

# Mathematics

## Grade 4

### 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. 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 2.1)

Objective - The students will be able to:

- a. Apply invented and acquired strategies to recall basic facts that multiply by 0, 1, and 10.
- b. Apply invented and acquired strategies to recall basic facts that divide by 1 and 10.
- c. Apply invented and acquired strategies to recall basic facts that multiply by 2.
- d. Apply invented and acquired strategies to recall basic facts that divide by 2.

#### Algebra, Patterns, and Functions

Objectives - The students will be able to:

- a. Identify, describe, and extend a variety of non-numeric patterns (symbols, shapes, designs, and pictures). (4.1.A.2.c)
- b. Identify, describe, extend, and create a variety of numeric patterns (multiples including 2's, 3's, 4's, 5's, 10's, 25's). (4.1.A.1.a)
- c. Generate a rule for a given repeating pattern. (4.1.A.2.a)
- d. Generate a rule for the next level of a growing pattern. (4.1.A.2.b)
- e. Write and identify expressions to represent numeric quantities using operational symbols (+, -,  $\times$ ,  $\div$ ) with no remainders. (4.1.B.1.a)
- f. Complete a function table when given a rule. (4.1.A.1.c)
- g. Find the unknown in an equation with one operation (+, -,  $\times$ ,  $\div$ ). (4.1.B.2b)

## **Number Relationships and Computation (Whole Numbers)**

Objectives - The students will be able to:

- a. Identify place value and state the value of each digit in a given numeral to 1,000,000. (4.6.A.1.a, 4.6.A.1.c)
- b. Read, write, and compare (using  $<$ ,  $>$ ,  $=$ ,  $\neq$ ) numerals to 1,000,000. (4.1.B.2.d)
- c. Write numbers in expanded notation (form).
- d. Add and subtract four-digit numbers presented horizontally and vertically with regrouping. (4.6.C.1.a, 4.6.C.1.b)
- e. Determine the approximate sum and difference of two numbers by rounding to the nearest ten, hundred, and thousand. (reasonableness of answers). (4.6.C.2.a)
- f. Write or solve a problem (including multi-step problems) that involve addition and subtraction of whole numbers.

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

Objectives - The students will be able to:

- a. Analyze, interpret, and make predictions (in oral and written forms) based on tables, bar graphs (vertical and horizontal), line plots, and line graphs. (4.4.B.1.a, 4.4.B.1.b)
- b. Describe a set of data by determining the median, mode, and range. (4.4.B.2.a, 4.4.B.2.b)

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

Objectives - The students will be able to:

- a. Apply the identity, commutative, and associative properties to multiplication facts. (4.6.B.1.C)
- b. Identify multiples of given numbers.
- c. Multiply one-digit numbers by multiples of 10, 100, and, 1000, using mental computation.
- d. Multiply a two-digit number by a two-digit number with regrouping. (4.6.c.1.c)
- e. Determine the approximate product of two numbers. (4.6.C.2.b)

## **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**

Objective - The students will be able to:

- a. Apply invented and acquired strategies to recall basic facts that multiply by 5.
- b. Apply invented and acquired strategies to recall basic facts that divide by 5.
- c. Apply invented and acquired strategies to recall basic facts that multiply by 9.
- d. Apply invented and acquired strategies to recall basic facts that divide by 9.

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

Objectives - The students will be able to:

- a. Use divisibility rules to determine if numbers are divisible by 2, 3, 5, and 10. (4.6.B.1.a)
- b. Divide a two- or three-digit number by a one-digit divisor with remainders. (4.6.C.1.d) (add approximate quotient to clarifying examples)
- c. Interpret the remainder for a given situation.
- d. Represent the remainder in a quotient as a fraction.

### **Number Relationships and Computation (Fractions)**

Objectives - The students will be able to:

- a. Read and write a fraction for a given region or part of a set and identify the numerator and denominator. (4.6.A.2.a, 4.6.A.2.b)
- b. Identify a fraction as greater than, less than, or equal to one.
- c. Estimate the value of a fraction as being close to zero, one-half, or one.
- d. Compare and order fractions or mixed numbers using the symbols  $<$ ,  $>$ , or  $=$  and locate their positions on a number line. (4.6.A.2.g)
- e. Represent equivalent fractions using models and drawings. (4.6.A.1.c)
- f. Simplify fractions to lowest terms.
- g. Rename improper fractions as mixed numerals and mixed numerals as improper fractions. (4.6.A.1.d)
- h. Represent addition and subtraction of like fractions using manipulatives and visual representations. (4.6.C.1.e)
- i. Add and subtract fractions with like denominators with sums greater than one and differences less than one. (4.6.C.1.e)

## **Probability**

Objectives - The students will be able to:

- a. Find the probability of one event and express the probability as a fraction. (4.6.C.1.e)
- b. Describe the likelihood of an event by using the terms certain, impossible, more likely, less likely, or equally likely.

