**Are Your Students Ready for Kindergarten Math?**

**Getting a Head Start On Math**

**Presented by**
**Tammy Smith**
**Creative Hands-On Math**

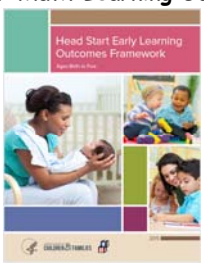
# Objective

**We will examine the ELOF Math Goals and be introduced to a prerequisite math skill necessary for students to be kindergarten ready in math.**

"Time needs to be set aside for intentional instruction that has structure, clear math learning goals that is sensitive to the students' current understanding. Purposeful math instruction can be done in a way that is experienced by children as playful. Dale Farran and others have found a strong association between the amount of teacher-led math instruction and gains children make in mathematics."

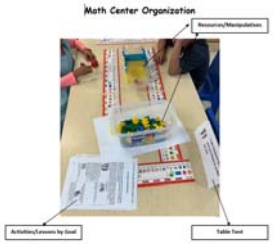
http://prek-math-te.stanford.edu/system/files/media/document/2017/Math%20Matters%20Excerpt_1.pdf

## Clear Math Learning Goals




## Sensitive to the students' current understanding

## Intentional instruction that has structure




**Counting and Cardinality**

**Math 1**. Child knows number names and the count sequence.
**Math 2**. Child recognizes the number of objects in a small set.
**Math 3**. Child understands the relationship between numbers and quantities.
**Math 4**. Child compares numbers.
**Math 5**. Child associates a quantity with written numerals up to 5 and begins to write numbers.

**Operations and Algebraic Thinking**

**Math 6**. Child understands addition as adding to and understands subtraction as taking away from
**Math 7**. Child understands simple patterns.

**Measurement**

**Math 8**. Child measures objects by their various attributes using standard and non-standard measurement. Uses differences in attributes to make comparisons.

**Geometry and Spatial Sense**

**Math 9**. Child identifies, describes, compares, and composes shapes.
**Math 10**. Child explores the positions of objects in space.

## Planning and Teaching a Math Center

**Head Start Math Pacing Guide**

| Unit | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Goal P-Math 1: Child knows number names and the count sequence. | | | | | |
| Goal P-Math 2: Child recognizes the number of objects in a small set. | | | | | |
| Goal P-Math 3: Child understands the relationship between numbers and quantities. | | | | | |
| Goal P-Math 4: Child compares numbers. | | | | | |
| Goal P-Math 5: Child associates a quantity with written numerals up to 5 and begins to write numbers. | | | | | |
| Goal P-Math 6: Child understands addition as adding to and understands subtraction as taking away from. | | | | | |
| **Goal P-Math 7. Child understands simple patterns.** | **I** | **C** | **C** | **C** | **M** |
| Goal P-Math 8: Child measures objects by their various attributes using standard and non-standard measurement & Uses differences in attributes to make comparisons. | | | | | |
| Goal P-Math 9: Child identifies, describes, compares, and composes shapes. | | | | | |
| Goal P-Math 10: Child explores the positions of objects in space. | | | | | |

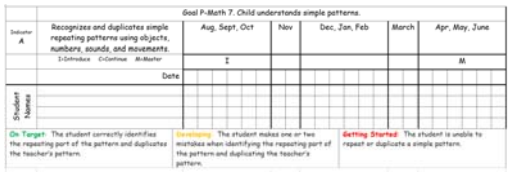
**Unit 1: Aug, Sept, Oct Unit 2: Nov Unit 3: Dec, Jan, Feb Unit 4: Mar**
**Unit 5: Apr, May, June I=Introduce C=Continue M=Master**

