LINCOLN PUBLIC SCHOOLS
Mathematics Learning Expectations: Preschool

Strand:
Math

Operations and Numeration

Students will use concrete objects to solve simple mathematical problems using comparative language.

Big Ideas

- The understanding of basic operations by using concrete objects is essential for the students to become successful problem solvers.
- Items can be combined and divided into groups which can be represented using numbers and symbols.

Key Outcomes

- Students will demonstrate an understanding of the **meaning of operations** by manipulating a variety of classroom materials and explaining their thinking process.

The key outcomes and expected learning targets are for students who are completing preschool and are eligible for kindergarten.

Essential Knowledge and Skills

Students will be able to:

- Participate in problem solving through literature and music based number stories and songs.
- Solve number stories using concrete objects.
- Create number stories using concrete objects.
- Addition and subtraction by using concrete objects.
- Represent part-whole relationships.
- Match whole objects that have been segmented
- Divide sets of objects into equal parts
- Use math vocabulary and terms

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Patterns, Functions and Algebraic Thinking

Students will describe concrete objects by their attributes and be able to sort and classify them accordingly. Students will recognize, describe, reproduce, extend, create and compare repeating patterns of concrete materials.

Big Ideas

- The understanding of patterns and functions helps children develop mathematical processes, which build a foundation of later applications of algebra.

Key Outcomes

- Students will demonstrate an understanding of **patterns** by using rules to recognize, identify and represent a repeating pattern.

The key outcomes and expected learning targets are for students who are completing preschool and are eligible for kindergarten.

Essential Knowledge and Skills

Students will be able to:

- Recognize attributes of objects, such as size shape and color.
- Describe attributes of objects, such as size, shape and color.
- Use attributes clues to identify objects.
- Use rules to sort objects.
- Recognize a repeating pattern.
- Copy and extend repeating patterns.
- Create a repeating pattern.

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Measurement and Reference Frames

Students will use non-standard units of measurement and estimation in meaningful ways.

Big Ideas

- Children's natural curiosity is fostered through exploring attributes of objects that are measurable, and can be quantified using non-standard units.
- Exploration of non-standard units of measurement help foster children's ability to communicate their understanding about measurement.

Key Outcomes

- Students will demonstrate an understanding of **systems and processes of measurement** by using appropriate techniques, tools, units and formulas in making measurements.

The key outcomes and expected learning targets are for students who are completing preschool and are eligible for kindergarten.

Essential Knowledge and Skills

Students will be able to:

- Explore and experiment with standard and non-standardized measuring tools.
- Recognize size attributes.
- Describe size attributes.
- Estimate objects according to size.
- Verbally explain and/or represent size findings.
- Sequence familiar events in time.

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Number Sense/ Numeration

Students will gain an understanding of numbers and number concepts in meaningful contexts.

Big Ideas

- Number concepts become significant to students when they engage in functional concrete experiences.
- Counting provides a foundation for understanding our number system and the basic operations of arithmetic.

Key Outcomes

- Students will demonstrate an understanding of **number and numeration** by representing equivalent names and numerical relationships.

The key outcomes and expected learning targets are for students who are completing preschool and are eligible for kindergarten.

Essential Knowledge and Skills

Students will be able to:

- Rote count up to 20.
- Receptively and expressively identify numbers 1 – 10.
- Demonstrate an awareness of numbers and their uses.
- Recognize and use different ways to represent numbers.
- Demonstrate an understanding and application of mathematical vocabulary.
- Compare groups of objects using mathematical vocabulary (more/less/same).
- Count objects with one-to-one correspondence up to 10.
- Uses objects or drawings to represent quantities.
- Arrange pictures from a story or event and or materials in sequence (short/long, small/large, first/then).
- Use numbers/digits to represent quantities up to 10.

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Data and Chance:

Students will organize and draw conclusions from facts they have collected.

Big Ideas

- Collecting, organizing and presenting data in tables and graphs is fundamental for young learners. Data explorations allow students to collaborate and make sense of their findings.

Key Outcomes

- Students will demonstrate an understanding of **graphical representations of collected or given data** by drawing conclusions and being able to answer simple questions.

The key outcomes and expected learning targets are for students who are completing preschool and are eligible for kindergarten.

Essential Knowledge and Skills

Students will be able to:

- Collect data through informal explorations.
- Represent data in a variety of ways using both concrete and pictorial representations.
- Interpret data that is created or given.
- Use graphs to answer simple questions.

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Geometry

Students will learn to identify shapes with various attributes and properties and be able to use language to identify and describe their relationships.

Big Ideas

- Shapes can be described, classified, and compared by their attributes.

Key Outcomes

- Students will demonstrate an understanding of the **attributes and properties of shapes** by manipulating, sorting and classifying.
- Students will demonstrate an understanding of **position and distance** by identifying space, direction, movement, relative position and size.

The key outcomes and expected learning targets are for students who are completing preschool and are eligible for kindergarten.

Essential Knowledge and Skills

Students will be able to:

- Recognize and identify shapes.
- Sort shapes by attributes.
- Create and represent shapes.
- Describe objects by single attribute.
- Follow directional language related to daily routines and activities.
- Locate objects based on directional words.
- Complete puzzles of increasing complexity.
- Compare the size of various everyday objects.
- Use simple balance scales to compare the weight of classroom materials.