

# DeRuyter Central School District

## Mathematics

## Kindergarten

### 55 Benchmarks

#### *Problem Solving Strand*

**►Standard 1: Students will build new mathematical knowledge through problem solving.**

K.PS.1 Explore, examine, and make observations about a social problem or mathematical situation.

K.PS.2 Interpret information correctly, identify the problem, and generate possible solutions.

**►Standard 2: Students will solve problems that arise in mathematics and in other contexts.**

K.PS.3 Act out or model with manipulatives activities involving mathematical content from literature and/or story telling.

K.PS.4 Formulate problems and solutions from everyday situations (e.g., counting the number of children in the class, using the calendar to teach counting).

**►Standard 3: Students will apply and adapt a variety of appropriate strategies to solve problems.**

K.PS.5 Use informal counting strategies to find solutions.

K.PS.6 Experience teacher-directed questioning process to understand problems.

K.PS.7 Compare and discuss ideas for solving a problem with teacher and/or students to justify their thinking.

K.PS.8 Use manipulatives (e.g., tiles, blocks) to model the action in problems.

K.PS.9 Use drawings/pictures to model the action in problems.

► **Standard 4: Students will monitor and reflect on the process of mathematical problem solving.**

K.PS.10 Explain to others how a problem was solved, giving strategies.

*Reasoning and Proof Strand*

► **Standard 5: Students will recognize reasoning and proof as fundamental aspects of mathematics.**

K.RP.1 Understand that mathematical statements can be true or false.

► **Standard 6: Students will make and investigate mathematical conjectures.**

K.RP.2 Investigate the use of knowledgeable guessing as a mathematical tool.

K.RP.3 Explore guesses, using a variety of objects and manipulatives.

► **Standard 7: Students will develop and evaluate mathematical arguments and proofs.**

K.RP.4 Listen to claims other students make.

*Communication Strand*

► **Standard 8: Students will organize and consolidate their mathematical thinking through communication.**

K.CM.1 Understand how to organize their thought processes with teacher guidance.

► **Standard 9: Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.**

K.CM.2 Share mathematical ideas through the manipulation of objects, drawings, pictures, and verbal explanations.

K.CM.3 Listen to solutions shared by other students.

K.CM.4 Formulate mathematically relevant questions with teacher guidance.

**►Standard 10: Students will use the language of mathematics to express mathematical ideas precisely.**

K.CM.5 Use appropriate mathematical terms, vocabulary, and language.

*Connections Strand*

**►Standard 11: Students will recognize and apply mathematics in contexts outside of mathematics.**

K.CN.1 Recognize the presence of mathematics in their daily lives.

K.CN.2 Use counting strategies to solve problems in their daily lives.

K.CN.3 Recognize and apply mathematics to objects and pictures.

*Representation Strand*

**►Standard 12: Students will create and use representations to organize, record, and communicate mathematical ideas.**

K.R.1 Use multiple representations, including verbal language, acting out or modeling a situation, and drawing pictures as representations.

K.R.2 Use standard and nonstandard representations.

K.R.3 Use objects to show and understand physical phenomena (e.g., guess the number of cookies in a package).

K.R.4 Use objects to show and understand social phenomena (e.g., count and represent sharing cookies between friends).

K.R.5 Use objects to show and understand mathematical phenomena (e.g., draw pictures to show a story problem, show number value using fingers on your hand).

*Number Sense and Operations Strand*

**►Standard 13: Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.**

- K.N.1 Count the items in a collection and know the last counting word tells how many items are in the collection (1 to 10).
- K.N.2 Count out (produce) a collection of a specified size 1 to 10.
- K.N.3 Numerically label a data set of 1 to 5.
- K.N.4 Verbally count by 1's to 20.
- K.N.5 Verbally count backwards from 10.
- K.N.6 Represent collections with a finger pattern up to 10.
- K.N.7 Draw pictures or other informal symbols to represent a spoken number up to 10.
- K.N.8 Draw pictures or other informal symbols to represent how many in a collection up to 10.
- K.N.9 *Number Systems:* Write numbers 1-10 to represent a collection.
- K.N.10 Visually determine how many more or less, and then using the verbal counting sequence, match and count 1-10.
- K.N.11 Use and understand verbal ordinal terms, first to tenth.

**►Standard 14: Students will understand meanings of operations and procedures, and how they relate to one another.**

- K.N.12 Solve and create addition and subtraction verbal word problems (use counting-based strategies, such as counting on and to ten).
- K.N.13 Determine sums and differences by various means.

*Algebra Strand*

**►Standard 15: Students will recognize, use, and represent algebraically patterns, relations, and functions.**

- K.A.1 Use a variety of manipulatives to create patterns using attributes of color, size, or shape.
- K.A.2 Recognize, describe, extend, and create patterns that repeat (e.g., ABABAB or ABAABAAAB).

*Geometry Strand*

**►Standard 16: Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.**

- K.G.1 Describe characteristics and relationships of geometric objects.

**►Standard 17: Students will identify and justify geometric relationships, formally and informally.**

- K.G.2 Sort groups of objects by size and size order (increasing and decreasing).

**►Standard 18: Students will apply transformations and symmetry to analyze problem solving situations.**

- K.G.3 Explore vertical and horizontal orientation of objects.
- K.G.4 Manipulate two- and three-dimensional shapes to explore symmetry.

**►Standard 19: Students will apply coordinate geometry to analyze problem solving situations.**

- K.G.5 Understand and use ideas such as over, under, above, below, on, beside, next to, and between.

*Measurement Strand*

**►Standard 20: Students will determine what can be measured and how, using appropriate methods and formulas.**

- K.M.1 Name, discuss, and compare attributes of length (longer than, shorter than).
- K.M.2 Compare the length of two objects by representing each length with string or a paper strip.
- K.M.3 Relate specific times such as morning, noon, afternoon, and evening to activities and absence or presence of daylight.

*Statistics and Probability Strand*

**►Standard 21: Students will collect, organize, display, and analyze data.**

- K.S.1 Gather data in response to questions posed by the teacher and students.
- K.S.2 Help to make simple pictographs for quantities up to 10, where one picture represents 1.
- K.S.3 Sort and organize objects by two attributes (e.g., color, size, or shape).
- K.S.4 Represent data using manipulatives.
- K.S.5 Identify more, less, and same amounts from pictographs or concrete models.