PRACTICE TASK: Bo Beep's Domino Dilemma

Approximately 1-2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCCK.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

MCCK.OA.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

MCCK.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

MCCK.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

MCCK.OA.5 Fluently add and subtract within 5

STANDARDS FOR MATHEMATICAL PRACTICE

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

BACKGROUND KNOWLEDGE

Numbers are related to each other through a variety of number relationships. The number 7, for example, is 3 more than 4, two less than 9, composed of 3 and 4 as well as 2 and 5, is three away from 10, and can be quickly recognized in several patterned arrangements of dots. These ideas further extend to an understanding of 17, 99, and beyond. Number concepts are intimately tied to the world around us. Application of number relationships to the real world marks the beginning of making sense of the world in a mathematical manner (Van de Walle, 2010).

ESSENTIAL QUESTIONS

- What happens when I decompose a quantity?

- How can I use different combinations of numbers to represent the same quantity?
- How can I represent problem situations using objects, pictures, and numbers?
- Why is it important that I can build the number combinations for the number 5?

MATERIALS

- Recording sheet (optional)
- Accessible manipulatives or dominos

GROUPING

whole/individual/small group task

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
If students have never been introduced to the game of dominoes, allow students to explore and play a couple of games before the task begins. Have students discuss the strategies they used during the game.

Part II Memory
All the dominoes are placed face down. In partners, students take turns flipping over two dominoes where the total number of pips on the dominoes match. Students must find two different dominoes that have the same total (Example: one domino could have 3&2 and the matching domino could have 4&1). Once all dominoes have been matched up and no more matches are possible, the player with the most pairs of dominoes wins.

Part III
Match players by ability level and have them take turns flipping over a domino. The first player to call out the total sum of pips on the domino wins. However, in order for the player to collect the domino, they must describe the strategy they used to their partner. (Example: 5&2 Student says "7, and I know that because 2 more than 5 is 7. If the domino was 3&0 the student might say "3, and I know that because any number plus zero is the number")

After all the dominoes have been played, the player with the most dominoes wins.

Part IV (to 5)
Introduce students to the task of 5 pips. Begin by discussing the vocabulary in the task and check for understanding.

> *Little Bo Peep loved to play dominoes. She had one domino in her pocket. The sum of the pips on her domino was 5. What could the domino in Bo Peep's Pocket look like?*

Comment: there are more than enough squares provided for the task to 5. This is used to make students justify that they have found all of the possible combinations. Many times students will

know they are complete when all the squares have been "filled up", so by providing more than enough squares, this cannot occur.

Part V (to 10)
Introduce students to the task of 10 pips. Begin by discussing the vocabulary in the task and check for understanding.

Little Bo Peep loved to play dominoes. One day she had 2 dominoes in her pocket and the sum of the pips on her two dominos was 10. What could have been the two dominoes in Bo Peep's Pocket?

Comment: there are not enough squares provided for this task. Any additional combinations to ten that students identify should be recorded in their math journal.

FORMATIVE ASSESSMENT QUESTIONS

- Are there any more was to decompose the number 5? How do you know?
- Why did you decide to do it his way?
- Are you sure that you have found them all? Why do you think so? How do you know?
- Did you develop a shortcut to find your answers?
- Did you identify any patterns or rules? Explain!

DIFFERENTIATION

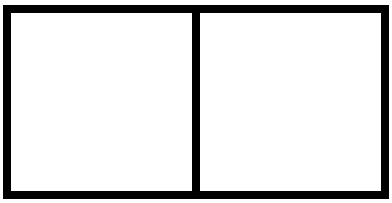
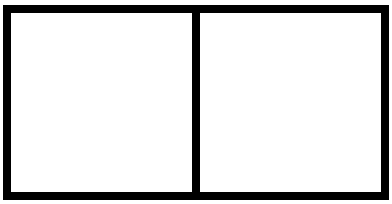
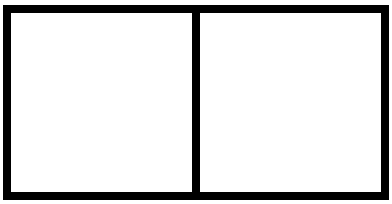
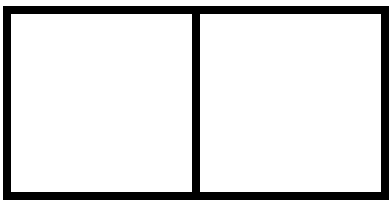
Extension
- Have the students identify which number of pips is the most frequent amongst the dominos. Have students make a make a conjecture (draw a conclusion) explaining why the number is most frequent.

