

# Mathematics

## Grade 2



### QUARTER 1

#### Processes of Mathematics

*(These processes are the structure for delivery of mathematics content objectives.)*

Objectives – The students will be able to:

- a. Select and apply appropriate strategies to solve a problem. (Problem Solving) (3.7.A.1.a-h)
- b. Justify solutions to problems with logic and evidence. (Reasoning and Proof) (3.7.B.1.a-d)
- c. (Representation): Represent mathematical concepts in a variety of ways including visual, concrete, and abstract. (Representation)
- d. Write about and discuss mathematical concepts. (Communication) (3.7.C.1.a-h)
- e. Connect mathematical concepts to related concepts and/or connect mathematical concepts to real-world applications. (Connections) (3.7.D.1.a-d)

#### Computational Fluency (Basic Facts, Strategies At Work, 3)

- a. Apply invented and acquired strategies to recall basic facts that add 10 and subtract 10. (2.6.C.1.a, 2.6.C.1.g)

#### Algebra, Patterns, and Functions

Objectives - The students will be able to:

- a. Represent and analyze repeated patterns. (2.1.A.2.b)
- b. Transfer a repeating pattern from one medium to two different media. (2.1.A.2.c)
- c. Represent and analyze numeric patterns using skip counting forward and backward by multiples of 2, 5, 10, 25, and 100, starting with any whole number to 1,000 using manipulatives and/or the hundreds chart. (2.1.A.1.a)
- d. Represent and analyze numeric patterns using skip counting by multiples of 3 or 4 starting with 0, 1, 2, 3 or 4 and using whole numbers 0-30. (2.1.A.1.b)
- e. Represent and analyze growing patterns using symbols, shapes, designs, and pictures. (2.1.A.2.a)

#### Number Relationships and Computation (Place Value)

Objectives - The students will be able to:

- a. Read, write, and represent whole numbers using models, symbols, and words through 1,000. (2.6.A.1.e)
- b. Identify place value and state the value of each digit in a given numeral through 1,000. (2.6.A.1.g)
- c. State the number that comes before and after a given whole number or between two whole numbers.
- d. Represent numerals up to 500 on a number line to show number relationships. (2.1.C.1.a)
- e. Identify numbers as odd or even with and without concrete models.
- f. Use concrete materials to compose and decompose quantities up to 1,000 using various combinations and multiple representations. (2.1.C.1.b) – Make this a clarifying example for objective A

- g. Express whole numbers up to 1,000 in expanded form. (2.6.A.1.f)
- h. Compare and order whole numbers up to 1,000 using words and relational symbols (<, >, =). (2.6.A.1.h)
- i. Develop a sense of the size of a number in relation to other numbers. (2.6.A.1.b)
- j. Use the numbers 10, 50, and 100 as anchors in relationship to other numbers. (2.6.A.1.c, 2.6.A.1.d)
- k. Estimate quantities up to 100 using a reference point such as 0 and the terminology "about." (2.6.A.1.i)

### **Number Relationships and Computation (Addition/Subtraction of Whole Numbers)**

Objectives - The students will be able to:

- a. Explain the meaning of the equal sign in a number sentence.
- b. Apply the relationship of addition and subtraction to fact families. (2.6.C.1.a)
- c. Add no more than 3 whole number addends with no more than 2 digits in each addend and a sum of no more than 100 (2.6.C.1.b).
- d. Add two 3-digit numbers with regrouping.
- e. Solve a given word problem based on addition situations and describe the results using pictures, numbers, and/or words. (2.6.C.1.d)
- f. Solve subtraction problems, which involve removal or comparison between numbers, or the missing element (addend).

## **QUARTER 2**

### **Processes of Mathematics**

*(These processes are the structure for delivery of mathematics content objectives.)*

Objectives – The students will be able to:

- a. Select and apply appropriate strategies to solve a problem. (Problem Solving) (3.7.A.1.a-h)
- b. Justify solutions to problems with logic and evidence. (Reasoning and Proof) (3.7.B.1.a-d)
- c. (Representation): Represent mathematical concepts in a variety of ways including visual, concrete, and abstract. (Representation)
- d. Write about and discuss mathematical concepts. (Communication) (3.7.C.1.a-h)
- e. Connect mathematical concepts to related concepts and/or connect mathematical concepts to real-world applications. (Connections) (3.7.D.1.a-d)

### **Computational Fluency (Basic Facts, Strategies At Work, 3)**

Objectives - The students will be able to:

