California Preschool/Transitional Kindergarten Learning Foundations

Mathematics

Counting and Cardinality

Counting Principles

1.1 Reciting Numbers

Early (3 to 4½ years)

1. Recite numbers in order from one to ten or higher with no more than a few errors. 1.1

Later (4 to 5½ years)

1. Recite numbers in order from one to thirty with no more than a few errors. Count forward from a number other than one. 1.1

1.2 One-to-One Correspondence

Early (3 to 4½ years)

2. Count five objects or more using one-to-one correspondence (one object for each number word). 1.2

Later (4 to 5½ years)

2. Count ten objects or more using one-to-one correspondence (one object for each number word). 1.2

1.3 Cardinality

Early (3 to 4½ years)

3. Answer the question “How many?” by counting. May repeat the last number word in the number list after counting but is still developing an understanding that the number name of the last object counted represents the total number of objects in the group. 1.3

Later (4 to 5½ years)

3. Consistently demonstrate understanding when counting that the number name of the last object counted represents the total number of objects in the group. 1.3

Recognizing Quantities

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1.4 Subitize

Early (3 to 4½ years)

4. Identify without counting the number of objects in a small collection (for example, one to four objects). 1.4

Later (4 to 5½ years)

4. Identify without counting the number of objects in a collection of one to five objects. 1.4

Numeral Recognition

1.5 Numeral Recognition

Early (3 to 4½ years)

5. Recognize and name a few written numerals under 10. 1.5

Later (4 to 5½ years)

5. Recognize and name all written numerals through 10. 1.5

Number Relationships

1.6 Number Comparison

Early (3 to 4½ years)

6. Compare (with or without counting) two groups of objects that are clearly equal or different in size and communicate, “same” or “more.” 1.6

Later (4 to 5½ years)

6. Compare two groups of objects by counting and communicating, “more,” “same,” “less,” or “fewer.” 1.6

Operations and Algebraic Thinking

Number Operations

2.1 Principles of Addition and Subtraction

Early (3 to 4½ years)

1. Demonstrate understanding that adding or taking away one or more objects from a group will increase or decrease the number of objects in the group. 2.1

Later (4 to 5½ years)

1. Demonstrate understanding that adding one or taking away one object changes the number in a small group of objects by exactly one. 2.1

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2.2 Number Composition and Decomposition

Early (3 to 4½ years)

2. Demonstrate understanding that a set of objects is made up of smaller parts and that the whole set is bigger than its parts. 2.2

Later (4 to 5½ years)

2. Decompose a set of objects into two small sets in more than one way (for example, decompose 5 into sets of 3 and 2, or 1 and 4). Combine two small sets to create a larger set (for example, 3 and 2 to make a set of 5). 2.2

2.3 Solving Addition and Subtraction Problems

Early (3 to 4½ years)

3. Solve addition and subtraction problems with a very small number of objects in the context of everyday situations. 2.3

Later (4 to 5½ years)

3. Solve addition and subtraction problems with a larger number of objects (sums up to 10) in the context of everyday situations. 2.3

2.4 Sharing Objects (Division)

Early (3 to 4½ years)

4. Share a small number of objects (for example, four or six objects) equally between two recipients. 2.4

Later (4 to 5½ years)

4. Share a slightly larger number of objects equally between two or more recipients (for example, nine objects among three recipients). 2.4

Classifying and Patterning

2.5 Sorting and Classifying

Early (3 to 4½ years)

5. Notice similarities and differences in the attributes of objects. Sort and classify objects by one attribute into two or more groups. 2.5

Later (4 to 5½ years)

5. Sort and classify objects by one or more attributes into two or more groups with accuracy and flexibility. When sorting by two attributes, a child may first sort by one attribute and then by the second attribute. 2.5

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2.6 Recognizing, Duplicating, and Extending Patterns

Early (3 to 4½ years)

6. Notice and explore patterns in their environment and, with adult support, duplicate simple repeating patterns (for example, ABAB). 2.6

Later (4 to 5½ years)

6. Explore, extend, and duplicate a variety of repeating patterns (for example, AABBAABB, ABCABC) with adult support. Describe the repeating part of a pattern (pattern unit). 2.6

2.7 Creating Patterns

Early (3 to 4½ years)

