

[LT]²

Trajectories: Comparing Numbers and Subitizing
Levels: Early Comparer, Number Senser, Very Small Number Recognizer

Which Has More? Early Number Comparison



STEM Connections

Technology:

- **Sequencing:** Follows one step directions

Engineering:

- **Ask:** Demonstrates curiosity about the world around them nonverbally by observing

Unit Objective: Children will compare sets with obviously different numbers and more similar sets with very small numbers. They will practice matching through correspondence.

Lesson Objective: Children will be exposed to a changing number of objects to draw their attention and foster noticing differences. Then, they will be encouraged to make comparisons in collections of objects.

Age: Birth to 2
Grouping: Center

Beginning of the Lesson (Engage):

Vocabulary

Instruction

Supports for Differentiation

- Begin by collecting and preparing materials before bringing children to play area.

Engage:

- Allow children to explore materials freely. Notice which toys the children are most interesting to them. Model how to use novel toys- stack blocks, shake rattles, etc.
- Ensure a welcoming, safe environment with plenty of materials to explore and space to move around. Use an enthusiastic tone of voice to make kids interested in the activity.

- Preparing the Environment for Access**
- **Fine Motor:** Have a variety of appropriate **materials** available and organized ahead of time. If a student has a fine motor difficulty, use chunkier, softer objects.
 - **Gross Motor:** Ensure the child has proper support while sitting. A table and an appropriately sized chair work for older toddlers, while some children may need adaptive seating or to lay on a blanket. Encourage reaching by placing objects just out of reach.

- More/ fewer
- Most/ fewest
- Bigger/ smaller
- Different/ same
- Many

- Couple
- Few
- One
- Two
- Three

Materials

- Blocks, stuffed animals, rattles, any toy in which the child is interested (several of each type)
- High contrast counting books (see below)
- White paper and a black marker

Instruction

1. Changing Numbers

- Even very young infants will notice when the number of objects in a group suddenly changes. Draw 10 black dots in different arrangements on each side of a white paper. On another paper, draw 10 black dots on one side and 20 on the other. Place both papers where the baby can see them with the 10 dots side facing up. Flip both papers at the same time and observe which one the baby pays attention to. They will likely spend more time looking at the paper that changes between 10 and 20 dots than the one with 10 dots on both sides. Repeat this process, drawing their attention to the changing numbers if necessary:
 - “Look! This paper has more dots on one side, and this paper has the same number of dots of both sides.”

2. Comparisons in Play

- Introduce young children to comparison words by using them during everyday play and routines. Help children begin to recognize “more.” During tummy time or while the child is supported in a highchair or similar, show two collections of objects. It is helpful if one collection has at least twice as many objects as the other. Ask older toddlers to point to which collection has “more” or the “most.”
- You may say:
 - “There are three cars and seven dinosaurs on the table. There are *more* dinosaurs!”
 - “I see there are pink, blue, and green blocks, but *most* of the blocks are pink.”
 - “This book has dots on its pages. Each page has a *different* number of dots.”

3. Numbers in Play

- Children will begin to recognize very small numbers (1-3) from a young age. Expand on this ability by counting in play and routines and regularly. You may say:
 - “I see there are three chicken nuggets on your plate. Can you eat them all?”
 - “How many stuffed animals are on your bed? Are there just a few or many?”
 - “Can you find the book with one dog on the cover?”
 - “There are three blocks in this tower. Let’s add one more!”

Supports for Differentiation

Language:

- Narrate student’s play or your own play to explicitly teach key **vocabulary**.
- Children may communicate about numbers **nonverbally** by holding up fingers or pointing to objects.

Social Emotional:

- **Prime students** on expectations prior to their exploration of materials.
- Pay attention to which toys children are **most interested** in. Use these to keep them engaged.

Cognitive:

- **Model** making collections of objects and set up scenarios that invite comparisons.

Fine Motor

- Encourage a **pincer grasp** (pointer finger to thumb) but allow children to hold objects however is comfortable.

Visual/ Auditory

- **High contrast images** are crucial for infants and those with visual impairments. Simple black and white pictures are a great place to start.

Closing the Lesson (Observe & Summarize)

Instruction (Observe, Summarize)

Observe again following interactions described in previous section. Consider children's level.

Questions to ask oneself when observing development:

- **Verbal** – Does the child use number words?
- **Fine motor**— Does the child use a pincer (pointer finger to thumb) grasp? Can they point to dots or pictures on a page?
- **Gross motor**— Can the child sit up unsupported? Do they reach to get desired objects?
- **Cognitive**—Does the child recognize that groups of have different number of objects? Are they able to understand “more” or “fewer?”
- **Social-Emotional**— Can the child play alone? Do they look for cues from adults to guide their play?

Extension activities:

- Read books about small numbers and counting (see Notes), being sure to allow each child plenty of time to look at pictures. Reinforce lesson vocabulary by making comparisons while reading. “This page has three cows, and this page has ten fish. There are *fewer* cows than fish.”
- Comparison and counting language can be used throughout the day:
 - During meals: “There are three chips on your plate and five on mine. Who has more?”
 - Before nap/ bedtime: “Pick one stuffed animal to come to bed with you.”
 - While dressing the child: “You have two socks and one shirt.”

Notes

Use observation to document children's level.

For children needing additional support:

- Focus on counting just one and two objects at a time. Repeat these numbers regularly throughout routines before moving onto three and four.

For children needing more of a challenge:

- Introduce more numbers- up to 10. Begin matching numerals with objects. “This is the number 3, and there are 3 dots!”

Comparison and Small Number Books

- 1, 2, 3, Counting by Kane Miller
- One is a Snail, Ten is a Crab by Jeff and April Sayre
- Counting Kisses by Karen Kats