## Operations and Algebraic Thinking

**Math 7**. Child understands simple patterns.

**Head Start Early Learning Outcomes Framework**
**Preschool Domain: Mathematics Development**
***Curriculum***
**Sub-Domain: Operations and Algebraic Thinking**

| Goal | Developmental Progression 48—60 months | Learning Target | Examples | |
|---|---|---|---|---|
| | | | Beginning of Year | End of Year |
| **Math 7. Child understands simple patterns.** | **Creates, identifies, extends, and duplicates simple repeating patterns in different forms, such as with objects, numbers, sounds, and movements.** | **A. Recognizes and duplicates simple repeating patterns using objects, numbers, sounds, and movements.**<br>**B. Creates and extends a simple repeating pattern.** | • **Recognizes a simple repeating pattern made with interlocking cubes, such as yellow, green, yellow, green.**<br>• **Sings, moves, or claps through part of a pattern song (e.g., the teacher begins a "clap-pat-clap-pat" pattern, and the child repeats with guidance.)**<br>• **Anticipates a repeating pattern in a storybook, with support.**<br>• **Puts together connecting blocks in alternating colors to form a repeating pattern, with guidance.**<br>• **Demonstrates a pattern of claps, signs, or movements, with guidance.**<br>• **Lines up pretzel sticks and cheese slices to make patterns at snack time.** | • **Fills in an item missing from a pattern (e.g., apple, pear, apple, pear), with guidance.**<br>• **Copies simple repeating patterns, using the same kind of objects as the original patterns.**<br>• **Attempts to sing, sign, move, or clap through a pattern song, trying to maintain the pattern.**<br>• **Adds a red bead and then a blue bead in a red-blue-red-blue pattern to complete a bead necklace.**<br>• **Alternates short and tall blocks to make a fence around a farm.**<br>• **Makes up a clapping or action pattern, "clap, clap, hop, hop" in rhythm to a song.**<br>• **Uses different materials such as buttons, beads, or sequins to create patterns.** |

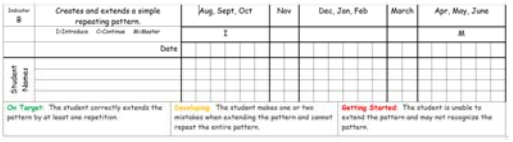


| | Goal P-Math 7. Child understands simple patterns. | | | | | |
|---|---|---|---|---|---|---|
| Indicator A | Recognizes and duplicates simple repeating patterns using objects, numbers, sounds, and movements. | Aug, Sept, Oct | Nov | Dec, Jan, Feb | March | Apr, May, June |
| | I=Introduce C=Continue M=Master | I | | | | M |
| | Date | | | | | |
| Student Names | | | | | | |

**On Target:** The student correctly identifies the repeating part of the pattern and duplicates the teacher's pattern.

**Developing:** The student makes one or two mistakes when identifying the repeating part of the pattern and duplicating the teacher's pattern.

**Getting Started:** The student is unable to repeat or duplicate a simple pattern.

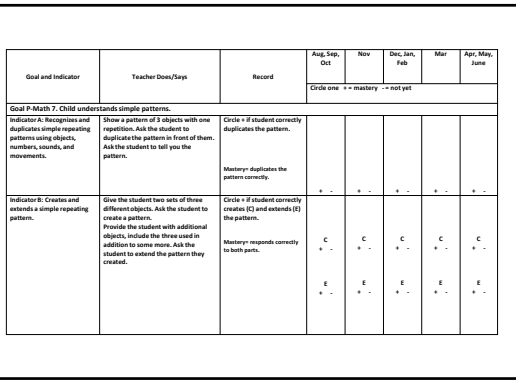


| Indicator B | Creates and extends a simple repeating pattern. | Aug, Sept, Oct | Nov | Dec, Jan, Feb | March | Apr, May, June |
|---|---|---|---|---|---|---|
| | I=Introduce C=Continue M=Master | I | | | | M |
| | Date | | | | | |
| Student Names | | | | | | |

