

Mathematics Activity 6. Counting (condensed from p.151-154)

Concepts: Number is an attribute that represents a set of objects: numerals are names of numbers; counting is a way of determining *more, less, same, how many*.

Learning Goals: To provide opportunities for children to explore mathematical relationships in combining and removing sets and subsets; in determining *how many*; in examining the concepts of *more, less, same*.

Thinking Operations: Observing, comparing, and classifying; suggesting hypotheses; examining assumptions; interpreting data; designing projects and investigations; creating and inventing

Materials: Cuisenaire rods or other counting rods; cubical counting blocks; other counters such as buttons, stones, spools, dominoes, counting discs, toothpicks; about one dozen cut-out circles of coloured cardboard or coloured paper in different diameters. The counting objects can be varied as can the coloured circles, so investigative play with counting has extensive permutations with even these initial materials.

Activity Card

Use the materials in this centre to make some observations about numbers.

- How many rods can you fit onto the red circle?
- How many rods can you fit onto the orange circle?
- Which can hold more rods? Which holds less?
- How many toothpicks can you fit onto the green circle?
- How many toothpicks can you fit onto the yellow circle?
- Which circle can hold more toothpicks? Which holds less?
- What observations can you make about the number of counters that fit on the coloured circles?

Sample Debriefing Questions

Asking Children to Reflect on Their Observations

What observations did you make about how many buttons (pebbles, rods) fit on the yellow (orange, blue) circle?

What observations did you make about which circles hold more counters? Which holds less? How do you explain it?

Challenging Children Beyond Their Observations

How come the orange circle holds more stones but fewer buttons? How do you explain it?

Do you think the blue circle will hold more stones or buttons? What is your estimation?

Which coloured circles hold exactly 8 (or 9, 10, 7) buttons (spools, dominoes)? What's your estimation?

Suggestions for Replay

Since there are so many permutations and combinations of coloured circles and counters, replay with the original activity card might carry on over several days or even weeks. Children should be encouraged to carry on their extensive investigations with these materials.

When children are ready to move on, new coloured circles of larger sizes and new objects for counters (toy cars, unshelled peanuts or hazelnuts, paperclips, crayons, pennies) may be added. These additional materials are used in conjunction with the following new activity cards:

How many different combinations of paperclips (peanuts, crayons) can you make to show the number 8 (or 7, 6, 9)? Write down the combinations you make.

Use the materials in the centre to figure out an answer to these questions:

- How many peanuts would you need to give everyone in the class two peanuts?
- How could you record this information to show how many people and how many peanuts?

Which circle holds the most buttons, and which circle holds the least? Try to figure out a way to write this down.

Suggestions for Creative Play

Playing store, with real coins (100 pennies can go a long way), toy cash register, play money

Playing games in which counting and/or keeping score is used (ten pins, dominoes, dice, ball games)

Singing number songs ("This Old Man, He Played One," "Sing a Song of Sixpence," "Five Little Chickadees," "One, Two, Buckle My Shoe," "Roll Over"), creating skits around them where appropriate

Drawing pictures to illustrate a "number sentence" ($3+4=7$; $7-3=4$)