EQuIP Review Feedback

Lesson/Unit Name: Designing: Candy Cartons
Content Area: Mathematics
Grade Level: 6

Overall Rating:

E/I

Exemplar if Improved

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 lesson states that it will address 6.G and then specifies 6.G.4 (Represent 3-dimensional figures using nets…). It is recommended that 6.G be replaced by 6.G.4 in order to avoid any possible misunderstanding regarding the scope of the targeted standards for this series of two lessons. Overall, while this lesson clearly involves representing nets to find volume, it is not clear that students use these nets to find surface area. Finding surface areas is not a focus for this lesson, but could make the next logical step for instruction. Connecting this, in turn, to expressions and equations would help target a standard that falls within the major work of the grade. The Standards for Mathematical Practice are cited at the beginning of the lesson. SMP 1,3 and 4 are used throughout the lesson as students have opportunities to consider the work of others, revise their own work, and model the geometric figures through building nets and using mathematical symbols. Including mention of these throughout the lesson in an explicit way would help students be more aware of them as they complete the tasks. There is a solid balance of mathematical procedures and conceptual understanding throughout these two lessons. Students are encouraged to apply reasoning to solve a math challenge. Critiquing peers' and their own models leads them to deeper conceptual understanding. In evaluating the sample responses, students will be exposed to some of the mathematical procedures that they might not have used previously. Asking them to consider the validity of these methods scaffolds their learning to the next level.
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	Focus: This lesson does not directly connect to the major work of grade 6 since it covers only 6.G.4. It is recommended that a connection be made to the major work of the grade by linking finding surface area of a net with expressions and equations. Coherence: This lesson connects to previous work with geometry. In particular, it builds on students' ability to find the area of various 2-dimensional shapes and creating nets of 3-dimensional shapes. There are connections to previous understanding from grades 4 and 5 by finding factors of 18. It leads into future work with scale drawings and constructions in the coordinate plane in seventh grade. Making a more explicit connection and extending the problem to making a larger scale model of the box would be a way to integrate standards across domains and clusters including multiplication, expressions and equations. The

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: – **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.	logical next step would be to build upon this work to focus on calculating surface area and using the dimensions to find volume (6.G.A.2). Rigor: Through designing candy boxes, the students have the opportunity to create nets and find volume of 3-dimensional shapes. This provides them with a real-world context in which to solve a challenging problem while discussing, writing about, and applying mathematical concepts. Students' conceptual understanding is developed through the task, but also through strategic questioning and class discussions where they receive specific and targeted feedback on their work. The opportunity to revise their original design in small groups also helps to develop their conceptual understanding through reasoning about the optimal candy box design. This set of two lessons provides guidelines for procedural skill and fluency through the inclusion of the chart where students circle the approaches they used. This raises students' awareness of a variety of mathematical procedures that can be used to solve the same problem.
Rating: **2 – Meets many 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.	This lesson is responsive to varied students' learning needs through its clear guidance to support the teaching and learning of the targeted standards. As noted on T-1, providing a variety of materials such as counters and calculators will provide additional support. While no technology support is provided, student worksheets and hint sheets provide a complete way to teach the lesson effectively. The use of precise mathematical language is encouraged throughout the lesson with reminders to "use math to explain your design" in the teacher directions to students. Volume, net, edges, dimensions, and diameter are all terms used with the suggestions for teacher-directed questions. Highlighting the use of the word "assumption" in this lesson context provides an effective way to teach academic language. Encouraging teachers to ask students "What do we mean by 'good' in this context?" promotes the use of mathematical language. The use of nets as a model is integrated into this lesson. Designing candy boxes is a task that engages the students in productive struggle. Through strategic questioning, students are encouraged to revise their designs and reflect on the mathematical work they have done. When working in groups, they are encouraged to justify their designs and come to group consensus on the 'best' design. Asking students to then consider aspects of box design such as the box with the best fit and least extra space then leads them to another level of mathematical thinking.

– Provides extensions for students with high interest or working above grade level. *A unit or longer lesson should:* ❒ 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.	This lesson addresses instructional expectations through its clear directions and supporting materials. Teacher directions are clear and the "Common Issues" and "Suggested Questions and Prompts" are particularly useful to guide teachers as they provide meaningful feedback to students. There is some scaffolding for students who need additional support in building nets through the 'hint' sheet and those who experience 'common issues.' Minimal support is provided for students who are culturally and linguistically diverse through including a discussion on the word "assumption." Through the open-ended nature of the task presented in this lesson, there is the possibility to extend learning for students who are working above grade level. For example, if a student solves the problem with a complete and well-justified response, the teacher might prompt the student to "provide a different solution by changing some of their assumptions." Students who experience a high level of success in completing their design are encouraged to develop a new design, possibly with different criteria.
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.	This 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 providing tremendous opportunity for student growth. Student self-reflection through the "Design Review" is encouraged by including the chart where they must circle the math that they used to solve the problem. Student sample work with commentary is helpful. Including a scoring guide/rubric to go along with the "Design Review" would be useful. Providing an additional opportunity for students to work on another challenge task in a new context would provide another opportunity for them to independently demonstrate the targeted standard, 6.G.4.
Rating: **2 – Meets many of the criteria in the dimension**	

Summary Comments

This lesson series aligns to grade appropriate standards that are developed through the challenges and tasks. The geometry standard that is the focus of these lessons connects to both previous knowledge and concepts beyond this grade level. It could also be extended to include standards targeting the major work of the grade. The lessons have a logical progression and are clearly written with engaging tasks and real-world application. Assessment options are provided, but could be strengthened by the inclusion of aligned rubrics and scoring guidelines as well as an independent task in a new context.

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.