

Number

Operational Fluency: Part-Part-Whole

ACTIVITY
33

GRADE
1

FOCUS: Representing addition and subtraction situations with concrete materials, pictures, and symbols

ACTIVITY TIME: 45–50 min

GROUP SIZE: Pairs

PROCESSES/COMPETENCIES: Problem Solving, Reasoning and Proving, Visualizing, Communicating



My Mat

MATERIALS

- Student Card 33
- Bag of 10 counters
- Counters (20 per pair)
- Styrofoam cups (1 per pair)
- Master 83: Assessment

Also available: *That's 10!*, *Hockey Time!*, *Cats and Kittens!*, *Buy 1–Get 1*, *Canada's Oldest Sport*, *Array's Bakery*

BIG IDEAS

- Numbers tell us how many and how much.
- Numbers are related in many ways.
- Quantities and numbers can be added and subtracted to determine how many and how much.

INSTRUCTIONS

Before

Place 10 counters in a bag. Have a student take out a few (4), place them on the carpet, then count them. Have students share how they would find the number of counters still in the bag. Model their solutions on a part-part-whole mat (Student Card 33). Highlight that the problem can be solved using addition (4 and ___ makes 10?) and using subtraction (10 subtract 4 is ___?).

What to Do (15–20 min): Use Student Card 33

Note: Give each pair 20 counters and a Styrofoam cup.

- Player A: Take two handfuls of counters and count them. Record the number in the Whole section of the mat. Put the counters in the cup.
- Player B: Take some of the counters out of the cup. Hold them in your hand behind your back. Pass the cup back to Player A.
- Player A: Count the number of counters left in the cup. Record that number under Part. Decide how many counters your partner is hiding.
- Player B: Check to see if your partner is right. Record the number of counters in your hand on the mat. Switch roles and play again.

How to Differentiate

Accommodations: Pairs start with 10 counters in the cup.

Extension: Students say how many counters are in their hands and partners find how many are left in the cup.

Combined Grades Extension: Students record each situation with an addition sentence and a subtraction sentence.

CONSOLIDATION

- Have volunteers model the strategies they used to find the number of hidden counters (e.g., counting on, counting back, drawing pictures, making 10). Each time, have student identify the whole and the parts. For each solution, write the addition or subtraction sentence (depending on how student viewed the problem).

Highlight for Students

- A part-part-whole mat can help us solve addition and subtraction problems.
- We can use addition to help us solve a subtraction problem.

WHAT TO LOOK FOR

- Do students confuse the whole and the part?
- How do students find the number of hidden counters (e.g., guessing, counting back from the whole, counting on from the part)?
- How do students represent the problem (e.g., concretely, pictorially, or symbolically)?
- How do students keep track of the count (e.g., using their fingers, using cubes)?

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PROBING QUESTIONS

- How do you know what is the whole and what is the part?
- How did you find the number of hidden counters?
- How did you remember your count?
- Can you use the part-part-whole mat to find your answer? How?

Conceptual Understanding/Computational Behaviours/Strategies

Student guesses, then counts on to check.

$$11 - ? = 6$$

Guess 6: 7, 8, 9, 10, 11, 12
Too many.

Guess 5: 7, 8, 9, 10, 11
Right!

Next Step

Encourage student to count on from the part and to track the count with his or her fingers. This will eliminate the need for guessing.

Student counts three times to find the number of counters hidden.

Next Step

Encourage student to model the whole (10) with counters, then count back as he or she takes away the part (6).

Student adds the whole and the part to find the number of counters hidden.

“There are 8 altogether and
5 in the cup.
8 and 5 make 13.”

Next Step

Emphasize that the whole has been split into two parts and one part has been taken away or subtracted.

Student records the whole as a part.

Next Step

Use counters to build the whole in the top part of the mat, then separate and slide it down to make two parts.

Student counts on or back with counters or fingers.

Next Step

Encourage student to use more efficient counting strategies and use fingers or tally marks to keep track of the count.

Student counts on and counts back fluently to find the number of hidden counters.

Next Step

Have student write an addition and subtraction sentence to represent the problem.