

# Computational Thinking and Preschool Math: Standards Alignment

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## Head Start Early Learning Outcomes Framework

The Head Start Early Learning Outcomes Framework (ELOF) includes broad areas of early learning for infants, toddlers, and preschoolers through age five. It describes what young children should be able to do in each of the five domains, based on comprehensive research in early education. This program aligns to ELOF's five central developmental domains.

### Approaches to Learning

#### Cognitive Self-Regulation (Executive Functioning)

**P-ATL 7.** Child persists in tasks.

**P-ATL 8.** Child holds information in mind and manipulates it to perform tasks.

#### Initiative and Curiosity

**P-ATL 10.** Child demonstrates initiative and independence.

**P-ATL 11.** Child shows interest in and curiosity about the world around them.

#### Creativity

**P-ATL 12.** Child expresses creativity in thinking and communication.

**P-ATL 13.** Child uses imagination in play and interactions with others.

### Social and Emotional Development

#### Relationships with Adults

**P-SE 1.** Child engages in and maintains positive relationships and interactions with adults.

**P-SE 2.** Child engages in prosocial and cooperative behavior with adults.

### Language and Literacy

#### Attending and Understanding

**P-LC 1.** Child attends to communication and language from others.



## Communication and Speaking

**P-LC 4.** Child understands, follows, and uses appropriate social and conversational rules.

## Print and Alphabet Knowledge

**P-LIT 2.** Child demonstrates an understanding of how print is used (functions of print) and the rules that govern how print works (conventions of print).

## Comprehension and Text Structure

**P-LIT 4.** Child demonstrates an understanding of narrative structure through storytelling and retelling.

**P-LIT 5.** Child asks and answers questions about a book that was read aloud.

## Cognition

### Counting and Cardinality

**P-MATH 1.** Child knows number names and the count sequence.

**P-MATH 2.** Child recognizes the number of objects in a small set.

**P-MATH 3.** Child understands the relationship between numbers and quantities.

### Operations and Algebraic Thinking

**P-MATH 7.** Child understands simple patterns.

### Geometry and Spatial Sense

**P-MATH 9.** Child identifies, describes, compares, and composes shapes.

**P-MATH 10.** Child explores the positions of objects in space.

### Scientific Inquiry

**P-SCI 1.** Child observes and describes observable phenomena (e.g., objects, materials, organisms, and events).

### Reasoning and Problem-Solving

**P-SCI 5.** Child plans and conducts investigations and experiments.

**P-SCI 6.** Child analyzes results, draws conclusions, and communicates results.

## Perceptual, Motor, and Physical Development

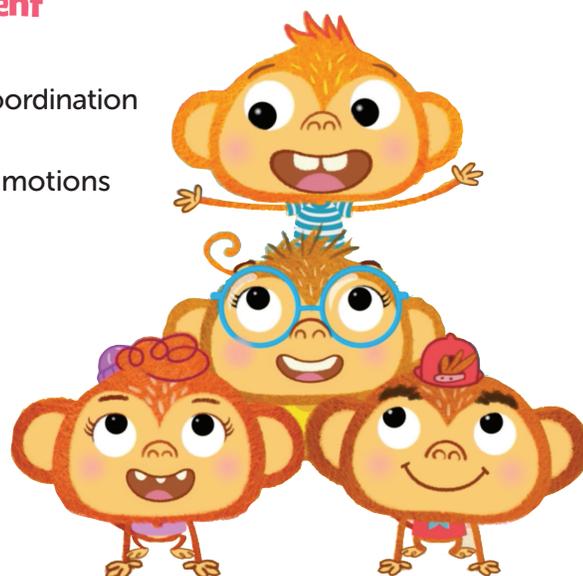
### Gross Motor

**P-PMP 1.** Child demonstrates control, strength, and coordination of large muscles.

**P-PMP 2.** Child uses perceptual information to guide motions and interactions with objects and other people.

### Fine Motor

**P-PMP 3.** Child demonstrates increasing control, strength, and coordination of small muscles.



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# K12 Computer Science Framework

The K12 Computer Science Framework was created by several organizations, in collaboration with school districts, to develop guidelines for computer science education in kindergarten through twelfth grade. The goal of the framework is to “inform the development of standards and curriculum, build capacity for teaching computer science, and implement computer science pathways.” This program aligns to several of the K12 Computer Science Framework’s Core Practices.

## Practice 3. Recognizing and Defining Computational Problems

**P3.2.** Decompose complex real-world problems into manageable sub-problems that could integrate existing solutions or procedures.

## Practice 4. Developing and Using Abstractions

**P4.1.** Extract common features from a set of interrelated processes or complex phenomena.

**P4.4.** Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

## Practice 5. Creating Computational Artifacts

**P5.1.** Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

**P5.2.** Create a computational artifact for practical intent, personal expression, or to address a societal issue.

**P5.3.** Modify an existing artifact to improve or customize it.

## Practice 6. Testing and Refining Computational Artifacts

**P6.1.** Systematically test computational artifacts by considering all scenarios and using test cases.

**P6.2.** Identify and fix errors using a systematic process.

**P6.3.** Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

## Practice 7. Communicating About Computing

**P7.2.** Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

