Lesson/Unit Name: Ratios and Unit Rates  
Content Area: Mathematics  
Grade Level: 6

Dimension I – Alignment to the Depth of the CCSS

<table>
<thead>
<tr>
<th>The lesson/unit aligns with the letter and spirit of the CCSS:</th>
<th>This module thoroughly addresses 6.RP.1 - 6.RP.3. There is ample attention to all aspects of these standards and students who experience this curriculum will have opportunity to fully master these standards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Targets a set of grade-level CCSS mathematics standard(s) to the full depth of the standards for teaching and learning.</td>
<td>The Standards for Mathematical Practice are clearly identified throughout the module, and places where a specific practice is being used are clearly called out in the teacher notes.</td>
</tr>
<tr>
<td>✓ Standards for Mathematical Practice that are central to the lesson are identified, handled in a grade-appropriate way, and well connected to the content being addressed.</td>
<td>The lessons focusing on understanding ratios, rates, and per cents are focused on developing strong conceptual understanding through the use of visual models and multiple representations. Sufficient practice is given so that students who complete these lessons should be confident in solving ratio and rate problems using multiple methods.</td>
</tr>
<tr>
<td>✓ Presents a balance of mathematical procedures and deeper conceptual understanding inherent in the CCSS.</td>
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Rating: 3 – Meets most to all of the criteria in the dimension

Dimension II – Key Shifts the CCSS

<table>
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<tr>
<th>The lesson/unit reflects evidence of key shifts that are reflected in the CCSS:</th>
<th>Focus: This module was quite focused on the standards intended to be taught. Likewise, each lesson focused on specific student goals, the use of proper terminology, and precision of student work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ <strong>Focus</strong>: Lessons and units targeting the major work of the grade provide an especially in-depth treatment, with especially high expectations. Lessons and units targeting supporting work of the grade have visible connection to the major work of the grade and are sufficiently brief. Lessons and units do not hold students responsible for material from later grades.</td>
<td>Coherence: The content in this module was clearly connected to the foundational standards identified from grades 4 and 5. Likewise, each lesson seemed to spiral and build off of the previous lesson.</td>
</tr>
<tr>
<td>✓ <strong>Coherence</strong>: The content develops through reasoning about the new concepts on the basis of previous understandings. Where appropriate, provides opportunities for students to connect knowledge and skills within or across clusters, domains and learning progressions.</td>
<td>Rigor: Although this received a check mark, this was the weakest component in this section. It was not evident to all reviewers that there was a great deal of rigor. However, there was more rigor evident in the lessons about the collections of equivalent ratios.</td>
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<tr>
<td>✓ <strong>Rigor</strong>: Requires students to engage with and demonstrate challenging mathematics with appropriate balance among the following:</td>
<td></td>
</tr>
<tr>
<td>− <strong>Application</strong>: Provides opportunities for students to independently apply mathematical concepts in real-world situations and solve challenging problems with persistence, choosing and applying an</td>
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</table>
appropriate model or strategy to new situations.

- **Conceptual Understanding:** Develops students' conceptual understanding through tasks, brief problems, questions, multiple representations and opportunities for students to write and speak about their understanding.

- **Procedural Skill and Fluency:** Expects, supports and provides guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.

**Rating:** 3 – Meets most to all of the criteria in the dimension

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**Dimension III – Instructional Supports**

<table>
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<tr>
<th>The lesson/unit is responsive to varied student learning needs:</th>
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<tr>
<td>✓ Includes clear and sufficient guidance to support teaching and learning of the targeted standards, including, when appropriate, the use of technology and media.</td>
</tr>
<tr>
<td>✓ Uses and encourages precise and accurate mathematics, academic language, terminology and concrete or abstract representations (e.g., pictures, symbols, expressions, equations, graphics, models) in the discipline.</td>
</tr>
<tr>
<td>✓ Engages students in productive struggle through relevant, thought-provoking questions, problems and tasks that stimulate interest and elicit mathematical thinking.</td>
</tr>
<tr>
<td>✓ Addresses instructional expectations and is easy to understand and use.</td>
</tr>
<tr>
<td>✓ Provides appropriate level and type of scaffolding, differentiation, intervention and support for a broad range of learners.</td>
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<tr>
<td>- Supports diverse cultural and linguistic backgrounds, interests and styles.</td>
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<tr>
<td>- Provides extra supports for students working below grade level.</td>
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<tr>
<td>- Provides extensions for students with high interest or working above grade level.</td>
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<th>A unit or longer lesson should:</th>
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<tbody>
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<td>✓ Recommend and facilitate a mix of instructional approaches for a variety of learners such as using multiple representations (e.g., including models, using a range of questions, checking for understanding, flexible grouping, pair-share).</td>
</tr>
<tr>
<td>✓ Gradually remove supports, requiring students to demonstrate their mathematical understanding independently.</td>
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The guidance to teachers for implementing this set of lessons is clear and could easily be followed by both experienced and novice teachers, alike. There are adequate supports to help teachers lead discussions, engage students in small group work, encourage student presentation of work, and assess student work. One concern is that there is so much material in each lesson, it is unlikely that every activity could be completed in a single class period. It would be helpful to provide guidance around how to decide which parts are the most crucial or how to organize when time is running out.

