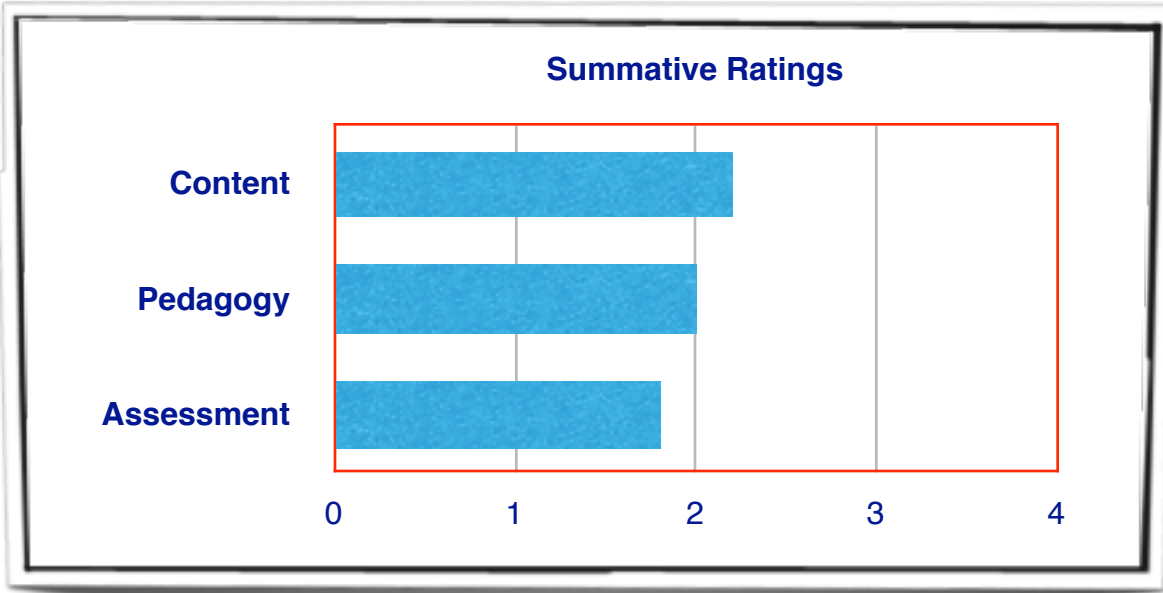


**Curriculum Materials Review  
Delaware Mathematics Coalition**

<u>Name:</u>	Center for Mathematics Education Project (CME)
<u>Authors:</u>	Cuoco
<u>Publisher:</u>	Pearson
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- Not Recommended
- Recommended

	<b>Commentary</b>
<b>Rationale</b>	<p>The <i>CME Project</i> curriculum materials were developed at the Center for Mathematics Education at the Education Development Center with partial support from the National Science Foundation and this pedigree produced great expectations in our review team for innovative and high quality materials. We were not disappointed, in the main, in terms of quality. We did, however, expect a good deal more innovation in this text, particularly given the claims about how students using these materials would develop mathematical “habits of mind.” Apparently the authors wanted to package their materials in a more familiar format and, in the estimation of our panel, they succeeded all too well in that ambition. While seen as challenging, there was a concern that these materials did not achieve a balance between conceptual understanding and procedural fluency with an emphasis, quite to the committee’s surprise, on the latter rather than the former. The summative assessments that accompany the curriculum were also found to be disappointing and our panel judged that the teacher materials were not sufficiently detailed to help teachers make the most of the better features of these materials.</p>

