

EARLY GRADES K-2

Number and Operations

In the early grades students develop number sense, reading, writing, and counting with whole numbers. Whole numbers are represented using concrete, pictorial, and symbolic representations. Students recognize different representations for whole numbers and explain why those representations are equivalent. Whole numbers are compared and ordered and students use a variety of strategies to estimate quantities and understand place value. Students develop fluency with addition and subtraction using multiple strategies.

Measurement

Students in the early grades begin to understand the concepts of measurement by using a variety of materials. As they learn about different tools for measuring, they describe, estimate, and measure length and temperature using non-standard and standard units. Students use the calendar to follow the days of the week and months of the year. Clocks are used to explore and tell time at the five-minute intervals.

Geometry

Students learn the names and basic properties of simple geometric shapes. They learn how shapes can be cut or arranged to form new shapes. Students look for the shapes in the environment, and practice drawing and using the shapes. They learn the meaning of basic directional and positional relationships.

Data Analysis and Probability

Students are introduced to the process of statistical investigation. They collect data by counting, measuring, and conducting simple surveys and experiments. They organize, describe, and display data. Simple probability experiments are conducted and the results interpreted.

Algebra

Children in the early grades learn about patterns and describe objects by their attributes. They compare, sort, and order things by one or more characteristics. Their understanding is extended by finding and creating patterns, correcting errors in patterns, and translating patterns into different forms. Students gather data pertaining to interests, family, and other things around them. They begin to understand that a number is a symbol for how much of something there is and begin to explore the use of a variable or placeholder and write open sentences to express relationships. Students begin to use patterns as a problem-solving strategy.

Kindergarten

Major Concepts/Skills

- Number sense 0 - 30
- Calendar time
- Recognize basic shapes
- Create and extend patterns
- Sort and classify

Strands: Number and Operations, Measurement, Geometry, Data Analysis and Probability, Algebra

COMPETENCY GOAL 1: The learner will recognize, model, and write whole numbers through 30.

Objectives

- 1.01 Develop number sense for whole numbers through 30.
 - a) Connect model, number word (orally), and number, using a variety of representations.
 - b) Count objects in a set.
 - c) Read and write numerals.
 - d) Compare and order sets and numbers.
 - e) Use ordinals (1st-10th).
 - f) Estimate quantities fewer than or equal to 10.
 - g) Recognize equivalence in sets and numbers 1-10.
- 1.02 Share equally (divide) between two people; explain.
- 1.03 Solve problems and share solutions to problems in small groups.

COMPETENCY GOAL 2: The learner will explore concepts of measurement.

Objectives

- 2.01 Compare attributes of two objects using appropriate vocabulary (color, weight, height, width, length, texture).
- 2.02 Recognize concepts of calendar time using appropriate vocabulary (days of the week, months of the year, seasons).

COMPETENCY GOAL 3: The learner will explore concepts of geometry.

Objectives

- 3.01 Identify, build, draw, and name triangles, rectangles, and circles; identify, build, and name spheres and cubes.
- 3.02 Compare geometric shapes (identify likenesses and differences).
- 3.03 Model and use directional and positional vocabulary.
- 3.04 Complete simple spatial visualization tasks and puzzles.

COMPETENCY GOAL 4: The learner will collect, organize and display data.

Objectives

- 4.01 Collect and organize data as a group activity.
- 4.02 Display and describe data with concrete and pictorial graphs as a group activity.

COMPETENCY GOAL 5: The learner will model simple patterns and sort objects.

Objectives

- 5.01 Sort and classify objects by one attribute.
- 5.02 Create and extend patterns with actions, words, and objects.

Grade 1

Major Concepts/Skills

- Number sense 0-99
- Single digit addition and subtraction
- Time
- Non-standard measurement
- Collect and display data
- Create and extend patterns

Concepts/Skills to Maintain

- Basic geometric shapes
- Sort and classify

Strands: Number and Operations, Measurement, Geometry, Data Analysis and Probability, Algebra

COMPETENCY GOAL 1: The learner will read, write, and model whole numbers through 99 and compute with whole numbers.

Objectives

- 1.01 Develop number sense for whole numbers through 99.
 - a) Connect the model, number word, and number using a variety of representations.
 - b) Use efficient strategies to count the number of objects in a set.
 - c) Read and write numbers.
 - d) Compare and order sets and numbers.
 - e) Build understanding of place value (ones, tens).
 - f) Estimate quantities fewer than or equal to 100.
 - g) Recognize equivalence in sets and numbers 1-99.
- 1.02 Use groupings of 2's, 5's, and 10's with models and pictures to count collections of objects.
- 1.03 Develop fluency with single-digit addition and corresponding differences using strategies such as modeling, composing and decomposing quantities, using doubles, and making tens.
- 1.04 Create, model, and solve problems that use addition, subtraction, and fair shares (between two or three).

