

Preschool/TK/K

Tubes and Cubes: A Counting Activity



The purpose of this activity is to provide children with a multi-sensory experience of numbers. In this activity, children will engage in counting and comparing numbers while making connections to corresponding numerals.

Key Concepts

- Practice counting, using number words, and reciting the count list.
- Use one-to-one correspondence to count the number of objects in a small set.
- Compare small quantities.
- Recognize and record numerals.

Materials and Setup

- 20–30 small same size cubes
- Tubes of varying lengths (instructions) below)
- Paper
- Markers

Preparing the Tubes

- The tube material should be sturdy enough to stand on its end and withstand play (for example, thick cardboard or PVC piping).
- Children will stack the cubes inside the tubes. The tubes should be wide enough to fit one cube.
- Cut the tubes to match the heights of various numbers of stacked cubes. For example, create a tube that is exactly the height of five cubes. Make as many tubes of different heights as appropriate for the children in your setting.





30-40 minutes



The floor or small group table

Small groups, pairs





Activity Instructions

Consider scaffolding this activity, adding steps five through seven as children are ready.

Exploring the Materials

1. Introduce children to the tubes and cubes. Offer time for children to explore the materials. Children may stack, pile, or make shapes with the cubes. Children might peek through the tubes, roll them, or stand them on end.

Stacking the Cubes in the Tubes

- 2. Invite children to explore whether the cubes fit inside the tubes. Encourage them to notice how the cubes stack and the sounds they make when they hit the bottom of the tube.
- 3. Invite children to make predictions about how many cubes they think will fit inside each tube. Encourage children to count as they drop each cube in the tube. Notice children's predictions. Are they making different predictions, depending on the



height of different tubes? As children count, notice if they are reciting the count list and using one-to-one correspondence as they drop each cube in the tube. Provide individualized support as needed.

4. When children add the last cube to the tube, ask, "How many cubes fit inside the tube?" Children may respond to your question by counting again or they may answer with the last word in their count list.

Comparing Tubes

5. As children fill different tubes, invite them to compare the number of cubes in each tube. You might ask questions such as, "Which tube has more? Which tube has less? Which tube has the most cubes?"





Recording Numerals

- 6. Consider preparing paper loops that wrap around the tubes. Label the loops to indicate the number of cubes that fit inside. Consider:
 - a. numerals
 - b. finger patterns
 - c. dot patterns
- After children fill the tubes, they might place the appropriate paper loop on each tube. Provide support in placing the paper loops on the tubes as needed.



Using M⁵ to Support Children's Number and Counting

This section offers ways to use the M⁵ Early Math Approach to support children's early math learning and development during this activity.

Mutual Learning

- Notice children's developing understanding of number and counting.
 - What predictions do the children make?
 - Can they recite the count list accurately? How high can they count? Do they understand one-to-one correspondence as they drop each cube in the tube?
- Notice the language each child uses to count. Encourage multilingual learners to count in their home language or English. Children may need different levels of support in each of their languages.
- Consider how you might adapt this activity so children with physical disabilities can participate.

Meaningful Math Investigations

- Notice how children are playing with and investigating the tubes and cubes. Allow children to follow their interests and introduce math concepts and vocabulary that support those investigations.
 - "I notice you are making a tower with the cubes. Do you think all those cubes will fit inside your tube?"
- Invite children to predict which tube can fit the most cubes inside. Ask them to explain why. Then invite them to fill up the tubes to find out which has the most cubes.





Materials and Learning Environment

- Consider moving this activity outdoors, using big buckets and balls.
- Consider using objects like bells so children can hear how many objects are dropping into the tubes.

Math Vocabulary and Discourse

- Invite children to estimate or predict how many cubes can fit in a tube.
 - How many cubes do you think will fit inside this tube?
- Encourage children to label the set after counting.
- Count aloud with the child as they place a cube in a tube or encourage other children to count with them.
 - "Let's count each cube that you put in the tube. One cube, two cubes, three cubes, four cubes."
- Invite children to label the set after counting.
 - "How many blocks fit in this tube?"
- Use language and questions to compare numbers as children fill different-sized tubes. You might say:
 - "You put five cubes in that tube and three cubes in this tube. Which tube has more cubes?"

Multiple Representations

- Invite children to make necklaces with beads or links, counting as they add to them.
- Encourage children to build block towers, comparing the size by counting the blocks.