	<b>Commentary</b>
<b>Content</b>	<p>The review panel judged that <i>CME Algebra I</i> was less well-balanced than some other materials reviewed. They characterized this curriculum as developing procedural fluency at the expense of conceptual understanding and noted that attempts to support the growth of conceptual knowledge tended to come <i>after</i> rather than before worked examples meant to promote fluency with standard algorithms. As one reviewer noted, “some problems had the potential to be engaging” and to develop conceptual understanding but “the teacher’s edition was weak on how to facilitate” the teaching of this material. Noted another teacher, “the use of real-world contexts was a bit shallow.” Observing that some of the content was indeed challenging, another committee member concluded, however, that “many of the good problems were so heavily preceded by procedures” that they became exercises in the application of just-learned formulas rather than opportunities for real problem solving. Perhaps the harshest judgment was that “this is just a traditional text in disguise. Manipulatives, multiple representations, and technology are all lacking.”</p>
<b>Pedagogy</b>	<p><i>CME</i> would seem to exemplify a “develop, define and use” approach to pedagogy which is an improvement, one reviewer contended, on standard high school texts which often “simply define the rules for students and then provide practice using the rules.” This same reviewer noted that <i>CME</i> “did prompt students to examine patterns and equivalencies to develop the rules before actually defining them for the students,” but other reviewers found that “overall the curriculum lacked the necessary scaffolding to [help students] discover their own method to solve problems” and that “the emphasis of the lessons seemed to be placed on the answers and not the thinking.” The <i>CME</i> text contained “some minor explorations for groups of students” but there were also “some missed opportunities for student exploration.” Another committee member was even more adamant about this: “Students are not asked to explore concepts.” The curriculum “is not investigative in nature.” Despite some differences of degree in this regard, the committee was unanimous in concluding that the teacher materials did not provide adequate support for teachers to maximize the best features of these materials.</p>
<b>Assessment</b>	<p>According to one reviewer, “the assessments for this unit seem to mirror the text too much. Students are not held accountable for understanding the material as much as for memorizing how to do certain problems.” The general sense was that the tests and quizzes seem to focus on procedural knowledge and not on application or transfer tasks. Panelists noted that there were multiple forms of questions posed (multiple choice, short answer) on the assessments, but didn’t feel this made up for the lack of quality in the questions themselves. Each lesson includes a quiz and there are two versions of both a mid-chapter test and the end-of-unit test. According to one reviewer, “the assessments look more like problem banks than completed assessment documents. In some cases there is too much repetition of the same type of question and there certainly is not enough space provided for student explanation and detailed work.”</p>

	<b>Commentary</b>
<b>Support</b>	<p>The publishers of the <i>CME Algebra</i> program (Prentice Hall) provide both hard copies and software support materials. They include a test generator, lesson planner, teacher and student resources including practice masters and other related chapter resources. The lessons in the teacher’s edition are illustrated in a launch, explore, and wrap up fashion. While notes related to the important ideas to tease out of during these segments of the lesson are included, the use of multiple strategies for problem solving does not seem apparent.</p> <p>Some lessons in the unit include a “Minds in Action” segment which allows students to role play characters that are used throughout the book. Panelists noted that there was potential for discussions related to these segments to stimulate some meta-cognition about the concepts and common errors students may make. Each lesson includes a Check for Understanding and On Your Own component. End-of-chapter projects appear to address particular habits of mind and seem to incorporate some applications. According to the literature, the use of technology is integrated throughout the program. Research related to the effectiveness of the <i>CME</i> program can be found at</p> <p><a href="http://www.pearsonschool.com/live/assets/200921/ResearchBehindtheCMEProject_22041_1.pdf">http://www.pearsonschool.com/live/assets/200921/ResearchBehindtheCMEProject_22041_1.pdf</a></p> <p>Research on the success of <i>CME</i> students on other assessments can be found</p> <p><a href="http://www.pearsonschool.com/live/assets/200921/CMEResearchResults_22042_1.pdf">http://www.pearsonschool.com/live/assets/200921/CMEResearchResults_22042_1.pdf</a></p>
<b>Organization</b>	<p>The <i>CME Project Algebra I</i> materials make a brave beginning by introducing the idea of “mathematical habits of mind” early and including a first chapter that attempts to build a bridge between arithmetic patterns and algebraic thinking. Unfortunately, the text then returns to the all-too-familiar organization of writing expressions and solving simple equations, then introducing Cartesian graphs and marching through the expected lines, functions, polynomials and quadratics with a detour to review exponents and radicals. As with most traditional texts, this suggests a grammar first approach to mathematics rather than beginning from the point of application. And while the text frequently includes boxes labelled “Developing Habits of Mind,” these seem, for the most part, to be more about telling students what to “notice” rather than providing an opportunity for that noticing to happen within a problem-solving situation. The same might be said for most of the exercises labelled “Practicing Habits of Mind.”</p>