- a. Apply invented and acquired strategies to recall basic facts that add by making ten and some more. (2.6.C.1.a)
- b. Apply invented and acquired strategies to recall basic facts that subtract by making ten and some more. (2.6.C.1.a)

### **Statistics (Analyze and Interpret Data)**

Objectives - The students will be able to:

- a. Analyze and interpret data in oral and in written form. (2.4.B.1.a)
- b. Collect data on tables, record results using tally marks with gate counting and or numbers. (2.4.A.1.a, 2.4.A.1.b)

- c. Describe, interpret, and compare data from pictographs, using scales of 1:1 and 2:1. (2.4.B.1.b)
- d. Describe, interpret, and compare single bar graphs in vertical and horizontal format. (2.4.B.1.c)

## Geometry

Objectives - The students will be able to:

- a. Identify and describe two-dimensional figures (triangle, circle, square, rectangle, rhombus, trapezoid, octagon, and hexagon) by sorting and classifying their attributes. (2.2.A.1.b)
- b. Identify and describe sides and corners of two-dimensional figures. (2.2.A.1.a)
- c. Combine and subdivide squares, triangles, and rectangles to identify a new shape. (2.2.A.1.d)
- d. Describe and classify three-dimensional figures including rectangular prism, sphere, cube, pyramid, cone, and cylinder.
- e. Compare two-dimensional and three-dimensional shapes such as a square to a cube, square and a rectangle to a rectangular prism. (2.2.B.1.a)
- f. Sketch or draw triangles, circles, squares, rectangles, rhombi, trapezoids, and hexagons using tools and or technology. (2.2.C.1.c)
- g. Describe congruency of simple geometric figures having the same size and shape. (2.2.D.1.a)
- h. Apply visualization and spatial reasoning in activities (using tangrams, pattern blocks, pentominoes). (2.2.E.1.a)
- i. Identify and demonstrate slides, flips, and turns using pictures, manipulatives or other simple objects. (2.2.E.1.b)
- j. Demonstrate symmetry in basic shapes and pictures by drawing 2 lines of symmetry. (2.2.E.1.b)

## Measurement

Objectives - The students will be able to:

- a. Estimate, measure, and record length, weight, and capacity using nonstandard units.
- b. Estimate, measure, and record in standard units of length, (inches, feet, yards, centimeters, meters) using the appropriate tool/unit. (2.3.B.1.a)
- c. Recognize equivalent units of measurements. (2.3.C.2.A)
- d. Estimate and count linear units around a picture or geometric shape to find the perimeter. (2.3.C.1.A)
- e. Estimate and count square units to find the area of a geometric shape.
- f. Estimate, measure, and record in standard units of weight (to the nearest gram, ounce, and pound, kilogram) using the appropriate tool/unit. (2.3.A.1.d, 2.3.A.1.e)
- g. Estimate, measure, and record capacity (cups, pints, quarts, gallons, and liters) using the appropriate tool/unit. (2.3.B1.b)
- h. Select and use appropriate units of measure for length, height, weight, and capacity. (2.3.b.1.d)
- i. Read a thermometer to the nearest 5° (°F, Fahrenheit. and °C) on a thermometer with a scale of 10 degree intervals. (2.3.A.1.c)

## QUARTER 3

### Processes of Mathematics

*(These processes are the structure for delivery of mathematics content objectives.)*

Objectives – The students will be able to:

- a. Select and apply appropriate strategies to solve a problem. (Problem Solving) (3.7.A.1.a-h)
- b. Justify solutions to problems with logic and evidence. (Reasoning and Proof) (3.7.B.1.a-d)
- c. (Representation): Represent mathematical concepts in a variety of ways including visual, concrete, and abstract. (Representation)
- d. Write about and discuss mathematical concepts. (Communication) (3.7.C.1.a-h)
- e. Connect mathematical concepts to related concepts and/or connect mathematical concepts to real-world applications. (Connections) (3.7.D.1.a-d)

### Computational Fluency (Basic Facts, Strategies At Work, 3)

Objectives - The students will be able to:

- a. Apply invented and acquired strategies to recall basic facts that add near doubles. (2.6.C.1.a)
- b. Apply invented and acquired strategies to recall basic facts that subtract near half. (2.6.C.1.a)

### Number Relationships and Computation (Addition/Subtraction of Whole Numbers)

Objectives - The students will be able to:

- a. Use concrete materials to compose and decompose quantities up to 1,000 using various combinations (*review of Quarter 1 Place Value objectives*)
- b. Subtract whole numbers with regrouping using no more than 3-digit whole numbers using a variety of methods. (2.6.C.1.c)
- c. Determine the reasonableness of sums and differences. (2.6.C.2.a)
- d. Solve given word problems based on addition and subtraction situations (2.6.C.1.d)
- e. Write word problems for addition and subtraction situations. (2.6.C.1.d)

### Number Relationships and Computation (Fractions)

Objectives - The students will be able to:

- a. Read, write, and represent halves, thirds, fourths, sixths, and eighths of a region and of a set using models and symbols. (2.6.A.2.a, 2.6.A.2.b)
- b. Match equivalent fractions for one whole.
- c. Match equivalent fractions for one-half.