7. Create, with adult support, a simple repeating pattern (for example, ABAB). 2.7

Later (4 to 5½ years)

7. Create a variety of repeating patterns (for example, AABBAABB, ABCABC) or recreate existing patterns using different objects. 2.7

Measurement and Data

Comparing and Ordering Objects

3.1 Comparing Measurable Attributes of Objects

Early (3 to 4½ years)

1. Demonstrate awareness that objects can be compared by length, weight, or capacity by noticing differences in objects and communicating about their comparison. 3.1

Later (4 to 5½ years)

1. Compare two objects by length, weight, or capacity (for example, putting objects side by side) and communicate about their comparison. 3.1

3.2 Ordering Objects

Early (3 to 4½ years)

2. Order a few objects (for example, three) by length or other attributes (for example, height, capacity). 3.2

Later (4 to 5½ years)

2. Order a slightly larger number of objects (for example, four or five) by length or other attributes (for example, height, capacity). 3.2

3.3 Measuring Length

Later (4 to 5½ years)

3. Measure length using concrete objects laid end to end, sometimes needing adult support. Note: Children may not yet understand that units need to be of equal length. 3.3

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3.4 Representing Data

Early (3 to 4½ years)

4. Use objects, tally marks, or pictographs to represent data in two groups, with adult support. 3.4

Later (4 to 5½ years)

4. Use objects, tally marks, or pictographs to represent data in two or more groups. Demonstrate understanding that each object, tally mark, or picture represents one data point. 3.4

3.5 Interpreting Data

Early (3 to 4½ years)

5. Notice, with adult support, differences in the data of two groups and describe which one has more or less. 3.5

Later (4 to 5½ years)

5. Describe and compare, with adult support, the number of data points in two or more groups. Determine which group has more or less. 3.5

Geometry and Spatial Thinking

Shapes

4.1 Identifying Two-Dimensional Shapes

Early (3 to 4½ years)

1. Identify familiar two-dimensional shapes such as circle, square, triangle, and rectangle. Note: May not identify a nontypical version of a shape (for example, a square turned so that the point is down—a diamond). 4.1

Later (4 to 5½ years)

1. Identify, describe, and construct different shapes including variations of circle, square, triangle, rectangle, and other shapes. Use informal language to describe defining properties of a shape (for example, sides, corners, round). 4.1

4.2 Identifying Three-Dimensional Shapes

Early (3 to 4½ years)

2. Occasionally identify a few familiar three-dimensional shapes using informal names (for example, saying “ball” when referring to a sphere). 4.2

Later (4 to 5½ years)

2. Identify a few familiar three-dimensional shapes such as sphere, cube, and cylinder. Note: Sometimes still use informal names (for example, ball, square box, tube). 4.2

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4.3 Comparing Two-Dimensional Shapes

Early (3 to 4½ years)

3. Compare two-dimensional shapes of different sizes and orientations to determine whether they are the same shape. 4.3

Later (4 to 5½ years)

3. Compare two-dimensional shapes of different sizes and orientations to determine whether they are the same shape. Identify similarities and differences in the properties (number of sides or vertices) of two different shapes. 4.3

4.4 Composing Shapes

Early (3 to 4½ years)

4. Use two- or three-dimensional shapes to represent different elements of a picture or design (for example, adding a circle in a corner to represent the sun). 4.4

Later (4 to 5½ years)

4. Combine different two- or three-dimensional shapes to create a picture or design (for example, make a house with two blocks shaped like rectangular prisms and one shaped like a triangular prism). 4.4

Spatial Thinking

4.5 Positions and Directions in Space

Early (3 to 4½ years)

5. Identify some positions of objects and people in space such as in/on, under/over, up/down, and inside/outside. 4.5

Later (4 to 5½ years)

5. Identify positions of objects and people in space including in/on, under/over, up/ down, inside/outside, near/far, next to, beside/between, and in front of/behind. 4.5

4.6 Mental Rotation

Early (3 to 4½ years)

6. Rely on trial and error to determine how objects move in space and fit in different locations (for example, try to fit an object into a hole by rotating, flipping, or sliding the piece in different orientations until it fits). 4.6

Later (4 to 5½ years)

6. Rotate, flip, or slide objects to solve a problem without relying as much on physical trial and error (for example, rotate an object before fitting it into a hole). 4.6