This sample Assignment Review Protocol looks at how well the [Task: Girl Scout Cookies By: Dan Meyer] would align to KY.6.G.2. It is important to note that the identified mathematical practices, coherence connections and any clarifications are possible suggestions; however, they are not the only pathways. The value of this resource is in having these discussions at the PLC level to support collective teacher clarity.

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Assignment Review Protocol: Math

The student work review tool is intended to help teachers, leaders, and other stakeholders answer the question, "Does this task give students the opportunity to meaningfully engage in worthwhile grade-appropriate content?"

PART ONE: Mathematical Content[i]: Does this assignment align with the expectations defined by grade-appropriate standards?

Does the assignment focus on one or more grade-appropriate mathematics standards?

Yes | Partially | No

Standard(s): KY.6.G.2

Do all questions and/or tasks reach the depth of grade-appropriate standard(s)? Use the following criteria to guide your thinking.

Yes | No

Evidence:

- **Section 1: Target of the Standard:**
  Does the task match the target of the standard (conceptual understanding, procedural skill & fluency, and/or application)? Do the numbers/number types and types of representations (area model, shapes, graphs, functions, etc.) match those called for by the targeted standard(s)? For example,
  - If the standard is **conceptual understanding**, does the task require more than knowing isolated facts and methods? Are students asked to make sense of why a mathematical idea is important and the kinds of contexts in which it is useful?
  - If the standard is **procedural skill/fluency**, does the task require students to apply procedures accurately, efficiently, flexibly and appropriately? Does the task focus students' attention on the use of procedures for the purpose of developing a deeper level of understanding of mathematical concepts or ideas? If general procedures may be followed, can they be followed mindlessly or are students asked to engage with the conceptual ideas that underlie the procedures to complete the task successfully?
  - If the standard is **application**, does the task offer students the opportunity to solve problems in a relevant and meaningful way? Are students asked to select an efficient method to find a solution and develop critical thinking skills? Are students asked to actively examine task constraints that may limit possible solutions and strategies?

KY.6.G.2 is an Application standard. Task provides a context for learning & problem solving in a meaningful way. Students are asked to select an efficient method to find a solution & determine whether a solution makes sense. Specifically addressed in the sequel.

- **Section 2: Coherence:** When examining the standard the task addresses,
  - Looking **across** grade-levels, is there a coherent connection to the same topic in a **previous** grade? If so, is the task crafted to elicit a more sophisticated level of understanding than would have been acceptable in the previous grade? Yes → In this task students are calculating volume for the girl scout cookie box with dimensions 5.8cm, 11.7cm, 17.8cm (rational number edge lengths)
  - Is there a coherent connection to another standard **within** the current grade? Yes → KY.6.NS.3 Fluently add, subtract, multiply and divide multi-digit decimals using an algorithm for each operation.

In 5th grade: Students found the volume of right rectangular prisms with whole number side lengths AND recognized volume is additive.

- **Section 3: Cognitive Complexity:** Based on the target of the standard, determine the cognitive complexity of the task.

Target of the Standard	Low (Level 1)	Medium (Level 2)	High (Level 3)
Conceptual Complexity	Solving the problem requires students to recall or recognize a grade-level concept. The student does not need to relate concepts or demonstrate a line of reasoning.	Students may need to relate multiple grade-level concepts or different types, create multiple representations or solutions, or connect concepts with procedures and strategies. The student must do some reasoning but may not need to demonstrate a line of reasoning.	Solving the problem requires students to relate multiple grade-level concepts and to evidence reasoning, planning, analysis, judgment, and/or creative thought OR work with a sophisticated (nontypical) line of reasoning.
Procedural Complexity	Solving the problem entails little procedural demand or procedural demand is below grade level.	Solving the problem entails common or grade-level procedure(s) with friendly numbers.	Solving the problem requires common or grade-level procedure(s) with unfriendly numbers, an unconventional combination of procedures, or requires unusual perseverance or organizational skills in the execution of the procedure(s).
Application Complexity	Solving the problem entails an application of mathematics, but the required mathematics is either directly indicated or obvious.	Solving the problem entails an application of mathematics and requires an interpretation of the context to determine the procedure or concept (may include extraneous information). The mathematics is not immediately obvious. Solving the problem requires students to decide what to do.	In addition to an interpretation of the context, solving the problem requires recognizing important features, and formulating, computing, and interpreting results as part of a modeling process.

