

# Tennessee Mathematics Standards 2009-2010 Implementation

## Grade One Mathematics

### Standard 1 – Mathematical Processes

#### Grade Level Expectations:

- GLE 0106.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.
- GLE 0106.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.
- GLE 0106.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.
- GLE 0106.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.
- GLE 0106.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.
- GLE 0106.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.
- GLE 0106.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.
- GLE 0106.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.

#### Checks for Understanding (Formative/Summative Assessment):

- ✓ 0106.1.1 Describe the relationship between days and months.
- ✓ 0106.1.2 Read and write time to the hour, half-hour, and quarter-hour.
- ✓ 0106.1.3 Compare units of time.
- ✓ 0106.1.4 Count the value of a set of coins up to fifty cents.
- ✓ 0106.1.5 Use a thermometer to measure temperature.
- ✓ 0106.1.6 Recognize scales as a way of measuring weight.
- ✓ 0106.1.7 Apply spatial sense to recreate a figure from memory.
- ✓ 0106.1.8 Recognize the “word clues” and mathematical symbols for addition and subtraction.
- ✓ 0106.1.9 Use age-appropriate books, stories, and videos to convey ideas of mathematics.
- ✓ 0106.1.10 Match the spoken, written, concrete, and pictorial representations of whole numbers, one-half, and one-fourth.

### Standard 2 – Number and Operations

#### Grade Level Expectations:

- GLE 0106.2.1 Understand and use number notation and place value to 100.
- GLE 0106.2.2 Compare and order whole numbers to 100.
- GLE 0106.2.3 Develop strategies for learning basic addition facts and related subtraction facts.
- GLE 0106.2.4 Use multiple representations (including groups of ten) to model two-digit addition and subtraction.

### Checks for Understanding (Formative/Summative Assessment):

- ✓ 0106.2.1 Read and write numerals up to 100.
- ✓ 0106.2.2 Write numbers up to 10 in words.
- ✓ 0106.2.3 Count forward and backward by ones beginning with any number less than 100.
- ✓ 0106.2.4 Skip count by twos, fives, and tens.
- ✓ 0106.2.5 Order and compare (less than, greater than, or equal to) whole numbers to 100.
- ✓ 0106.2.6 Recognize the place value of numbers (tens, ones).
- ✓ 0106.2.7 Develop fluency with addition and subtraction facts of sums through ten.
- ✓ 0106.2.8 Relate “counting on” and “counting back” to addition and subtraction and understand them as inverse operations.
- ✓ 0106.2.9 Add three single-digit numbers.
- ✓ 0106.2.10 Use models (such as discrete objects, connecting cubes, and number lines) to represent “part-whole,” “adding to,” “taking away from,” and “comparing to” situations to develop understanding of the meaning of addition and subtraction.
- ✓ 0106.2.11 Recognize the “part-whole” relationship in representations of basic fractions such as  $\frac{1}{2}$  and  $\frac{1}{4}$ .
- ✓ 0106.2.12 Use various models to develop strategies for solving arithmetic problems.
- ✓ 0106.2.13 Solve problems that require addition and subtraction of numbers through 100.
- ✓ 0106.2.14 Use composition and decomposition of numbers to identify and discuss patterns.
- ✓ 0106.2.15 Represent whole numbers between 10 and 100 in groups of tens and ones.
- ✓ 0106.2.16 Represent whole numbers up to 100 on a number line.
- ✓ 0106.2.17 Use the number line to create visual representations of sequences (such as even numbers, tens, multiples of five).

## Standard 3 – Algebra

### Grade Level Expectations:

- GLE 0106.3.1 Identify, describe, and extend simple number patterns to develop strategies for adding and subtracting whole numbers.
- GLE 0106.3.2 Understand that addition and subtraction are inverse operations.
- GLE 0106.3.3 Extend the strategies for basic facts to include other properties of number and operations.

### Checks for Understanding (Formative/Summative Assessment):

- ✓ 0106.3.1 Find repeating patterns on the number line, addition table, and hundreds chart.
- ✓ 0106.3.2 Determine a reasonable next term in a given sequence and describe the rule.
- ✓ 0106.3.3 Use objects to illustrate the commutative property with basic facts and show that subtraction is not commutative.
- ✓ 0106.3.4 Demonstrate understanding of the basic equation  $a + b = c$  by using objects to illustrate the number sentences (fact families) associated with any particular sum.
- ✓ 0106.3.5 Use various strategies to find unknowns in problems involving addition and subtraction.
- ✓ 0106.3.6 Use objects to demonstrate the inverse relationship between addition and subtraction.
- ✓ 0106.3.7 Use the inverse relation between addition and subtraction to check arithmetic problems.
- ✓ 0106.3.8 Determine whether a number is odd or even by pairing objects.
- ✓ 0106.3.9 Recognize that zero is the identity element for addition.

## Standard 4 – Geometry and Measurement

### Grade Level Expectations:

- GLE 0106.4.1 Recognize, describe, and draw geometric figures.
- GLE 0106.4.2 Compose and decompose geometric shapes.

GLE 0106.4.3 Use non-standard units in linear measurement.

**Checks for Understanding (Formative/Summative Assessment):**

- ✓ 0106.4.1 Recognize and describe similarities and differences between 2-dimensional figures (geometric attributes and properties).
- ✓ 0106.4.2 Recognize 2- and 3-dimensional figures from different perspectives and orientations.
- ✓ 0106.4.3 Model part-whole relationships and properties of plane and solid figures by combining two or more shapes to make a larger shape or by breaking apart an object into its smaller shapes.
- ✓ 0106.4.4 Identify 2-dimensional shapes as faces of 3-dimensional figures.
- ✓ 0106.4.5 Estimate and measure length using non-standard units (counting by using groups of tens and ones) to represent addition.
- ✓ 0106.4.6 Recognize the essential role of units in measurement, and understand the difference between standard and non-standard units.
- ✓ 0106.4.7 Understand and use comparative words such as long, longer, longest; short, shorter, shortest; tall, taller, tallest; high, higher, highest.

## **Standard 5 – Data, Probability and Statistics**

**Grade Level Expectations:**

GLE 0106.5.1 Use various representations to display and compare data.

**Checks for Understanding (Formative/Summative Assessment):**

- ✓ 0106.5.1 Represent measurements and discrete data using concrete objects, picture graphs, and bar graphs.
- ✓ 0106.5.2 Represent data in both horizontal and vertical form.
- ✓ 0106.5.3 Display data using appropriate titles and labels.
- ✓ 0106.5.4 Count and compare collected data.