First Grade Sample Tasks	First Grade Sample Tasks
Task A: You will need various items to measure, a large set of cubes such as unifix or snap cubes, and a recording sheet with 4 sections. In each section would be the words: "_____ cubes long" with enough space for a small drawing. The students work in pairs to choose an item to measure. First they line up the cubes along the longest side of the item. They count and record the number on the first line in the first section, then draw a picture of the item they measured. Continue 3 more times.	**Task B:** Peyton had 16 books to take on his trip. He lost some. Now he has 7 books. How many books did Peyton lose?
Task C: Jasmine has eight daisies and three vases - one large, one medium-sized and one small. She puts 5 daisies in the large vase, 2 in the medium vase and 1 in the small vase. ● Can you find another way to put daisies so that there are the most in the large vase and least in the small vase? ● Try to find as many ways as you can put the daisies in the vases with the most in the large vase and the least in the smallest vase. If you think you have found them all, explain how you know those are all the possibilities.	**Task D:** Decide if the equations are true or false. Explain your answer. a. 2+5=6 b. 3+4=2+5 c. 8=4+4 d. 3+4+2=4+5 e. 5+3=8+1 f. 1+2=12 g. 12=10+2 h. 3+2=2+3 i. 32=23

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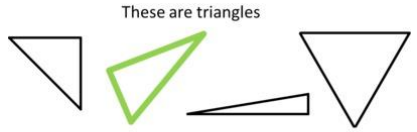
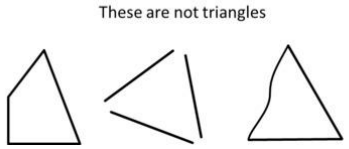
Task E:

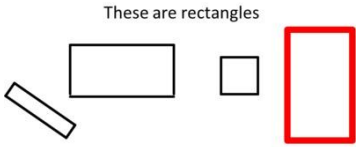
First pose the question: *Here are four triangles. What do all of these triangles have in common? What makes them different from the figures that are not triangles? What is true for some but not all of these triangles?*



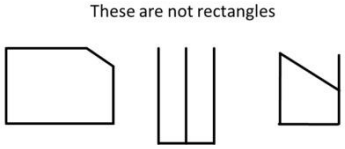


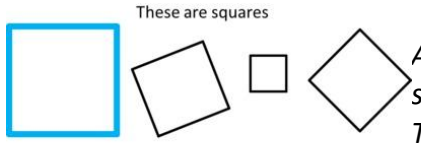
If students come up with a statement that is true about all of the triangles that they see but not true of all triangles in general, the teacher should ask students if they can imagine a triangle without that attribute. For example, if a student says, "All of the triangles are white on the inside," the teacher can ask, "Would it be possible for a triangle to have a different color on the inside?" When the class comes up with an attribute that is truly shared by all triangles, then the class can complete the sentence frame: **All triangles _____, but only some triangles _____.** When the students have written (or composed) their sentences based on the sentence frames, the class can write the definition of a triangle together: ***A triangle is a closed shape with three straight sides that meet at three corners.***

The teacher will repeat the process for rectangles and then squares. Each time, the class should complete the appropriate sentence frame once they have settled on a universal attribute. Then the teacher can help them compose a definition for the shape.

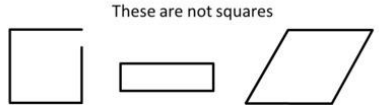


A rectangle is a closed shape with four straight sides and four square corners.

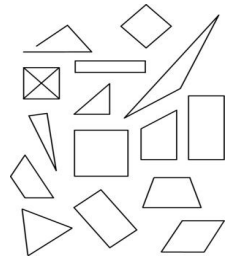




A square is a closed shape with four straight sides and four square corners. The four sides are the same length.



Once the class has working definitions in grade appropriate language for these shapes, students can identify the triangles, rectangles, and squares below.

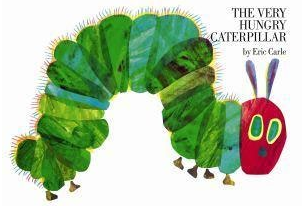


* Color all the triangles blue.
* Color all the squares red.
* Color all the rectangles green.

Task F:

Materials

- The Very Hungry Caterpillar by Eric Carle



The students work individually or in pairs. Each student or pair needs:

- Three ten-frames for each student or pair of students
- 30 counters or unifix cubes per pair of students
- One small dry-erase board and dry-erase maker per pair of students

Actions:

The teacher reads the book to the class and asks, “How many things do you think the caterpillar ate in this story?” The students take a minute to share their estimate with a partner. Next, the teacher reads The Very Hungry Caterpillar again. After each page, the teacher pauses so that the students can add counters or unifix cubes to the ten-frame to represent the number of things the caterpillar ate, and then write an equation on the dry-erase board connecting addition to the number of counters used. After each ten-frame is filled in the students move to the next one. If the students are working in pairs, one student can add the counters/unifix cubes to the ten-frame while the other student writes the equation. By the end of the story, there should be a total of 25 food items eaten and 1 leaf eaten. (The students can decide as a class whether to count the leaf as a food). There will be two ten-frames completed with 5 or 6 counters/unifix cubes on the third ten-frame. If students come up with different, but correct, equations, then discuss the different equations and ask students, "Can all of these be correct?"

