

EQuIP Review Feedback



Lesson/Unit Name: Sharing Costs: Travelling to School

Content Area: Mathematics

Grade Level: 6

Overall Rating:

E/I

Exemplar if Improved

Dimension I – Alignment to the Depth of the CCSS

<p><i>The lesson/unit aligns with the letter and spirit of the CCSS:</i></p> <ul style="list-style-type: none">✓ 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.	<p>The lesson "Sharing Costs: Travelling to School" is targeted for the grade 6 standard 6.RP.3b: Solve unit rate problems including those involving unit pricing and constant speed. The problem is aligned so that students can use proportional reasoning to determine the portion of travel each student uses and can calculate their share of the \$300 from this proportion. Explicit strategies such as tables, tape diagrams, and double number lines are not explored deeply in the student samples.</p> <p>The Standards for Mathematical Practice highlighted in this lesson are: SMP 1: Make sense of problems and persevere in solving them. SMP 2: Reason abstractly and quantitatively. SMP 4: Model with mathematics.</p> <p>These three SMPs are clear throughout the lesson as students have opportunities to consider the work of others, revise their own work, and reason about how the cost of transportation might be shared between the students. It might be helpful for teachers if the SMPs are highlighted at points in the lesson where teachers might draw the attention of students to that specific practice.</p> <p>This lesson presents a balance of conceptual understanding along with mathematical procedures as students figure out a way to share the costs of transportation. In evaluating the sample responses, students will be exposed to some of the mathematical procedures that they might not have used and consider the mathematical validity of these procedures. They are encouraged to justify their preferred solution in the "How Did You Work?" section. In noting different student approaches to the task, teachers are encouraged to question students on the strategies that they use which develops their conceptual understanding.</p>
<p>Rating: 3 – Meets most to all of the criteria in the dimension</p>	

Dimension II – Key Shifts the CCSS

<p><i>The lesson/unit reflects evidence of key shifts that are reflected in the CCSS:</i></p> <ul style="list-style-type: none">✓ 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.	<p>Focus: This lesson directly connects to the major work of grade 6 with reasoning about multiplication and division to solve ratio and rate problems about quantities. There are high expectations as evidenced by strategic questioning and requiring students to justify their responses with reasoning. Students are not held responsible for material from later grades.</p> <p>Coherence: The content in this lesson develops from previous understanding of part/whole relationships and proportional reasoning. More explicit connections to algebraic expressions could be included in this lesson. The understanding of these concepts will be an important foundation for work in ratios and proportions in grade 7.</p>
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<ul style="list-style-type: none"> ✓ 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. ✓ Rigor: Requires students to engage with and demonstrate challenging mathematics with appropriate balance among the following: <ul style="list-style-type: none"> – 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. 	<p>Rigor: This lesson clearly provides opportunities for students to apply mathematical concepts in the real-world context of determining how students might share the cost of travel to school. The guiding questions for the teacher to ask students and the variety of possibilities for reasoning about and representing the proportional relationships provides a strong grounding for conceptual understanding. The lesson develops students' conceptual understanding through questioning, discussions, and self-reflection. Students have multiple opportunities to speak and write about their understanding and application of ratio reasoning.</p>
<p>Rating: 3 – Meets most to all of the criteria in the dimension</p>	