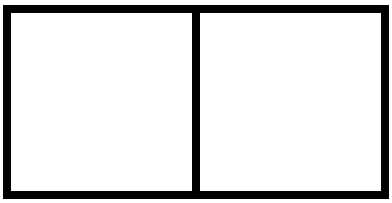
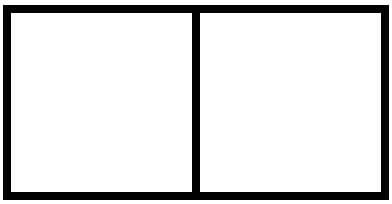
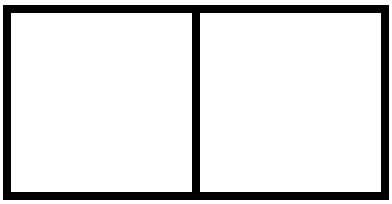
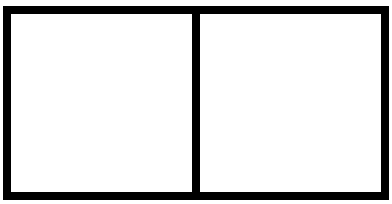
Intervention
- Use a blank domino mat or folded piece of paper and give the student 5 or 10 counters. Have students create the domino using the template and counters. Students then transfer model to the recording sheet.

Bo Peep's Domino Dilemma

Little Bo Peep loved to play dominoes. One day she had a domino in her pocket and the sum of the pips on her domino was 5. What could the domino in Bo Peep's pocket look like?

Domino	Total

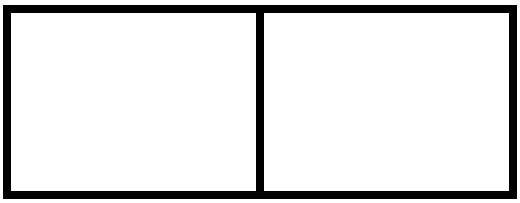
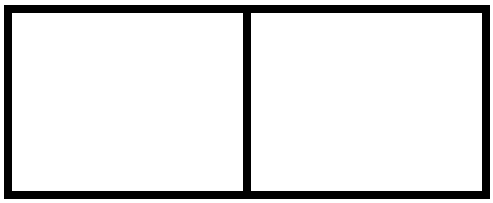
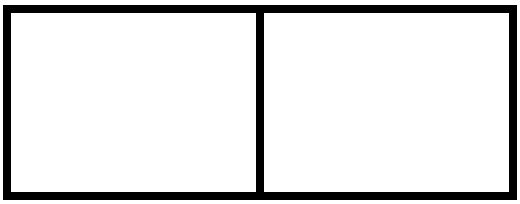
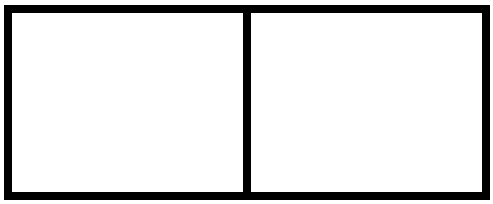
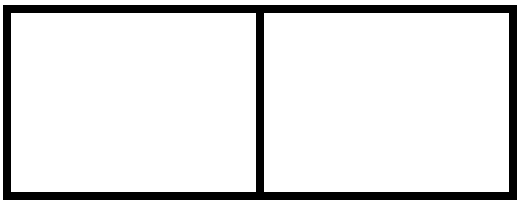
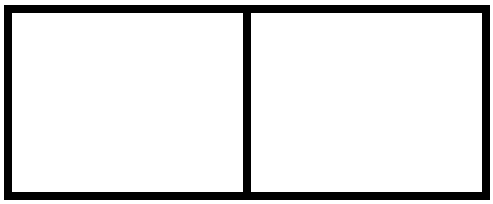
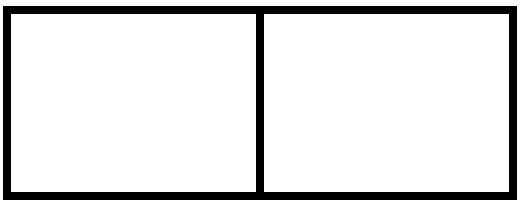
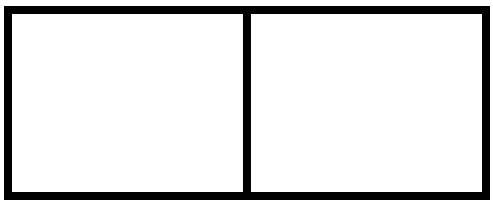
Domino	Total
	
	
	
	

Domino	Total
	
	
	
	

Bo Peep's Domino Dilemma

Little Bo Peep loved to play dominoes. One day, she had 2 dominoes in her pocket and the sum of the pips on her two dominoes was 10. What could have been the two dominoes in Bo Peep's Pocket?

Domino #1	Domino #2	Total

Domino #1	Domino #2	Total
 _____ _____	 _____ _____	
 _____ _____	 _____ _____	
 _____ _____	 _____ _____	
 _____ _____	 _____ _____	