Task G:

Materials

- 20 counters or linking cubes per pair of students

The teacher poses the problem:

> *Bo bought 20 tickets to play games at Family Fun Night at his school. He wants to play each game at least once. He needs to use all of his tickets. How many times might he play each game? Find at least two ways he can do it.*

Game	Number of Tickets Needed
Ring Toss	1
Putt-Putt Golf	2
Soccer Kick	3
Moonwalk	5

When all pairs of students have had a chance to find at least one solution, the teacher can lead a whole-group discussion and record each solution as an equation on chart paper or the chalkboard, whiteboard or SmartBoard.

Task H:

Materials:

- A large set of dominoes to affix to a whiteboard or place in a pocket chart, or a regular set to use on a document projector.
- One set of dominoes for each student or pair of students
- Domino addition worksheets

Actions

The teacher asks a child to choose a domino from a stack or bag. As the teacher holds up the domino, the students call out how many dots are on the domino altogether. Next the class counts the number of dots on each end of the domino to check their responses. Then the class names an addition equation that represents the relation between total number of dots and the number of dots on each end. For example, if the domino has 4 dots on one side and 2 dots on the other, the teacher can show the domino with the 4 on the left and the 2 on the right and the class names the equation 4+2=6. The teacher then writes the equation. Then the teacher rotates the domino so the 2 is on the left and the 4 is on the right, and the class can name the equation 2+4=6. The teacher then writes the equation. The teacher then draws the dots from the chosen domino on a blank domino.Once the students understand the task, they can work on their own. Students should have a set of dominoes to explore individually or with a partner, along with the domino addition worksheet.

There are two variants of this task.

i. Students can choose dominoes at random, draw the dot pattern, and write the two related equations.

ii. Students can find all of the dominoes that have a particular sum, and then draw all the related dot patterns and equations. For example, they could look for all the dominoes that have 6 dots all together, then draw the dot patterns for those dominoes and write the corresponding equations.

A Closer Look at the Standards for Mathematical Practice - Grade 1

Participant Guide

Directions: Match each task to the SMP targeted by the author of the task. While some tasks may connect to more than one SMP, there is one task that most closely aligns with each of the SMPs. Thus, each SMP will have one task to match and each task will only be used once.

Note: The Standards for Mathematical Practice focus on the nature of the learning experiences by attending to the thinking processes and habits of mind that students need to develop in order to attain a deep and flexible understanding of mathematics. Certain tasks lend themselves to the demonstration of specific practices by students. The practices that are observable during exploration of a task depend on how instruction unfolds in the classroom. While it is possible that tasks may be connected to several practices, only one practice connection will be discussed in depth. Possible secondary practice connections may be discussed but not in the same degree of detail.

Standards of Mathematical Practice (SMP)	Standards of Mathematical Practice (SMP)
MP.1. Make sense of problems and persevere in solving them.	MP.5. Use appropriate tools strategically.
MP.2. Reason abstractly and quantitatively.	MP.6. Attend to precision.
MP.3. Construct viable arguments and critique the reasoning of others.	MP.7. Look for and make use of structure.
MP.4. Model with mathematics.	MP.8. Look for and express regularity in repeated reasoning.

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A Closer Look at the Standards for Mathematical Practice - Grade 1

Facilitator's Guide

Throughout facilitation of this activity it will be important to remind participants:

- Use the cluster level narratives to better understand what attending to the mathematical practices might look like in the classroom.
- Emphasize to participants the statement at the end of each cluster within the *KAS for Mathematics*, "The identified mathematical practices, coherence connections, and clarifications are possible suggestions; however, they are not the only pathways."