*Source: https://www.achieve.org/files/Cognitive%20Complexity%20Mathematics%20Assessment_FINAL_0.pdf

Medium

The mathematics is not immediately obvious. Students have to decide what to do. "Volume" is actually only mentioned by name in the teachers notes.

* This task could also be high cognitive complexity through facilitation: mathematical discourse as students recognize important features, compute, interpret. The extent to which students have the opportunity to engage in the modeling process will really be the determining factor for cognitive complexity here.

Overall Content Rating

Overall, do the content demands of this assignment align with the expectations defined by grade-appropriate standards?

0 – Weakly Aligned	1 – Partially Aligned	2 – Strongly Aligned
Less than half of the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).	*More than half (but not all) of the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).*	*All the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).*

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Note: I review the SMP descriptions on p. 12-15 and look at which descriptions have the most in common with the questions / student expectations on the assignment.

Assignment Review Protocol: Math

PART TWO: Mathematical Practice: Does the assignment provide meaningful opportunities for students to engage in the standards for mathematical practices?

	Yes	No
Does the assignment require students to engage with one or more mathematical practices while working on grade-appropriate content? • Does the target standard(s) explicitly call for use of a specific mathematical practice? If so, does the task provide opportunity for students to engage in the mathematical practice named by the standard? It may be useful to utilize the front matter of the KAS for Mathematics (p. 12-15) and the Engaging the SMPs: Look fors and Questions Stems document from the *Getting to Know the KAS for Mathematics* module.	*Evidence:* MP2: Make sense of quantities & their relationships in problem situations. Attend to the meaning of quantities, not just how to compute them. MP4: Students can apply the mathematics they know to solve problems that arise in everyday life. Students interpret their results in context & reflect on whether the results make sense. MP6: Students communicate precisely & are careful about specifying units of measure.	

Note: MP 2, MP 5 and MP6 are tagged within KY.6.G.A.2 BUT that doesn't mean students automatically engage with those practices.

Overall Practice Rating *Overall, to what extent does the assignment provide meaningful practice opportunities with the standards for mathematical practices?*		
0 – Weakly Aligned The assignment does not have students engage with critical mathematical practices while working on grade-appropriate content.	**1 – Partially Aligned** The assignment gives students an opportunity to engage with at least one math practice, but not at the level of depth required by the standard.	**2 – Strongly Aligned** The assignment gives students the opportunity to engage with at least one mathematical practice at the appropriate level of depth required by the standard.

PART THREE: Relevance: Does the assignment give students an authentic opportunity to connect content standards to real-world issues and/or contexts?

	Yes	No
Does the majority of the assignment consist of word problems or real-world application problems/tasks?	*Evidence:*	
If the assignment connects grade-appropriate, content standards to real-world experiences, does it also allow students to apply math in a meaningful way? • Do the provided scenarios make sense in a real-world setting? Yes • Do students have to think critically for each new problem rather than applying the same rote computation over and over without having to make sense of the problem? Is there likely to be more than one way to solve the problem rather than students all solving the problem in the same way? • Does the assignment provide cues (intentionally or unintentionally) for how to approach the task? NO → As mentioned earlier, the task doesn't even use the word "volume".	Yes *Evidence:* yes → Sequel questions are not just repetitions of the questions in the task. They offer an opportunity to extend understanding.	No

Overall Relevance Rating *Overall, to what extent does the assignment give students an authentic opportunity to connect content standards to real-world issues and/or contexts?*		
0 – Weakly Aligned *The assignment does not connect content standards to real world experiences.*	**1 – Partially Aligned** *The assignment connects content standards to real-world experiences, but the problems do not allow students to apply math to the real world in a meaningful way.*	**2 – Strongly Aligned** *The assignment connects content standards to real world experiences and allows students to apply math to the real world in a meaningful way. It may also include novel problems.*