### Number Relationships and Computation (Money)

Objectives - The students will be able to:

- a. Identify the equivalent relationships of the number of pennies, nickels, dimes, quarters, and half-dollars to the value of a dollar. (2.6.A.1.b)
- b. Identify different combinations of coins equal to the value of a given amount. (2.6.A.1.b)
- c. Determine and record the value of a given set of money (up to \$10.00). (2.6.A.3.a)
- d. Compare the value of two sets of mixed currency up to \$10. (2.6.A.3.c)
- e. Compare the cost of different items up to \$20.00.
- f. Determine the amount of change up to \$1. (2.6.C.1.f)
- g. Solve problems involving addition and subtraction of money up to \$5.00 and record money amounts in dollar and cents notation.

## Measurement (Time)

Objectives - The students will be able to:

- Identify the number of days in each month.
- Tell time to the nearest 5 minute intervals. (2.3.A.1.b)
- Write time for the quarter hour and half-hour.
- Determine elapsed time to the hour.
- Solve problems involving time and elapsed time.

## QUARTER 4

### Processes of Mathematics

*(These processes are the structure for delivery of mathematics content objectives.)*

Objectives – The students will be able to:

- Select and apply appropriate strategies to solve a problem. (Problem Solving) (3.7.A.1.a-h)
- Justify solutions to problems with logic and evidence. (Reasoning and Proof) (3.7.B.1.a-d)
- (Representation): Represent mathematical concepts in a variety of ways including visual, concrete, and abstract. (Representation)
- Write about and discuss mathematical concepts. (Communication) (3.7.C.1.a-h)
- Connect mathematical concepts to related concepts and/or connect mathematical concepts to real-world applications. (Connections) (3.7.D.1.a-d)

### Computational Fluency

Objectives - The students will be able to:

- Apply invented and acquired strategies to recall basic facts add using helping facts. (2.6.C.1.a)
- Apply invented and acquired strategies to recall basic facts that subtract using helping facts. (2.6.C.1.a)

### Algebra, Patterns, and Functions

Objectives - The students will be able to:

- Recognize a function table as a relationship between numbers. (2.1.A.1.c)
- Complete a function table when given a one-operation rule (addition or subtraction of whole numbers).
- Represent numeric quantities using operational symbols (+ and -) of whole numbers to 25. (2.1.A.1.d)
- Represent numeric quantities using appropriate relational symbols (<, >, =) and operational symbols (+ and -) of whole numbers to 100. (2.1.B.2.a)
- Solve an addition problem with missing elements in any of the three positions: result unknown, change unknown, and start unknown. (2.1.B.2.a)

### Probability

Objectives - The students will be able to:

- Identify possible outcomes that make up the sample space. (2.5.A.1.a)
- Classify events as possible or impossible, likely, or unlikely, equally likely, more likely, and less likely (using spinners, number cubes, etc.).

## **Statistics (Organizing and Displaying Data)**

Objectives - The students will be able to:

- a. Describe, interpret, and compare data (in oral and written forms) contained in tables (ex: tables, scale pictographs, bar graphs, and line plots).
- b. Organize and display data using tables, scale pictographs (2:1) and bar graphs (vertical and horizontal). (2.4.A.1.c)
- c. Organize and display data to make single bar graphs using a variety of categories and intervals of 1, 2, 5, and 10 in vertical and horizontal format. (2.4.A.1.d)
- d. Describe, interpret, and compare data contained in line plots.

## **Number Relationships and Computation (Multiplication/Division of Whole Numbers)**

Objectives - The students will be able to:

- a. Identify multiplication as repeated addition.
- b. Identify and construct an array to represent a multiplication sentence. (2.6.C.1.h)
- c. Explore the operation of division: the grouping process (determining how many groups) and the sharing process (determining how many in each group). (2.6.C.1.i)
- d. Identify the relationship between multiplication and division.