## **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**

Objective - The students will be able to:

- a. Apply invented and acquired strategies to recall basic facts use helping facts to multiply.
- b. Apply invented and acquired strategies to recall basic facts that use helping facts to divide.

### **Number Relationships and Computation (Decimals)**

Objectives - The students will be able to:

- a. Read, write, and represent a decimal through hundredths. (4.6.A.2.e)
- b. State the value of each digit in a given decimal through hundredths.
- c. Identify the relationship between common fractions and decimals.
- d. Identify equivalent decimals through hundredths.
- e. Compare (using  $>$ ,  $<$ ,  $=$ ,  $\neq$ ) and order decimals through hundredths and locate their positions on a number line. (4.1.C.1.c, 4.6.A.2.h)
- f. Estimate the value of a decimal as being close to zero, one-half, or one.
- g. Add and subtract decimals through hundredths. (4.6.C.1.f, 4.6.C.1.g)
- h. Solve word problems (addition and subtraction) involving money in real life situations including making change. (4.6.A.3.b)

## Geometry

Objectives - The students will be able to:

- a. Identify, describe, draw, and label points, lines, line segments, and rays.
- b. Identify and construct intersecting, parallel, and perpendicular lines and line segments. (4.2.A.1.c)
- c. Identify, classify, draw, and label angles as acute, obtuse, right, and straight. (4.2.A.1.a, 4.2.A.1.b, 4.2.C.1.a, 4.3.B.2.a)
- d. Identify and name quadrilaterals (square, rectangle, parallelogram, rhombus, and trapezoid) and polygons to decagon.
- e. Analyze the properties of solid figures and identify cones, cylinders, prisms and pyramids. (4.2.B.1.a)
- f. Describe solid geometric figures by the number of edges, vertices, and faces including triangular prisms, triangular pyramids, rectangular prisms, and rectangular pyramids. (4.2.B2.2.a)
- g. Identify, describe, and model transformations: translations (slides), reflections (flips), and rotations (turns). (4.2.E.1.a)
- h. Identify and describe congruency of geometric figures and real-world objects. (4.2.D.1.a)
- i. Identify, describe, and represent symmetry in geometric figures with multiple lines of symmetry.
- j. Identify the ordered pair for a point and locate the point for an ordered pair in the first quadrant of a coordinate grid. (4.1.C.1.b)

## QUARTER 4

### 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 2.1)

Objective - The students will be able to:

- a. Apply invented and acquired strategies to recall basic facts that use helping facts to multiply (continued from 3<sup>rd</sup> quarter).
- b. Apply invented and acquired strategies to recall basic facts that use helping facts to divide (continued from 3<sup>rd</sup> quarter).

## **Measurement**

Objectives - The students will be able to:

- a. Estimate, measure, and record in standard units of length (including width, height, and distance) (inches [to 1/4 inch increments], feet, yards, centimeters, meters) using the appropriate tool/unit. (4.3.A.1.a, 4.3.B.1.a)
- b. Estimate and determine the perimeter of polygons and real world objects. (4.3.C.1.a)
- c. Estimate and determine the area of regular polygons by using the formula ( $A = L \times W$ ) and irregular polygons by counting square units.
- d. Estimate, measure, read, and record in standard units of weight (grams, ounces, and pounds) using the appropriate tool/unit. (4.3.A.1.c)
- e. Estimate, measure, read, and record capacity (cups, pints, quarts, gallons, liters and milliliters) using the appropriate tool/unit.
- f. Determine and use equivalent units within the same measurement system. (4.3.C.2.b, 4.3.C.2.c, 4.3.C.2.d)
- g. Determine volume of regular and irregular three-dimensional figures by counting cubic units using manipulatives.
- h. Determine elapsed time and end time. (4.3.C.1.c)

## **Number Relationships and Computation (Ratios and Percent)**

Objectives - The students will be able to:

- a. Compare two quantities using a ratio.
- b. Calculate equal ratios for two given quantities.
- c. Identify percent and the symbol and name everyday uses for percent.
- d. Identify and describe the relationships of fractions, decimals, and percent.

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

Objectives - The students will be able to:

- a. Collect, organize and display data using line plots, line graphs, and stem and leaf plots. (4.4.A.1.b)
- b. Analyze, interpret, and make predictions (in oral and written forms) based on tables, single and double bar graphs, single and double line graphs, and stem and leaf plots. (4.4.A.1.a)
- c. Determine the mode, median, and range for a given set of data.
- d. Determine the average for a given set of numbers using manipulatives. (4.3.2.B)
- e. Interpret a circle graph. (4.4.B.2.a)