COMPETENCY GOAL 2: The learner will use non-standard units of measure and tell time.

Objectives

- 2.01 For given objects:
 - a) Select an attribute (length, capacity, mass) to measure (use non-standard units).
 - b) Develop strategies to estimate size.
 - c) Compare, using appropriate language, with respect to the attribute selected.
- 2.02 Develop an understanding of the concept of time.
 - a) Tell time at the hour and half-hour.
 - b) Solve problems involving applications of time (clock and calendar).

COMPETENCY GOAL 3: The learner will identify, describe, draw, and build basic geometric figures.

Objectives

- 3.01 Identify, build, draw and name parallelograms, squares, trapezoids, and hexagons.
- 3.02 Identify, build, and name cylinders, cones, and rectangular prisms.
- 3.03 Compare and contrast geometric figures.
- 3.04 Solve problems involving spatial visualization.

COMPETENCY GOAL 4: The learner will understand and use data and simple probability concepts.

Objectives

- 4.01 Collect, organize, describe and display data using line plots and tallies.
- 4.02 Describe events as certain, impossible, more likely or less likely to occur.

COMPETENCY GOAL 5: The learner will demonstrate an understanding of classification and patterning.

Objectives

- 5.01 Sort and classify objects by two attributes.
- 5.02 Use Venn diagrams to illustrate similarities and differences in two sets.
- 5.03 Create and extend patterns, identify the pattern unit, and translate into other forms.

Grade 2

Major Concepts/Skills

- Number sense 0-999
- Place value
- Addition and subtraction of multi-digit numbers
- Length, time
- Symmetry and congruence
- Pictographs
- Probability experiments
- Number sentences
- Students will solve relevant and authentic problems using appropriate technology and apply these concepts as well as those developed in earlier years

Concepts/Skills to Maintain

- Patterns
- Sort and classify
- Line plots, tallies

Strands: Number and Operations, Measurement, Geometry, Data Analysis and Probability, Algebra

COMPETENCY GOAL 1: The learner will read, write, model, and compute with whole numbers through 999.

Objectives

- 1.01 Develop number sense for whole numbers through 999.
- a) Connect model, number word, and number using a variety of representations.
 - b) Read and write numbers.
 - c) Compare and order.
 - d) Rename.
 - e) Estimate.
 - f) Use a variety of models to build understanding of place value (ones, tens, hundreds).

- 1.02 Use area or region models and set models of fractions to explore part-whole relationships in contexts.
 - a) Represent fractions (halves, thirds, fourths) concretely and symbolically.
 - b) Compare fractions (halves, thirds, fourths) using models.
 - c) Make different representations of the same fraction.
 - d) Combine fractions to describe parts of a whole.
- 1.03 Create, model, and solve problems that involve addition, subtraction, equal grouping, and division into halves, thirds, and fourths (record in fraction form).
- 1.04 Develop fluency with multi-digit addition and subtraction through 999 using multiple strategies.
 - a) Strategies for adding and subtracting numbers.
 - b) Estimation of sums and differences in appropriate situations.
 - c) Relationships between operations.
- 1.05 Create and solve problems using strategies such as modeling, composing and decomposing quantities, using doubles, and making tens and hundreds.
- 1.06 Define and recognize odd and even numbers.

COMPETENCY GOAL 2: The learner will recognize and use standard units of metric and customary measurement.

Objectives

- 2.01 Estimate and measure using appropriate units.
 - a) Length (meters, centimeters, feet, inches, yards).
 - b) Temperature (Fahrenheit).
- 2.02 Tell time at the five-minute intervals.

COMPETENCY GOAL 3: The learner will perform simple transformations.

Objectives

- 3.01 Combine simple figures to create a given shape.
- 3.02 Describe the change in attributes as two- and three-dimensional figures are cut and rearranged.
- 3.03 Identify and make:
 - a) Symmetric figures.
 - b) Congruent figures.

COMPETENCY GOAL 4: The learner will understand and use data and simple probability concepts.

Objectives

- 4.01 Collect, organize, describe and display data using Venn diagrams (three sets) and pictographs where symbols represent multiple units (2's, 5's, 10's).
- 4.02 Conduct simple probability experiments; describe the results and make predictions.

COMPETENCY GOAL 5: The learner will recognize and represent patterns and simple mathematical relationships.

Objectives

- 5.01 Identify, describe, translate, and extend repeating and growing patterns.
- 5.02 Write addition and subtraction number sentences to represent a problem; use symbols to represent unknown quantities.