

Galway Math Curriculum Guide
3rd Grade

Problem Solving Strand

Students will build new mathematical knowledge through problem solving.

- 3.PS.1 Explore, examine, and make observations about a social problem or mathematical situation
- 3.PS.2 Understand that some ways of representing a problem are more helpful than others
- 3.PS.3 Interpret information correctly, identify the problem, and generate possible solutions

Students will solve problems that arise in mathematics and in other contexts.

- 3.PS.4 Act out or model with manipulatives activities involving mathematical content from literature
- 3.PS.5 Formulate problems and solutions from everyday situations
- 3.PS.6 Translate from a picture/diagram to a numeric expression
- 3.PS.7 Represent problem situations in oral, written, concrete, pictorial, and graphical forms
- 3.PS.8 Select an appropriate representation of a problem

Students will apply and adapt a variety of appropriate strategies to solve problems.

- 3.PS.9 Use trial and error to solve problems
- 3.PS.10 Use process of elimination to solve problems
- 3.PS.11 Make pictures/diagrams of problems
- 3.PS.12 Use physical objects to model problems
- 3.PS.13 Work in collaboration with others to solve problems
- 3.PS.14 Make organized lists to solve numerical problems
- 3.PS.15 Make charts to solve numerical problems
- 3.PS.16 Analyze problems by identifying relationships
- 3.PS.17 Analyze problems by identifying relevant versus irrelevant information
- 3.PS.18 Analyze problems by observing patterns
- 3.PS.19 State a problem in their own words

Students will monitor and reflect on the process of mathematical problem solving.

- 3.PS.20 Determine what information is needed to solve a problem
- 3.PS.21 Discuss with peers to understand a problem situation
- 3.PS.22 Discuss the efficiency of different representations of a problem
- 3.PS.23 Verify results of a problem
- 3.PS.24 Recognize invalid approaches
- 3.PS.25 Determine whether a solution is reasonable in the context of the original problem

Reasoning and Proof Strand

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

- 3.RP.1 Use representations to support mathematical ideas
- 3.RP.2 Determine whether a mathematical statement is true or false and explain why

Students will make and investigate mathematical conjectures.

- 3.RP.3 Investigate the use of knowledgeable guessing by generalizing mathematical ideas
- 3.RP.4 Make conjectures from a variety of representations

Students will develop and evaluate mathematical arguments and proofs.

- 3.RP.5 Justify general claims or conjectures, using manipulatives, models, and expressions
- 3.RP.6 Develop and explain an argument using oral, written, concrete, pictorial, and/or graphical forms
- 3.RP.7 Discuss, listen, and make comments that support or reject claims made by other students

Students will select and use various types of reasoning and methods of proof.

- 3.RP.8 Support an argument by trying many cases

Communication Strand

Students will organize and consolidate their mathematical thinking through communication.

- 3.CM.1 Understand and explain how to organize their thought process
- 3.CM.2 Verbally explain their rationale for strategy selection
- 3.CM.3 Provide reasoning both in written and verbal form

Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.

- 3.CM.4 Organize and accurately label work

- 3.CM.5 Share organized mathematical ideas through the manipulation of objects, drawings, pictures, charts, graphs, tables, diagrams, models, symbols, and expressions in written and verbal form

- 3.CM.6 Answer clarifying questions from others

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

- 3.CM.7 Listen for understanding of mathematical solutions shared by other students
- 3.CM.8 Consider strategies used and solutions found in relation to their own work

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

- 3.CM.9 Increase their use of mathematical vocabulary and language when communicating with others
- 3.CM.10 Describe objects, relationships, solutions and rationale using appropriate vocabulary
- 3.CM.11 Decode and comprehend mathematical visuals and symbols to construct meaning

Connections Strand

Students will recognize and use connections among mathematical ideas.

- 3.CN.1 Recognize, understand, and make connections in their everyday experiences to mathematical ideas
- 3.CN.2 Compare and contrast mathematical ideas
- 3.CN.3 Connect and apply mathematical information to solve problems

Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

- 3.CN.4 Understand multiple representations and how they are related
- 3.CN.5 Model situations with objects and representations and be able to make observations

Students will recognize and apply mathematics in contexts outside of mathematics.

- 3.CN.6 Recognize the presence of mathematics in their daily lives
- 3.CN.7 Apply mathematics to solve problems that develop outside of mathematics
- 3.CN.8 Recognize and apply mathematics to other disciplines

Representation Strand

Students will create and use representations to organize, record, and communicate mathematical ideas.

- 3.R.1 Use verbal and written language, physical models, drawing charts, graphs, tables, symbols, and equations as representations
- 3.R.2 Share mental images of mathematical ideas and understandings
- 3.R.3 Recognize and use external mathematical representations
- 3.R.4 Use standard and nonstandard representations with accuracy and detail

Students will select, apply, and translate among mathematical representations to solve problems.

- 3.R.5 Understand similarities and differences in representations
- 3.R.6 Connect mathematical representations with problem solving
- 3.R.7 Construct effective representations to solve problems

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

- 3.R.8 Use mathematics to show and understand physical phenomena (e.g., estimate and represent the number of apples in a tree)
- 3.R.9 Use mathematics to show and understand social phenomena (e.g., determine the number of buses required for a field trip)
- 3.R.10 Use mathematics to show and understand mathematical phenomena (e.g., use a multiplication grid to solve odd and even number problems)

Number Sense and Operations Strand

Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.

