

Kids on the Playground

Strand:	Computation and Estimation
Topic:	Recognizing and describing part-whole relationships for numbers up to 10
Primary SOL:	1.7 The student will a) recognize and describe with fluency part-whole relationships for numbers up to 10;
Related SOL:	1.1, 1.6, 1.7b, 1.15

Materials

- Counters (e.g., cubes, tiles, chips, blocks)
- Crayons/pencils to explain thinking
- Paper

Vocabulary

total, part, whole, equal, all

Student/Teacher Actions: What should students be doing? What should teachers be doing?

Note: When working on part/whole activities, students typically work with one ‘whole’ for several days until they are fluent with all of the combinations for that ‘whole’. If a math workshop model is being used, this activity in this lesson can become a station and each student can work on whatever ‘whole’ is appropriate for his or her level of learning.

1. Introduce the activity by asking students to think about fun activities they enjoy on the playground. Ask, “*What are some things you do on the playground? Who likes to swing? Who likes to play ball? Who likes to climb on the monkey bars? How many of you like to slide? How many of you like to do more than one thing? Do you do the same activity every day, or do you like to do different things? Why do you like to do different things?*” (You could focus on one playground activity, such as swinging, and ask the students to discuss how many girls like to swing and how many boys like to swing. “*Could these numbers change from day to day? Why?*”)
2. Explain to the students that they will be working with a partner or in a small group to solve the following playground problem: *There are 10 children on the playground. How many could be boys? How many could be girls?* Instruct students to explain their thinking using pictures, numbers, and words.
3. Discuss the problem with students. “*What are we trying to figure out? How many children are on the playground altogether? How could we record our answers?*”
4. Students can use materials of their choice to solve the problem, but they must record their solutions (see recording sheet).
5. Allow student groups to work on the problem and find several ways to solve it.
6. Monitor students as they work to see how they are approaching the problem. *What strategies are they using? Are they putting objects together randomly? Do they know their number combinations? Does each combination total 10? What difficulties are students having? What are students doing well?*

7. After students have had time to explore the problem, pull them back together as a whole class to discuss the various combinations of girls and boys they found to make 10.
8. Record various students' solutions on chart paper or the board during the whole class discussion.

Assessment

- **Questions**

- What is the problem asking?
- How could you record your thinking?
- How many children are there altogether?
- How did you solve the problem?
- Do you have 10 children on the playground altogether? How do you know?
- Do you need more? Fewer?
- If there are _____ girls, how many boys will there be? How do you know?
- Is there another way to solve this problem?
- How do we know that we have found all the ways to solve this problem?
- What do you notice about the combinations we have found?
- How did you record your thinking?

- **Journal/writing prompts**

- There were 6 children at the table. Some were boys and some were girls. Use numbers, pictures, and words to show how many boys and how many girls could be at the table. How many different ways can you find to solve this problem?

- **Other Assessments**

- Provide a container of counters. Have students count out 8 (or whatever number you are working on). Hide some of the counters under your hand. Ask students to tell you how many counters are hidden. Repeat for all of the combinations for that number.

Extensions and Connections (for all students)

- Students could write and solve their own story problem about 10 children.
- Try a similar problem that asks students to think about decomposing into 3 parts. *There were 10 animals in my backyard. I saw some birds, cats, and dogs. How many of each could I have seen?*

Strategies for Differentiation

- Use a larger or smaller number for students to explore, depending on student needs.
- Provide a blank ten frame for students who may need this visual support.
- For students who find a solution quickly, challenge them to find all of the possible solutions and explain how they know they found all of the solution.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Name _____

Kids on the Playground

There are 10 children on the playground. How many could be boys?
How many could be girls? Explain your thinking using pictures,
numbers, and words.