**On Target:** The student correctly extends the pattern by at least one repetition.

**Developing:** The student makes one or two mistakes when extending the pattern and cannot repeat the entire pattern.

**Getting Started:** The student is unable to extend the pattern and may not recognize the pattern.



| Goal and Indicator | Teacher Does/Says | Record | Aug, Sep, Oct | Nov | Dec, Jan, Feb | Mar | Apr, May, June |
|---|---|---|---|---|---|---|---|
| | | | Circle one + = mastery -= not yet | | | | |
| **Goal P-Math 7. Child understands simple patterns.** | | | | | | | |
| **Indicator A: Recognizes and duplicates simple repeating patterns using objects, numbers, sounds, and movements.** | **Show a pattern of 3 objects with one repetition. Ask the student to duplicate the pattern in front of them. Ask the student to tell you the pattern.** | **Circle + if student correctly duplicates the pattern.**<br>**Mastery= duplicates the pattern correctly.** | + - | + - | + - | + - | + - |
| **Indicator B: Creates and extends a simple repeating pattern.** | **Give the student two sets of three different objects. Ask the student to create a pattern. Provide the student with additional objects, include the three used in addition to some more. Ask the student to extend the pattern they created.** | **Circle + if student correctly creates (C) and extends (E) the pattern.**<br>**Mastery= responds correctly to both parts.** | C + - E + - | C + - E + - | C + - E + - | C + - E + - | C + - E + - |

| | |
|---|---|
| **Linking Cubes**<br>In a small group, use objects listed above, at a table to create a short pattern. Ask individual students to name the pattern. Ask individual students to name the next object in the pattern. Continue with other patterns, by color, shape, size etc.<br><br>In a small group, use objects listed above, at a table to have students create a short pattern. Ask students to name the pattern they created.<br>  | **Nuts about Patterning**<br>In a small group, use nuts and bolts at a table to create a short pattern. Ask individual students to name the pattern. Ask individual students to name the next object in the pattern. Continue with other patterns by color.<br><br>In a small group, use nuts and bolts at a table to have students create a short pattern. Ask students to name the pattern they created.<br>  |
| **Pattern Blocks**<br>In a small group, use pattern blocks at a table to create a short pattern. Ask individual students to name the pattern. Ask individual students to name the next object in the pattern. Continue with other patterns, by color, shape, size etc.<br><br>In a small group, use pattern blocks at a table to have students create a short pattern. Ask students to name the pattern they created.<br>  | **String Beads**<br>In a small group, use objects listed above, at a table to create a short pattern. Ask individual students to name the pattern. Ask individual students to name the next object in the pattern. Continue with other patterns, by color, shape, size etc.<br><br>In a small group, use objects listed above, at a table to have students create a short pattern. Ask students to name the pattern they created.<br>  |

# I can create patterns.


**SUB-DOMAIN: OPERATIONS AND ALGEBRAIC THINKING**

**Goal P-Math 7: Child understands simple patterns.**

**Indicators—By 60 months 1) fills in missing elements of simple patterns, 2) duplicates simple patterns in a different location than demonstrated, such as making the same alternating color pattern with blocks at a table that was demonstrated on the rug. Extends patterns, such as making an eight block tower of the same patterns that was demonstrated with four blocks, and 3) identifies the core unit of sequentially repeating patterns, such as color in a sequence of alternating red and blue blocks.**

Goal P-Math 7. Child understands simple patterns.

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|---|---|---|---|---|---|---|
| | I-Introduce C-Continue M-Master | I | | | | M |
| | Date | | | | | |
| Student Names | | | | | | |

**On Target:** The student correctly identifies the repeating part of the pattern and duplicates the teacher's pattern. **Developing:** The student makes one or two mistakes when identifying the repeating part of the pattern and duplicating the teacher's pattern. **Getting Started:** The student is unable to repeat or duplicate a simple pattern.

| Indicator B | Creates and extends a simple repeating pattern. | Aug, Sept, Oct | Nov | Dec, Jan, Feb | March | Apr, May, June |
|---|---|---|---|---|---|---|
| | I-Introduce C-Continue M-Master | I | | | | M |
| | Date | | | | | |
| Student Names | | | | | | |

**On Target:** The student correctly extends the pattern by at least one repetition. **Developing:** The student makes one or two mistakes when extending the pattern and cannot repeat the entire pattern. **Getting Started:** The student is unable to extend the pattern and may not recognize the pattern.

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