EQuIP Review Feedback

Lesson/Unit Name: Understanding Fraction Equivalence and Comparison
Content Area: Mathematics
Grade Level: 4

Overall Rating:

E

Exemplar

Dimension I – Alignment to the Depth of the CCSS

The lesson/unit aligns with the letter and spirit of the CCSS: ✓ Targets a set of grade-level CCSS mathematics standard(s) to the full depth of the standards for teaching and learning. ✓ 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. ✓ Presents a balance of mathematical procedures and deeper conceptual understanding inherent in the CCSS.	This is a unit designed for grade 4 to provide instruction about fraction equivalence and comparison across 9 lessons. The unit focuses on content standards for grade 4 about fractions including 4.NF.A.1 and 4.NF.A.2. The lessons are designed to target these standards and help students develop multiple strategies for reasoning about fractions beyond finding equivalent fractions. All Standards for Mathematical Practice (MPs) are listed at the beginning of the unit with descriptions about what teachers might expect to observe students doing for each of the MPs. These descriptions are age-appropriate. Individual lessons provide more specific information about the MPs highlighted and student behaviors teachers might expect to observe as students engage in the MPs. There are many opportunities for students to use their intuitive understandings to develop conceptual understanding. Using a variety of representations will help students build a visual understanding of the fractions, and the classroom conversations will connect the visual representations to the symbolic notation of fractions. The idea of finding equivalent fractions is developed by beginning with partitioning physical materials to drawing pictures to writing equations.
Rating: **3 – Meets most to all of the criteria in the dimension**	

Dimension II – Key Shifts the CCSS

The lesson/unit reflects evidence of key shifts that are reflected in the CCSS: ✓ **Focus:** 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. ✓ **Coherence:** 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.	Focus: The focus throughout the unit remains on the ideas of fraction equivalence and using number sense about fractions to make comparisons. The lessons are explicit in explaining the depth of the content students need to know. For example, on page 74, the lesson cautions that students are not to use multiplication with fractions equivalent to one until grade 5. Coherence: This unit intends to expand upon previous understandings from the introduction of fractions in grade 3, using what students know about unit fractions and representations such as bar models, number lines, and fraction circles. Ideas about multiplicative reasoning are embedded throughout the unit and provide a solid foundation for future learning. Lastly, starting on page 13, the authors have included a section of 15-minute routines to begin the week before the unit begins to assess and advance understandings from grade 3. Rigor: The unit provides many opportunities for students to develop conceptual understanding through inquiry-based tasks and classroom conversations. Multiple representations of fractions, including bar models, circles, number lines, and numbers are used and connected through conversations in small groups and as a whole class.

✓ **Rigor:** Requires students to engage with and demonstrate challenging mathematics with appropriate balance among the following: – **Application:** Provides opportunities for students to independently apply mathematical concepts in real-world situations and solve challenging problems with persistence, choosing and applying an 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.	There are limited opportunities for application through real-world situations, which is appropriate at this time as the focus of these lessons is on developing solid conceptual understanding for fraction equivalence and comparisons. Students work toward procedural skill and fluency in finding equivalent fractions and making comparisons throughout the unit. Independent work tasks and homework are provided for students to have opportunities to build independent, procedural fluency.
Rating: **3 – Meets most to all of the criteria in the dimension**	

