

Mathematical Landmarks

Parents and caregivers can infuse mathematical concepts into play by recognizing:

- **One-to-one tagging** (counting every object once and only once)
- **One-to-one correspondence** (recognizing a certain number of something must correspond to a certain number of something else; e.g. 10 kids, 10 noses)
- **Hierarchical Inclusion:** Counting 3 Times → Counting On (e.g. to count 3 objects and 5 objects, kids count to 3, then count to 5, then start from one and count to 8 – they don't continue from where one collection leaves off and "count up")
- **Cardinality** (counting to 3 means 3 objects) / **Magnitude** (3 as a size) / **Rank** (3 as a rank)
- **Conservation** (rearranging objects doesn't change their quantity)
- **Compensation** → Constant Difference, Canceling Common Amounts, Swapping, Doubles, Near-Doubles
- **Unitizing** (counting groups; e.g. 5 sets of 3 blue, then 5 sets of 3 green)
- **Patterns**
- **Combinations to 10** (0,10; 1,9; 2,8; 3,7; 4,6; 5,5)
- **Part-Whole Relations**
- **Commutative Addition** (doesn't matter what order you add)

Ask Yourself:

- How can I extend natural play to develop mathematical ways of thinking and exploring?
- How can I encourage effective problem solving? Can I encourage him/her to figure out why something doesn't work rather than simply quitting or starting over? To what extent do I encourage him/her to stay focused on a particular problem rather than going off on tangents or becoming immersed in a sub-problem? Can I encourage him/her to see connections between different strategies, different problems, or variations of a particular problem?
 - How can I encourage effective mathematical reasoning; e.g. conjecturing generalized properties, finding examples and counter-examples?
 - How can I encourage effective mathematical modeling?
- How do I recognize when my interventions become too directive and therefore counterproductive? When does my agenda begin to conflict, rather than enrich my child's?

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