

## ACTIVITY IA4.4: I Wish I Had on the Bead Rack

**Intended learning:** To learn combinations and partitions in the range 1 to 20, privileging five and ten.

**Instructional mode:** Shorter, reproductive practice for individuals, groups or whole class.

**Materials:** An arithmetic rack for each student and one for the teacher.

**Description:** Begin by familiarizing students with building numbers on the rack. *Using your bead rack, build the number I say on your rack. I wish I had 9.* Choose a few students to explain how they built 9. Create their pattern on your bead rack so all students can see. Summarize their comments drawing attention to use of colours and rows of beads. *So you made five red beads and four white beads all on the top row? So you had four beads on the top and five beads on the bottom? Did anyone do it a different way?* Continue with building a few other numbers: 10, 5, 6, 15, 16, 20. Discuss different quick moves on the bead rack: 'one-push' and 'two-push' moves, 'tilt-all, in-play' and 'tilt-all, out-of-play'.

After a familiarization period, increase the pace of the activity so that students have just enough time to create the pattern before calling a new pattern. Repeat 5, 10, 15 and 20 several times in the course of the activity to draw attention to these numbers and encourage one- or two-push building of numbers. *I wish I had 10. I have 10; I wish I had 9. I have 9; I wish I had 10. I have 10; I wish I had 11. I have 11; I wish I had 10. I have 10; I wish I had 9. I have 9; I wish I had 5. I have 5; I wish I had 10. I have 10; I wish I had 20. I have 20; I wish I had 15. I have 15; I wish I had 10.* After a quick succession of several patterns, pause to compare different patterns and ask, *Did anyone build that pattern in just one push?*

**Responses, variations and extensions:**

- Initially students may count-on each time to create the named number. If this persists, teachers should prompt with *Can you make the number in fewer pushes?*
- The first time students do this activity, 5, 10, 15 and 20 should dominate the sequence, to facilitate these numbers being used as anchors or standard patterns. Non-anchor numbers should be one more or one less than an anchor number. Call an anchor number after calling each non-anchor number.
- As students become facile with one-push moves, the anchor numbers should not be called as often and other non-anchor numbers should be introduced. Attention should be given to related patterns. *I wish I had 12. I have 12; I wish I had 7. How did you do that move?* Hopefully at least one student would have removed one push of 5. *I have 7; I wish I had 9. I have 9; I wish I had 16. How did you do that move?*
- A variation of this game that addresses structuring to ten is to play with a ten-bead rack or a blank ten-frame and counters.
- Teachers can quickly assess students' levels of structuring by watching the number of pushes needed to build a number. For example, frequently moving beads one at a time indicates a lower level of structuring.