Dimension III – Instructional Supports

The lesson/unit is responsive to varied student learning needs: ✓ Includes clear and sufficient guidance to support teaching and learning of the targeted standards, including, when appropriate, the use of technology and media. ❒ 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. ✓ Engages students in productive struggle through relevant, thought-provoking questions, problems and tasks that stimulate interest and elicit mathematical thinking. ✓ Addresses instructional expectations and is easy to understand and use. ✓ Provides appropriate level and type of scaffolding, differentiation, intervention and support for a broad range of learners. – Supports diverse cultural and linguistic backgrounds, interests and styles. – Provides extra supports for students working below grade level. – Provides extensions for students with high interest or working above grade level. <u>*A unit or longer lesson should:*</u>	The unit provides many examples of clear and sufficient guidance to aid teachers in using these lessons. Protocols for discussion, such as "In the Middle," are provided on pages 17–21, to help teachers use various strategies for whole and small group discussion as a way to deepen student understanding. Guidance for teachers is highlighted in yellow throughout the unit. Additionally, sample discussions and explanations are provided, such as the number talk routine on pages 69–70. The reference to online tools on page 16 is appropriate for this unit. A detailed vocabulary list is provided at the beginning of the unit that includes both definitions and illustrations to support the use of precise and accurate language. Multiple representations of fractions are provided by having students show fractions in drawings, numerical form (1/4), and word form (one-fourth) while making connections to the idea that these representations have the same meaning and are equivalent. However, there are instances in the unit when the fraction word forms are not accurate. An example of this is on page 33 when 3/4 is referred to as 3-fourths instead of three-fourths. The unit engages students in productive struggle through inquiry-based explorations and classroom discussions. For example, on pages 31–34, students work to find equivalent fractions using manipulatives to prove conjectures and complete a chart to find patterns about the equivalent fractions. There are several times that recommend the teacher purposely place representations in an incorrect location on the chart – the classroom conversations surrounding this strategy will help to uncover any student misconceptions and allow students time to justify their conclusions. Activities include working with partners, using appropriate tools, and creating visual representations to help students compare fractions.

✓ 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). ✓ Gradually remove supports, requiring students to demonstrate their mathematical understanding independently. ✓ 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.	The unit includes opportunities for the teacher to observe and assess foundational knowledge about fractions from grade 3 to check for gaps in understanding. Instructional supports, such as the use of sentence frames on page 17, are provided for English Language Learners along with suggestions for task modification if needed. An extension problem is provided at the end of the summative assessment for students needing an additional challenge. Giving students choice and private time to think is helpful for all learners and a strength of this unit. The unit begins with explorations of various models and representations. As the learning progresses, later lessons allow students to choose the models that make the most sense for them to solve problems. This methodology gradually removes supports allowing students to independently demonstrate their understanding. There remain some typographical errors in the unit which might affect the overall quality experience for the user. A few examples are the subtitle on page 13 "Assess and Advance Third Grade Concepts: Use Resoning To Compare and Order Fractions which should read as "...Use Reasoning...," the removal of the "s" for the correct spelling of Dylan Wiliam on pages 19 and 22, and the remainder of a prior editing note on page 55 that refers to "their" instead of "there." A final spell- and grammar-check, along with a thorough detailed reading by an editor should eliminate all remaining errors.
Rating: **2 – Meets many 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. <u>*A unit or longer lesson should:*</u> ✓ Use varied modes of curriculum-embedded assessments that may include pre-, formative, summative and self-assessment measures.	This sequence of lessons contains a strong assessment component. Each lesson is thoroughly planned with achievement targets that can be communicated to students, as well as detailed success criteria. Often the lesson includes teacher strategies that tie directly to the success criteria. Formative assessment opportunities, such as exit tickets, are included throughout the lessons with suggestions for what teachers should specifically observe. For example, on page 57 under "Notes for Monitoring," there are suggested questions to ask students who might be struggling with misconceptions. Answer keys are provided for both formative and summative assessments. There is also the opportunity for students to participate in self-assessment, such as the activity on page 52 where students rate their understanding with a partner. An additional strength of the assessment plan is the use of the pre-unit assessment and pre-lesson "routines" that activate student prior knowledge and provide diagnostic data for the teacher, a variety of assessment types throughout the unit, and the use of choice as a Universal Design for Learning strategy.
Rating: **3 – Meets most to all of the criteria in the dimension**	

Summary Comments

This is a unit designed for grade 4 to provide instruction about fraction equivalence and comparison across 9 lessons. The unit focuses on content standards for grade 4 about fractions including 4.NF.1 and 4.NF.2. The focus of the lessons is on development of conceptual understanding of fraction equivalence, as well as strategies such as using 1/2 as a benchmark to compare fractions. Assessment is a strength of this unit. A final spell- and grammar-check, a search for inaccurate fraction word forms, and a thorough reading by an editor to find and correct any remaining minor typographical errors is all that is needed.

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.