feature opportunities to identify correspondences across mathematical representations? When manipulatives are used, are they faithful representations of the mathematical objects they represent? Are manipulatives connected to written methods? Evaluate lessons, chapter/unit assessments, and homework assignments. |

| **Scoring AC Metric 1A:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **AC Metric 1B**: The materials are designed so that students attain the fluencies and procedural skills required by the standards. |
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| **How to Find the Evidence** | **Evidence:** |
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| Identify clusters or standards from the domains and clusters for the grade being evaluated that relate specifically to fluency and procedural skill to use throughout the questions associated with this metric. | Is progress toward fluency and procedural skill interwoven with students’ developing conceptual understanding of the operations in question? Evaluate lessons, chapter/unit assessments, daily routines, and homework assignments for evidence that the development of fluency and procedural skill is supported by conceptual understanding.  For Example: Do the materials in grades K–8 provide repeated practice toward attainment of fluency standards? Do assessment tasks reveal whether students have the fluencies the standards require? Evaluate lessons, daily routines, and homework assignments for evidence of repeated practice toward attainment of fluency.  Please see fluency standards across all grade levels, table 6 page 255 in the Kentucky Academic Standards for Mathematics document. |

| **Scoring AC Metric 1B:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| AC Metric 1C: The materials are designed so that teachers and students spend sufficient time working with applications, without losing focus on the domains and clusters of each grade. |
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| **How to Find the Evidence** | **Evidence:** |
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| Identify clusters or standards for the grade being evaluated that relate specifically to application to use throughout the questions associated with this metric. | Are there single- and multi-step contextual problems that develop the mathematics of the grade, afford opportunities for practice, and engage students in problem solving?  For example: In grades K-5, utilize Tables 1 and 2 from Appendix A in the KAS for Mathematics to ensure that each type of application problem is addressed.  Where the standards require students to solve multi-step and real-world problems, do the assignments that students work on allow them to do that, and do assessment tasks reveal whether students can do that? Evaluate lessons, chapter/unit assessments, and homework assignments.  Do application problems particularly stress applying the domains and clusters of the grade? Evaluate lessons, chapter/unit assessments, and homework assignments.  Are there ample opportunities for students to engage with modeling problems? Do materials require students to use both individual parts of the modeling cycle as well as the full modeling cycle? Read the pages on Modeling in the Standards for Mathematics (pp. 7 and 8 in the KAS for Mathematics). Evaluate lessons, chapter/unit assessments, and homework assignments.  For example: Does modeling build slowly across K–8, with applications that are relatively simple in earlier grades and when students are encountering new content? In grades 6–8, do the problems begin to provide opportunities for students to make their own assumptions or simplifications in order to model a situation mathematically? |

| **Scoring AC Metric 1C:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Alignment Criterion 2: Standards for Mathematical Practice**  Materials must demonstrate authentic connections between content standards and practice standards. |
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| **AC Metric 2A:** Materials address the practice standards in such a way as to enrich the content of the grade; practice standards strengthen the focus on the content standards instead of detracting from it, in both teacher and student materials. |
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| **How to Find the Evidence** | **Evidence** |
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| Evaluate teacher and student materials for evidence that the practices enrich and connect to content standards. |  |

| **Scoring AC Metric 2A:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **AC Metric 2B:** Tasks and assessments of student learning are designed to provide evidence of students’ proficiency in the Standards for Mathematical Practice. |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate the variety of tasks and assessments provided (e.g., observation checklists, portfolio recommendations, performance tasks, tests and quizzes) to see whether students have opportunities to demonstrate proficiency with each of the Standards for Mathematical Practice over the course of the year. |  |

| **Scoring AC Metric 2B :** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **AC Metric 2C:** Materials support the standards’ emphasis on mathematical reasoning. |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate the units, chapters, and lessons in both the teacher and student materials. | Do the materials support students in constructing viable arguments and critiquing the arguments of others concerning grade-level mathematics that is detailed in the content standards? Read Standard for Mathematical Practice 3. Evaluate teacher and student materials to ensure that students are given opportunities to reason with grade-level mathematics.  Do the materials support students in producing not only answers and solutions, but also, in a grade-appropriate way, arguments, explanations, diagrams, mathematical models, etc.? Familiarize yourself with the standards of the grade being evaluated. Evaluate teacher and student materials to understand the types of work students are expected to produce.  Do materials explicitly attend to the specialized language of mathematics? Is the language of argument, problem solving, and mathematical explanations taught rather than assumed? Evaluate teacher and student materials, paying attention to how mathematical language is taught. |

| **Scoring AC Metric 2C:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Alignment Criterion 3: Access to Standards for All Learners**  Materials must provide supports for English Language Learners and other special populations. |
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| **AC Metric 3A:** **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**. |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate teacher and student materials, paying attention to supports offered for special populations. Supports provided should ensure that all students are engaging with grade-level standards. For example, supports for English Language Learners include attention to and analysis of the language of mathematical problems. |  |