Dimension III – Instructional Supports

<p><i>The lesson/unit is responsive to varied student learning needs:</i></p> <ul style="list-style-type: none"> ✓ 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. <ul style="list-style-type: none"> – Supports diverse cultural and linguistic backgrounds, interests and styles. 	<p>This lesson provides clear and sufficient guidance to support teaching and learning of the content. Teachers will appreciate the Common Issues, suggested questions and prompts, and supporting documents for students. The "Planning a Strategy Together" slide provides expectations for students to set the stage for how the work will be shared in a group. Explanations for solutions to the assessment task are provided with commentary. While no technology use is included, hands on materials such as white boards and graph paper are used to promote discussion and explanations.</p> <p>Academic vocabulary is not necessarily a point of emphasis for this lesson. If students are expected to use terms such as "ratio" or "proportion", you might consider including language about how vocabulary should be used within the lesson plan. Some academic vocabulary is supported by the suggested questions and prompts, such as "calculation", "compare", and "productive".</p> <p>Engagement in productive struggle is a definite strength with this lesson. The teacher is encouraged to act as a facilitator rather than providing direct instruction of mathematical procedures. Students work with the problem individually prior to the lesson and can then revise their work based on questions from the teacher. With partners, students evaluate the sample solutions and make connections about mathematical thinking. The</p>
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<ul style="list-style-type: none"> - Provides extra supports for students working below grade level. - Provides extensions for students with high interest or working above grade level. <p><u><i>A unit or longer lesson should:</i></u></p> <ul style="list-style-type: none"> <input type="checkbox"/> 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). <input type="checkbox"/> Gradually remove supports, requiring students to demonstrate their mathematical understanding independently. <input type="checkbox"/> Demonstrate an effective sequence and a progression of learning where the concepts or skills advance and deepen over time. <input type="checkbox"/> 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. 	<p>real-world context may or may not stimulate interest and some students may not be able to identify with it because they might get to school by bus or walking.</p> <p>The lesson addresses instructional expectations and is easy to use. The red, italicized font is effective in highlighting suggestions for teacher directions/talk. The sequence of activities follows a logical progression and guides novice teachers to address misconceptions and troubleshoot common issues.</p> <p>Support for diverse learners is embedded in this task through the questioning and prompting provided for students. For example, there are comments in the dialogue box of the handout with the problem that might help students who are having difficulty entering the problem. The teacher can use the suggested questions and prompts to provide support to students for specific areas of struggle. You might consider suggestions for an alternative scenario if the students' culture is not familiar with carpooling. Including extensions for students working above grade level will enhance the lesson.</p>
<p>Rating: 2 – Meets many of the criteria in the dimension</p>	

Dimension IV – Assessment

<p><i>The lesson/unit regularly assesses whether students are mastering standards-based content and skills:</i></p> <ul style="list-style-type: none"> ✓ 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. <input type="checkbox"/> Includes aligned rubrics, answer keys and scoring guidelines that provide sufficient guidance for interpreting student performance. <p><u><i>A unit or longer lesson should:</i></u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Use varied modes of curriculum-embedded assessments that may include pre-, formative, summative and self-assessment measures. 	<p>The lesson has clear opportunities for teachers to observe student learning through the formative assessment, partner work, and class discussions. Much of the assessment is observational and open-ended. You might consider including a rubric or scoring guidelines to support novice teachers in their assessment of the formative assessment as well as the "How Did You Work?" that students complete at the end of the lesson helping them to see the most important learning target from the lesson.</p> <p>Inclusion of an assessment to be completed by individual students would be a helpful addition. A logical extension may be to include additional assessments or tasks to elicit the use of other strategies (tables, tape diagrams, double number lines) when solving problems requiring ratio reasoning.</p> <p>The "Common Issues" chart is useful as a guideline to provide feedback. Commentary is provided for the Sample Student Responses to help teachers understand the intent of the response.</p>
<p>Rating: 2 – Meets many of the criteria in the dimension</p>	

Summary Comments

This lesson for grade 6 asks students to calculate how students might share the cost of the drive to school using proportional reasoning. The lesson includes clear connections to previous learning and builds a foundation for later learning in grade 7. Instructional materials are provided to support the teacher in implementing the lesson, including questions and prompts. A strength of this lesson is the opportunity that students have to revise their initial work. Assessment occurs through observation and a self-reflection at the end of the lesson. The lesson could be strengthened with the inclusion of an individualized assessment of learning at the end of the lesson. The scenario of the task might be revised to be more accessible for all students. Students will find this lesson engaging and will make connections to mathematical content through the class discussions.

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
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- 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**)
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- 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.
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- 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.
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- 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.