Standards of Mathematical Practice (SMP)	Standards of Mathematical Practice (SMP)
MP.1. Make sense of problems and persevere in solving them. **Task B** This task helps illustrate MP.1. As students approach this problem, they might use concrete objects or pictures to show the action of the problem, such as drawing 16 books then taking the seven books away, resulting in the 9 books Peyton lost. Or a student may start with the 7 books Peyton has left and count up to the 16 books he started with to determine how many books he lost. One approach uses a subtraction pathway while the other uses an addition perspective. This allows students to think about this problem from different perspectives and choose a pathway that makes sense to them. Students may also need to search for a similar problem they have solved previously to give them a starting point. These types of experiences support a productive disposition towards problem solving as they provide students with multiple entry points and opportunities to build on what they already know.	MP.5. Use appropriate tools strategically. **Task A** This task helps illustrate MP.5. During this exploration, first graders investigate the attribute of length by using a common measurement tool such as snap or unifix cubes to directly measure objects in the classroom. In this case, students lay the cubes end-to-end and count them to measure a length. As students become proficient in this practice, they will be able to consider a tool's usefulness and consider its strengths and limitations, as well as know how to use it appropriately. Since this may be a new experience for students, they may initially leave gaps between cubes or overlap cubes. The necessity of aligning the cubes accurately can be reinforced throughout this activity. After students feel comfortable with measuring with the cubes, they can select another common tool to use to measure the same objects. A conversation about which measuring tool may be more useful would support the development of MP.5 Further exploration with multiple measuring tools will result in differences in lengths. This observation provides an opportunity for students to explain why there are differences and how that impacts the choice of tools (MP.3).

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A Closer Look at the Standards for Mathematical Practice - Grade 1

MP.2. Reason abstractly and quantitatively. **Task C** This task helps illustrate MP.2. Students make sense of quantities and how they are related in a problem situation. In the task at hand, students first create a meaningful representation of the problem by using objects, pictures, or equations. Then, they manipulate the objects, pictures, or equations by finding different 3-number combinations of daisies in the vases totaling eight. Lastly, students periodically contextualize the problem by connecting the mathematical objects or symbols back to the context. Thus, students build meaning for the mathematical symbols by reasoning about the problem rather than memorizing an abstract set of rules or procedures. Problems that begin with a context and are represented with mathematical objects or symbols can also be examples of modeling with mathematics (MP.4).	MP.6. Attend to precision. **Task D** This task helps illustrate MP.6. Students must use mathematical symbols correctly and describe the meaning of the symbols they use. In this case, they understand that the equal sign denotes that the quantities on either side have the same value and use this understanding flexibly to identify and express equivalences. When crafting their explanations, they learn to communicate their reasoning by using precise mathematical vocabulary describing each quantity accurately. Even though the main focus may be attending to precision, this task also supports MP.3, Construct viable arguments and critique the reasoning of others as well as MP.7, Look for and make use of structure.
MP.3. Construct viable arguments and critique the reasoning of others. **Task E** This task is linked very intentionally to the first part of MP.3. Through question posing, students are guided to distinguish and describe defining characteristics of triangles by examining figures that are triangles and figures that are not triangles. This same process is repeated for squares and rectangles. Thus, students are continually analyzing and describing. This task lays the foundation for the art of explanation leading to "critiquing the reasoning of others." For instance, a first grader might offer the explanation, "It looks like all the triangles have 3 straight sides that are all connected." Through carefully crafted questions, students will discover which characteristics really matter and complete the sentence frames provided as a class. These sentence frames can then be used to write definitions for each of the shapes. These types of activities further support MP.6, Attend to precision, which in this case pertains to precision in language.	MP.7. Look for and make use of structure. **Task F** Although this task can be linked to several of the Mathematical Practice Standards, the focus of this discussion will be on MP.7. First graders are building on their previous knowledge of adding smaller numbers and taking advantage of more sophisticated strategies such as "making tens" to solve addition problems. They use this structure of numbers to recognize that numbers from 11 to 19 consist of a ten and some number of ones. They notice the same holds true for the numbers 21 to 29. These numbers are composed of two tens and some number of ones. This activity links their understanding of place value structure to numbers beyond ten.

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MP.4. Model with mathematics. **Task G** This task helps illustrate MP.4. Students apply the mathematics they know to solve problems arising in everyday life. For this problem, young children might arrange concrete objects such as linking cubes or counters to represent the mathematical elements of the problem, draw a picture, or write an addition sentence to describe the situation. This problem is complex in that students will need to track the number of tickets needed for four different games. Each game requires a different amount of tickets and Bo must use all his tickets. It doesn't matter whether children use counters or linking cubes or draw pictures. The real significance lies in that students can identify the mathematical elements of the situation and represent them appropriately.	MP.8. Look for and express regularity in repeated reasoning. **Task H** This task helps illustrate MP.8. First graders might notice a pattern as they create equations for the dominos that there is a relationship between the total numbers of dots and the number of dots on each end. They observe that when the dots on each end are reversed the equation is different, but the sum is the same. For instance, 3 dots + 4 dots = 7 dots but 4 dots + 3 dots = 7 dots also. In addition, students may notice that if there are the same number of dots at both ends of the domino, only one addition equation is possible. They may wonder, "Are these observations always true?" When students are engaged in MP.8, they purposely look for these types of patterns, make conjectures about these patterns, consider generalities and limitations, and make connections over time about their ideas. As they begin to explain why these generalizations must be true, they construct, critique, and compare arguments (MP.3).