Math Textbook Reviews:

Section 1, August 2014

Publisher: Cengage/National Geographic

Textbook Title: Pre-Calculus with Limits, A Graphical Approach
Grade band: High school advanced math

Focus Metrics	
A. In any single course, 100% of the content standards are present in the materials for that course	Yes
B. Topics from earlier courses are used to support course-level work. Content from prior cours eis clearly indicated as such.	Yes
Does this textbook meet the requirements for focus?	Yes
Justification/Notes: Alignment: The new correlation document supplied by the publisher shows that all standards have been met. An extension document will be supplied online and in print (upon request) which contains full lessons (instruction, examples, and problem sets) on standards not in the printed text. The publisher intends to update the correlation document to identify previous review material.	

Rigor Metrics	
A. For the widely applicable prerequisites, the three aspects of rigor are given full attention: conceptual understanding, procedural fluency, and application.	Yes
B. High quality problems and questions designed to invite exploration and support conceptual understanding are included for content standards and clusters that explicitly call for it. A variety of conceptual problems enable students to connect mathematical ideas and representations, and transfer understandings to new situations.	Yes
C. Materials support the development of fluency, including opportunities to practice algebraic manipulation and computation, appropriately apply tools, and use technology. Sometimes problems are purely procedural, none are based on non-mathematical tricks or mnemonics.	Yes
Does this textbook meet the requirements for rigor?	Yes
Justification/Notes: Rigor: There are multiple places where students use a graphing utility to solve problems as well as algebraically using a side by side approach. At the end of each lesson, there are many practice problems to address skill and fluency. There are multiple levels of application exercises including real world applications. To address conceptual understanding there are places in the lesson allow the students to explore labeled Explore the Concept. There are also Capstone problems that address conceptual understanding of key concepts and require students to solve, explain, and justify their	

reasoning. There is also a conclusion section for each lesson which requires students to explain and justify material introduced in the lesson before moving on. For example, the lesson containing the Binomial Theorem (8.4), there are 116 practice problems (within some of these problems, the students are asked to compare and describe relationships), 1 Modeling Data problem, 7 conclusion problems where students are justifying their reasoning and explaining using words. 1 capstone problem, and 4 proof problems. Although only 2 application problems are present in this section, other sections contain more (section 6.4 Vectors and Dot Products have 8 real world application problems).

Were both non-negotiables in Section I met? Yes

Optional Additional Comments from Reviewers: n/a

Cengage	Precalculus with Limits, a Graphical Approach	
	Number rating	Comments
6a Materials connect the math practices to the content standards in meaningful and intentional ways. The development of the practices is well-grounded n content and not in isolation.	1	Mathematical Practices are present but not explicitly stated or referred to.
6b Materials include teacher-directed materials that explain the role of the practice standards in the classroom and in students' mathematical development. Problems and activities present opportunities for students to make use of an exhibit the practices as they work on content.	1	There is a correlation document provided but it only cites a few examples and does not cite where practices are used throughout the entire text. Problems are presented that allow students to make use of the Mathematical Practices. Problems are presented that allow students to make use of the Mathematical Practices.
6c Particular attention is given to: MP3 - Construct viable arguments and critique the reasoning of others: Students are encouraged to create and test mathematical arguments, make generalizations and provide justifications,	2	Conclusions and Think about It and Proof and Error Analysis problems example pg 442 allow students to construct viable arguments and critique the reasoning of others.

particularly in standards that explicitly call for it, in a manner of reasoning appropriate to the course.		
6d Particular attention is given to: MP4 - Model with mathematics: Students should be given opportunities to apply mathematics learned in novel situations, with an appropriate tradeoff between the complexity and novelty of the problem and the newness of the content they are asked to use. Modeling problems should draw heavily from major work of the grade level or securely-held content, integrated across multiple domains/clusters where appropriate. Standards with explicit expectations for modeling are indicated with a star (*).	2	Some problems say Modeling Data which would meet MP4 (example pg 283 #83)
7a Connections are made within a course between clusters and domains, where these connections are appropriate and natural.	2	
7b Materials are vertically coherent with previous courses and these connections are made clear in the materials. Materials include attention to the development of the math practices appropriate to the level of the course.	2	
8a Materials support teachers in ways such as the following: planning(including ideas for pacing), introducing lessons, assessment types, vocabulary.	2	Materials provided for teacher include: Text-Specific DVDs PowerLecture with ExamView that include:

		PowerPoint lectures PowerPoint Library Smart notebook guide ExamView computerized testing and test bank Hard Copy: Lesson Plans booklet A Complete Solutions Manual with all problems worked
8b Materials are clear and easy to read for students, teachers, parents. The design and graphics do not distract from the mathematics.	2	
8c. Materials include supports for all learners, e.g., EL, students who are below grade level, advanced students.	0	No evidence is shown for support for all learners.