The attention to precise academic language regarding ratio and rate is a particular strength of this module. Terms are clearly defined in line with the CCSS standards and progressions, and students are held accountable for using this language accurately in this work. Also, students are expected to be able to use several representations of ratios.

Students will have an opportunity to engage in productive struggle in these lessons. Places where this is evident include some of the Exploratory Challenge activities. Problems are sufficiently challenging, and if teachers allow students time to engage with the problems before presenting answers, there should be a chance to engage in productive struggle.

The instructional expectations are clear and the materials are organized for ease of use.

Throughout the lessons, there are boxes which suggest ways to scaffold, support English language learners, and to engage advanced learners. While this isn't present in every activity of every lesson, there is clearly an intention to provide supports at key points in the module.

While the lessons are mostly teacher directed, there is some variety in what students are asked to do. There are opportunities for pair work and small group work, for students to create arguments to support their thinking, and for students to present their thinking to the class. One concern is that many of the activities listed are suggested to take 2 minutes or 4 minutes, which doesn't seem realistic. It seems that any activity that would engage students deeply and result in a meaningful discussion couldn't be done in such a short time frame.
Demonstrate an effective sequence and a progression of learning where the concepts or skills advance and deepen over time.

Expect, support and provide guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.

Most lessons start more teacher-directed, and the new learning is guided by semi-scripted discussions led by the teacher. Later lessons on the same topic allow for more independent work on the part of students, and even students presenting and evaluating their own work.

The sequencing of lessons is also a strength of these materials. The progression of concepts and skills is well thought-out, connections carefully made, and each lesson brings a new and deeper dimension to the learning of the targeted standards.

While the focus in this unit is more about understanding ratio relationships conceptually, there is ample opportunity for students to work with the numbers in ratio relationships and to solve problems involving ratio relationships to develop fluency with ratio calculations.

Rating: 3 – Meets most to all of the criteria in the dimension

Dimension IV – Assessment

The lesson/unit regularly assesses whether students are mastering standards-based content and skills:

✓ Is designed to elicit direct, observable evidence of the degree to which a student can independently demonstrate the targeted CCSS.

✓ Assesses student proficiency using methods that are accessible and unbiased, including the use of grade-level language in student prompts.

✓ Includes aligned rubrics, answer keys and scoring guidelines that provide sufficient guidance for interpreting student performance.

A unit or longer lesson should:

✓ Use varied modes of curriculum-embedded assessments that may include pre-, formative, summative and self-assessment measures.

Both the mid-module and end-of-module assessment will allow teachers to elicit evidence of student mastery of the targeted standards.

There is no concern about bias, and the language in the prompts seems appropriate for 6th grade.

Rubrics are provided for the assessments that help teachers evaluate students’ levels of understanding of each of the targeted standards. There are also answer keys provided for all learning activities in the module.

There are exit tickets provided for each lesson, in addition to the summative assessments. It would be even more useful if there were an option for a pre-assessment, and ways for students to engage in self-assessment on a regular basis.

The one criticism from the review team would be that there does not seem to be any clearly defined pre-assessment opportunities. With so many foundational standards, teachers might benefit by using some good pre-assessments to perhaps move the module along if students have a clear understanding of the foundational work.

Rating: 3 – Meets most to all of the criteria in the dimension

Summary Comments

Overall this module was excellent. The only major criticism is the volume of work. Although very thorough, it seemed like a lot of lessons, and the review team believed that it could possibly take much longer than was proposed. It would be nice to provide some clearly identified pre-assessments that would make it easier for teachers to move these lessons along and save some valuable instructional time for other, more complex, topics at this grade level.

Rating Scales

Rating Scale for Dimensions I, II, III, IV:

3: Meets most to all of the criteria in the dimension
2: Meets many of the criteria in the dimension
1: Meets some of the criteria in the dimension
0: Does not meet the criteria in the dimension

Overall Rating for the Lesson/Unit:
E: Exemplar – Aligned and meets most to all of the criteria in dimensions II, III, IV (total 11 – 12)
E/I: Exemplar if Improved – Aligned and needs some improvement in one or more dimensions (total 8 – 10)
R: Revision Needed – Aligned partially and needs significant revision in one or more dimensions (total 3 – 7)
N: Not Ready to Review – Not aligned and does not meet criteria (total 0 – 2)

Rating Descriptors

Descriptors for Dimensions I, II, III, IV:
3: Exemplifies CCSS Quality - meets the standard described by criteria in the dimension, as explained in criterion-based observations.
2: Approaching CCSS Quality - meets many criteria but will benefit from revision in others, as suggested in criterion-based observations.
1: Developing toward CCSS Quality - needs significant revision, as suggested in criterion-based observations.
0: Not representing CCSS Quality - does not address the criteria in the dimension.

Descriptor for Overall Ratings:

E: Exemplifies CCSS Quality – Aligned and exemplifies the quality standard and exemplifies most of the criteria across Dimensions II, III, IV of the rubric.
E/I: Approaching CCSS Quality – Aligned and exemplifies the quality standard in some dimensions but will benefit from some revision in others.
R: Developing toward CCSS Quality – Aligned partially and approaches the quality standard in some dimensions and needs significant revision in others.
N: Not representing CCSS Quality – Not aligned and does not address criteria.