

Galway Math Curriculum Guide Kindergarten

Problem Solving Strand

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

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).

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

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

Students will recognize reasoning and proof as fundamental aspects of mathematics.

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

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

Students will develop and evaluate mathematical arguments and proofs.

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

Communication Strand

Students will organize and consolidate their mathematical thinking through communication.

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

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

Students will analyze and evaluate the mathematical thinking and strategies of others.

- K.CM.3 Listen to solutions shared by other students
- K.CM.4 Formulate mathematically relevant questions with teacher guidance

Students will use the language of mathematics to express mathematical ideas precisely.

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

Connections Strand

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

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

Students will use representations to model and interpret physical, social, and mathematical phenomena.

- 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

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 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

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

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

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

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)

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

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

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

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