

This sample Assignment Review Protocol looks at how well the [Task: Pentominoes Puzzle](#) aligns to KY.7.EE.4. 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.



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:** Does this assignment align with the expectations defined by grade-appropriate standards?

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

<input checked="" type="radio"/> Yes	<input type="radio"/> Partially	<input type="radio"/> No
Standard(s): <b>KY.7.EE.4</b>		
<input type="radio"/> Yes	<input type="radio"/> No	

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

• **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?

• **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 → the equations created in this task build to more grade 7 appropriate equations in the form of  $px+q=r$ .*
- Is there a coherent connection to another standard **within** the current grade? *Yes → this task connects to KY.7.EE.1 and KY.7.EE.3.*

*It should be noted that these standards, along with KY.7.EE.4, all specify rational numbers, while the numbers involved in this task are rational, instructional decisions will need to accentuate other types of rational numbers to ensure students have the opportunity to explore negatives, fractions, etc. Remember, every assignment won't/may not address every component of a standard, but holistically instruction should be balanced & offer students access to the full intent of the standard.*

Evidence:

*The target of standard KY.7.EE.4 is application.*

*This task is an application task, specifically, this task offers students the opportunity to problem solve. (Note: This task will need to be paired instructionally with others offering more relevant/meaningful contexts to allow students to reach the full intent of the standard.)*

*Students are asked to select an efficient method to find a solution & develop critical thinking skills.*

*yes: KY.6.EE.7 where students solve real world & mathematical problems by writing & solving equations of the form  $x+p=q$  and  $px=q$*



- 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)
<b>Conceptual Complexity</b>	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.
<b>Procedural Complexity</b>	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).
<b>Application Complexity</b>	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](https://www.achieve.org/files/Cognitive%20Complexity%20Mathematics%20Assessment_FINAL_0.pdf)

Medium  
 The mathematics here is not immediately obvious and much of this task hinges on students deciding how to get a solution. Honestly, I debated for a while here between medium/high since students are asked to recognize important features, formulate, compute, etc. Ultimately my "medium" really came down to the phrase "as a part of the modeling process". The modeling process (p. 89 of KAS for Mathematics) is based on answering a real-world question and context isn't really authentic here. I think this could be debated, but ultimately if we are deciding between medium or high, that's a win-win for our students already.

**Overall Content Rating**

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

**0 – Weakly Aligned**

Less than half of the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).

**1 – Partially Aligned**

More than half (but not all) of the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).

**2 – Strongly Aligned**

All the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).

\* This standard is packed with rich content. This task will need to be intentionally paired with others that allow students experience with the content not addressed here.



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/task.

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

**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.

Note: MP2 and MP4 are tagged to provide guidance for teachers around KY.7.EE.4 BUT that doesn't mean students automatically engage with those practices.

Yes	No
Evidence:	
<p><b>MP1:</b> Students consider analogous problems to gain insight into its solutions. Check their answers using a different method.</p> <p><b>MP3:</b> Students justify their conclusions, communicate them to others and respond to the arguments of others.</p> <p><b>MP8:</b> Students notice if calculations are repeated and look for general methods and shortcuts</p>	

**Overall Practice Rating**

Overall, to what extent does the assignment provide meaningful practice opportunities with the standards for mathematical practices?

0 – Weakly Aligned	1 – Partially Aligned	2 – Strongly Aligned
The assignment does not have students engage with critical mathematical practices while working on grade-appropriate content.	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.	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?

**Does the majority of the assignment consist of word problems or real-world application problems/tasks?**

Yes	No
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?
- 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?

Yes	No
Evidence:	

\* While this learning experiences offers an opportunity for students to problem solve & think critically, it will need to be a part of instruction that intentionally offers students the opportunity to engaged with authentic, real-world contexts as that is not built into this experience.

Also screen 11 has students making sense of the algebra for a new tile shape.

No -> very open to multiple methods but the goal is for students to understand how algebra can be used to support efficient problem solving.

**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	1 – Partially Aligned	2 – Strongly Aligned
The assignment does not connect content standards to real world experiences.	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.	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.

This task does build an understanding of using algebra as an efficient problem solving strategy, which will lend itself nicely to future application work.