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.

### **PART ONE: Mathematical Content**

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

<table>
<thead>
<tr>
<th>Yes</th>
<th>Partially</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard(s):</strong></td>
<td>KY.7.EE.4</td>
<td></td>
</tr>
</tbody>
</table>

**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 context to allow students to reach the full intent of the standard.)

Students are 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 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** to 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** to 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 accommodate 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 to offer students access to the full intent of the standard.
### Section 3: Cognitive Complexity

Based on the target of the standard, determine the cognitive complexity of the task.

<table>
<thead>
<tr>
<th>Target of the Standard</th>
<th>Low (Level 1)</th>
<th>Medium (Level 2)</th>
<th>High (Level 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conceptual Complexity</strong></td>
<td>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.</td>
<td>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.</td>
<td>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 (non-typical) line of reasoning.</td>
</tr>
<tr>
<td><strong>Procedural Complexity</strong></td>
<td>Solving the problem entails little procedural demand or procedural demand is below grade level.</td>
<td>Solving the problem entails common or grade-level procedure(s) with friendly numbers.</td>
<td>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).</td>
</tr>
<tr>
<td><strong>Application Complexity</strong></td>
<td>Solving the problem entails an application of mathematics, but the required mathematics is either directly indicated or obvious.</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>


### Assignment Review Protocol: Math

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

<table>
<thead>
<tr>
<th>Overall Content Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – Weakly Aligned</td>
<td>Less than half of the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).</td>
</tr>
<tr>
<td>1 – Partially Aligned</td>
<td>More than half (but not all) of the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).</td>
</tr>
<tr>
<td>2 – Strongly Aligned</td>
<td>All the questions on the assignment reach the depth of the targeted grade-appropriate standard(s).</td>
</tr>
</tbody>
</table>

*This task 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.

Assignment Review Protocol: Math

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?

Evidence:
MP1: Students consider analogous problems to gain insight into its solutions, which their answers, using a different method.
MP2: Students justify their conclusions, communicate them to others, and respond to the arguments of others.
MP3: Students notice if calculations are repeated and look for general methods and shortcuts

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.T.EE.4
but that doesn't mean students automatically engage with these practices.

Overall Practice Rating

<table>
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<th>2 - Strongly Aligned</th>
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<tbody>
<tr>
<td>The assignment does not have students engage with critical mathematical practices while working on grade-appropriate content.</td>
<td>The assignment gives students an opportunity to engage with at least one mathematical practice, but not at the level of depth required by the standard.</td>
<td>The assignment gives students the opportunity to engage with at least one mathematical practice at the appropriate level of depth required by the standard.</td>
</tr>
</tbody>
</table>

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

- 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 routine 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? Definitely more than one way to solve.
  - Does the assignment provide cues (intentionally or unintentionally) for how to approach the task?

Overall Relevance Rating

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<tbody>
<tr>
<td>The assignment does not connect content standards to real world experiences.</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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