



Mathematical Thinking and Development

Math skills developed in the early
childhood years

Birth through age 4

Adapted from [The Pennsylvania Learning Standards for Early Childhood](#)

Mathematical Thinking and Development

	Infant (birth to 12 months)	Young Toddler (9 to 27 months)	Older Toddler (24 to 36 months)	Pre-Kindergarten (3 to 4 years)
Numbers and Operations				
Cardinality	Explores Objects	Imitates rote counting using some names of numbers	Knows some number names and the counting sequence	Knows number names and the counting sequence
Counting	<i>Emerging</i>	<i>Emerging</i>	Counts to tell number of objects	Counts to tell the number of objects
Comparing	Explores relationships between objects	Explores simple comparisons of quantity	Uses comparative language to show understanding of more or less	Compares numbers
Mathematical Processes	Engages in numerical play	Engages and persists in numerical play	Uses mathematical processes when quantifying, comparing and representing numbers	Uses mathematical processes when quantifying, comparing, representing and modeling numbers
Algebraic Concepts				
Operations and Algebraic Thinking	<i>Emerging</i>	Sorts manipulatives into sets	Adds to and takes apart sets	Understands addition as putting together/adding to and subtraction as taking apart/taking from
Geometry				
Identification	Explores objects of different sizes and shapes	Matches identical shapes	Recognizes and identifies basic shapes in the environment	Identifies and describes shapes
Application	<i>Emerging</i>	<i>Emerging</i>	Creates and composes simple shapes	Analyzes, compares, creates and composes shapes
Mathematical Processes	Engages in numerical play	Engages and persists in numerical play	Uses mathematical processes when creating and composing shapes.	Uses mathematical processes when drawing, constructing, modeling and representing shapes.
Measurement, Data and Probability				
Measurement	<i>Emerging</i>	Engages in measurement experiences	Uses basic measurement vocabulary	Describes and compares measurable attributes of length and weights of everyday objects
Data	<i>Emerging</i>	Participates in sorting objects	Classifies objects and counts the number of objects in each category	Classifies objects and counts the number of objects in each category
Mathematical Processes	<i>Emerging</i>	Engages nad persits when measuring and sorting objects	Uses mathematical processes when measuring and organizing data	Uses mathematical processes when measuring, representing, organizing and understanding data