

ISPS Math Standards & Benchmarks

(Adapted from AERO standards)

Pre-Kindergarten

Standard 1 -Students will apply a wide variety of mathematical concepts, processes, and skills to solve a broad range of problems in various content areas and everyday situations.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 1 – 1 Demonstrate that there may be multiple ways to solve a problem and explain why this is so.
- 1 – 2 Understand that there is no one right way to solve mathematical problems but that different methods (e.g., working backward from a solution, using a similar problem type, identifying a pattern) have different advantages and disadvantages.

Standard 2 -Students will apply mathematical reasoning skills to investigate, evaluate, justify, and connect approaches and solutions to situations in mathematics and in other disciplines.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 2 – 1 Make, check, and verify predictions about the quantity, size, and shape of objects and groups of objects.
- 2 – 2 Explain why a prediction, estimation, or solution is reasonable.
- 2 – 3 Make and describe connections linking conceptual and procedural knowledge using a variety of strategies (manipulative, pictorial, symbolic graph of projectile motion)

Standard 3 -Students will understand mathematical information presented and obtained in a variety of ways and will accurately and clearly present and justify mathematical ideas in diverse formats.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 3 – 1 Listen to mathematical strategies and solutions, and communicate them to others using everyday language and correct mathematical terms (e.g., sum, product) and symbols (e.g. +, =).
- 3 – 2 Recognize that certain words give clues to specific operations (e.g., sum means all together, difference means take away).

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- 3 – 3 Communicate mathematical ideas using concrete, pictorial and symbolic representations.
- 3 – 4 Understand and demonstrate that some ways of representing a problem are more helpful than others.

Standard 4 -Students will select and use a wide variety of tools and technology to support and validate mathematical results, when appropriate.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 4 – 1 Represent and examine mathematical situations using manipulatives.

Standard 5 -Students will understand and apply numbers, ways of representing numbers, relationships among numbers, and number systems.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 5 – 1 Connect physical, verbal, and symbolic representations of whole numbers and fractions.
- 5 – 2 Use drawings, diagrams, and models to show the concept of fractions as part of a whole and part of a set.
- 5 – 3 Explain how numbers are used in various ways, including counting, ordering, representing quantities, measuring and labeling.
- 5 – 4 Use concrete objects to count, order, group, compare and demonstrate one-to-one correspondence with whole numbers to 20.
- 5 – 5 Identify patterns in number sequences (count by 2s)
- 5 – 6 Read, write, and model numbers to 20.

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Standard 6 -Students will estimate, compute, and assess reasonableness of solutions.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 6 – 1 Demonstrate proficiency with and memorize addition and subtraction facts to 20.
- 6 – 2 Add and subtract single digit numbers.
- 6 – 3 Apply addition and subtraction in a variety of situations (such as working out a problem based question)
- 6 – 4 Understand and appropriately use the vocabulary of estimation (such as near, between, less than, more than)
- 6 – 5 Use a variety of strategies and estimation skills to find solutions.

Standard 7 -Students will estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools, and technologies.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 7 – 1 Estimate before measuring to determine the reasonableness of a solution.
- 7 – 2 Estimate and measure length, capacity and weight to the nearest unit using nonstandard measurement.
- 7 – 3 Compare and order measurable characteristics (for example, time, temperature, length, weight) of different objects on the same dimensions.
- 7 – 4 Tell time to the hour
- 7 – 5 Use a calendar to determine the date and sequence days of the week and months of the year.

Standard 8 -Students will use algebraic methods to represent, analyze, and solve abstract and practical mathematical situations involving patterns and functional relationships.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 8 – 1 Recognize, reproduce, create, and describe repeating patterns and sequences using a variety of materials.
- 8 – 2 Use tables to describe patterns and other relationships.

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Standard 9 -Students will use spatial reasoning and apply the properties and relationships of geometric figures to represent, investigate, analyze, and solve problems.

Benchmarks - By the end of Pre-Kindergarten, students will:

- 9 – 1 Use comparative directional and positional words (such before, between, after, left, right, above).
- 9 – 2 Describe, name, and label related geometric two- and three-dimensional shapes (such as circle and sphere, square and cube, triangle and pyramid, rectangle and prism).
- 9 – 3 Construct two-dimensional geometric shapes, including boxes and triangular prisms.
- 9 – 4 Identify and describe geometric figures in the environment.
- 9 – 5 Order simple geometric figures by size.
- 9 – 6 Identify the symmetry of shapes.

Standard 10 -Students will pose a question, collect, organize, analyze, and represent data in order to make decisions and predictions.

Benchmarks – By the end of Pre-Kindergarten, students will:

- 10 – 1 Sort and label objects into sets by one or more attribute.
- 10 – 2 Collect data by observing, measuring, surveying, and counting.
- 10 – 3 Construct, read, interpret, and label graphs, including pictographs and simple bar charts.
- 10 – 4 Interpret data by looking for patterns and relationships.
- 10 – 5 Discuss and identify outcomes that will happen, won't happen, and might happen.

Standard 11 – Students will understand and apply basic concepts of probability

Benchmarks – By the end of Pre-Kindergarten, students will:

- 11 – 1 Discuss and identify outcomes that will happen, won't happen and might happen.