- 3.N.1 Skip count by 25's, 50's, 100's to 1,000
- 3.N.2 Read and write whole numbers to 1,000
- 3.N.3 Compare and order numbers to 1,000
- 3.N.4 Understand the place value structure of the base ten number system: 10 ones = 1 ten / 10 tens = 1 hundred / 10 hundreds = 1 thousand
- 3.N.5 Use a variety of strategies to compose and decompose three-digit numbers
- 3.N.6 Use and explain the commutative property of addition and multiplication
- 3.N.7 Use 1 as the identity element for multiplication
- 3.N.8 Use the zero property of multiplication

- 3.N.9 Understand and use the associative property of addition
- 3.N.10 Develop an understanding of fractions as part of a whole unit and as parts of a collection
- 3.N.11 Use manipulatives, visual models, and illustrations to name and represent unit fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6},$ and $\frac{1}{10}$) as part of a whole or a set of objects
- 3.N.12 Understand and recognize the meaning of numerator and denominator in the symbolic form of a fraction
- 3.N.13 Recognize fractional numbers as equal parts of a whole
- 3.N.14 Explore equivalent fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$)
- 3.N.15 Compare and order unit fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$) and find their approximate locations on a number line
- 3.N.16 Identify odd and even numbers
- 3.N.17 Develop an understanding of the properties of odd/even numbers as a result of addition or subtraction

Students will understand meanings of operations and procedures, and how they relate to one another.

- 3.N.18 Use a variety of strategies to add and subtract 3-digit numbers (with and without regrouping)
- 3.N.19 Develop fluency with single-digit multiplication facts
- 3.N.20 Use a variety of strategies to solve multiplication problems with factors up to 12×12
- 3.N.21 Use the area model, tables, patterns, arrays, and doubling to provide meaning for multiplication
- 3.N.22 Demonstrate fluency and apply single-digit division facts
- 3.N.23 Use tables, patterns, halving, and manipulatives to provide meaning for division
- 3.N.24 Develop strategies for selecting the appropriate computational and operational method in problem solving situations

Students will compute accurately and make reasonable estimates.

- 3.N.25 Estimate numbers up to 500
- 3.N.26 Recognize real world situations in which an estimate (rounding) is more appropriate
- 3.N.27 Check reasonableness of an answer by using estimation

Algebra Strand

Students will perform algebraic procedures accurately.

- 3.A.1 Use the symbols $<, >, =$ (with and without the use of a number line) to compare whole numbers and unit fractions

$$\left(\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \text{ and } \frac{1}{10} \right)$$

Students will recognize, use, and represent algebraically patterns, relations, and functions.

- 3.A.2 Describe and extend numeric (+, -) and geometric patterns

Geometry Strand

Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.

- 3.G.1 Define and use correct terminology when referring to shapes (circle, triangle, square, rectangle, rhombus, trapezoid, and hexagon)
- 3.G.2 Identify congruent and similar figures
- 3.G.3 Name, describe, compare, and sort three-dimensional shapes: cube, cylinder, sphere, prism, and cone
- 3.G.4 Identify the faces on a three-dimensional shape as two-dimensional shapes

Students will apply transformations and symmetry to analyze problem solving situations.

- 3.G.5 Identify and construct lines of symmetry

Measurement Strand

Students will determine what can be measured and how, using appropriate methods and formulas.

- 3.M.1 Select tools and units (customary) appropriate for the length measured
- 3.M.2 Use a ruler/yardstick to measure to the nearest standard unit (whole and $\frac{1}{2}$ inches, whole feet, and whole yards)
- 3.M.3 Measure objects, using ounces and pounds
- 3.M.4 Recognize capacity as an attribute that can be measured
- 3.M.5 Compare capacities (e.g., Which contains more? Which contains less?)
- 3.M.6 Measure capacity, using cups, pints, quarts, and gallons

Students will use units to give meaning to measurements.

- 3.M.7 Count and represent combined coins and dollars, using currency symbols (\$0.00)
- 3.M.8 Relate unit fractions to the face of the clock: Whole = 60 minutes / $\frac{1}{2}$ = 30 minutes / $\frac{1}{4}$ = 15 minutes

Students will develop strategies for estimating measurements.

- 3.M.9 Tell time to the minute, using digital and analog clocks
- 3.M.10 Select and use standard (customary) and non-standard units to estimate measurements

Statistics and Probability Strand

Students will collect, organize, display, and analyze data.

- 3.S.1 Formulate questions about themselves and their surroundings
- 3.S.2 Collect data using observation and surveys, and record appropriately
- 3.S.3 Construct a frequency table to represent a collection of data
- 3.S.4 Identify the parts of pictographs and bar graphs
- 3.S.5 Display data in pictographs and bar graphs
- 3.S.6 State the relationships between pictographs and bar graphs
- 3.S.7 Read and interpret data in bar graphs and pictographs

Students will make predictions that are based upon data analysis.

- 3.S.8 Formulate conclusions and make predictions from graphs