| **Scoring AC Metric 3A:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **AC Metric 3B: Materials provide appropriate level and type of scaffolding, differentiation, intervention, and support for a broad range of learners with gradual removal of supports, when needed, to allow students to demonstrate their mathematical understanding independently.** |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate teacher and student materials, paying attention to whether materials provide differentiation that will lead all learners to engage with on-grade-level content. For example, materials may offer suggestions for distinguishing between difficulties in conceptual understanding versus developing English proficiency and should offer suggestions for supporting learners in both circumstances. |  |

| **Scoring AC Metric 3B:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| AC Metric 3C: Design of lessons attends to the needs of a variety of learners (e.g., using multiple representations, deconstructing/reconstructing the language of problems, providing suggestions for addressing common student difficulties). |
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| **How to Find the Evidence** | **Evidence:** |
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| Evaluate teacher materials, noting instructional approaches suggested for whole class and differentiated lessons and activities. |  |

| **Scoring AC Metric 3C:** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Part B:** **Organization and Presentation**  **Information is organized logically and presented clearly using multiple methods and mode for delivering instruction that motivate and increase literacy as students engage in high interest, authentic activities.** |
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| **Key Criteria for Inquiry, Research, and Application of Learning** |
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| **How to Find the Evidence** | **Evidence:** |
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| Look fors:   * Provides opportunities for inquiry and research that includes activities such as gathering information, researching resources, observing, interviewing, evaluating information, analyzing and synthesizing data, communicating findings and conclusions and formulating authentic questions to deepen and extend reasoning. * Requires students to use higher-level cognitive skills (analysis, synthesis, evaluation, generalizing, justifying, etc.). * Provides activities and projects for students to deepen their knowledge and cultivate and strengthen problem-solving and decision-making skills. * Provides opportunities for application of learned concepts. * Uses a variety of relevant charts, graphs, diagrams, number lines, and other illustrations to invite and motivate students to engage in discussion, problem solving, and other high-order thinking skills. * Emphasizes conceptual understandings that invite students to predict, conclude, evaluate, develop and extend ideas to support reasoning.   *Note: may apply to either teacher or student edition* |  |

| **Scoring KC for Inquiry, Research, and Application of Learning** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Key Criteria for Technical Skill Development** |
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| **How to Find the Evidence** | **Evidence:** |
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| Look fors:   * Provides opportunities for real world application of program specific content. * Provides opportunities for project based learning. * Provides opportunities for performance based activities. * Provides opportunities for critical thinking and reasoning. * Provides opportunities to justify/prove responses. * Provides opportunities for in-depth questioning. * Contains embedded activities (or extensions) that emphasize use of technology for problem solving.   *Note: may apply to either teacher or student edition* |  |

| **Scoring KC for Technical Skill Development** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Key Criteria for Connections to Literacy** |
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| **How to Find the Evidence** | **Evidence:** |
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| Look fors:   * Employs a variety of reading levels and is grade/level appropriate. * Use of multiple representations-concrete, visual/spatial, graphs, charts, etc. * Provides opportunities for summarizing, reviewing, and reinforcing vocabulary skills and concepts at multiple levels of difficulty for a variety of learning styles. * Student text provides opportunity to integrate reading and writing. * Uses vocabulary that is age and content appropriate. * Focuses on critical vocabulary vs. extensive lists. * Identifies key vocabulary through definitions in both text and glossary. * The text is engaging and facilitates learning. * Embedded activities enhance the understanding of the text.   *Note: may apply to either student or teacher editions* |  |

| **Scoring KC for Connections to Literacy** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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| **Key Criteria for Organizational Quality** |
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| **How to Find the Evidence** | **Evidence:** |
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| Look fors:   * Print and/or electronic materials present minimal barriers to learners, but also add encouragement for students to stretch and make further explorations. * Presents chapters/lessons in an organized and logical sequence. * Provides clearly stated objectives for each lesson. * Uses text features (e.g., titles, headings, subheadings, review questions, goals, objectives, space, print, type size, color) to enhance readability. * Makes use of various forms of media (e.g., CD’s, recordings, videos, cassette tapes, computer software, web-based components, interactive software, calculators, physical and virtual manipulatives) as either student or teacher resources. * Includes clear, accurate, appropriate and clearly explained illustrations and/or graphics that reinforce content standards. * Incorporates a glossary, footnotes, recordings, pictures, and/or tests that aid pupils and teachers in using the book effectively. * Uses grade-appropriate type size. * Included media are durable, easy to use and have technical merit. * Construction appears to be durable and able to withstand normal use. |  |

| **Scoring KC for Organizational Quality** □ Strong Evidence □ Moderate Evidence □ Little or No Evidence □ NA |
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\*Part A of the Evaluation Tool for Basal Instructional Materials was adapted from the Instructional Materials Evaluation Tool (IMET) from Student Achievement Partners. [**IMET for K-12 Mathematics**](https://achievethecore.org/page/1946/instructional-materials-evaluation-tool)