

## THIRD GRADE - MATHEMATICS STANDARDS AND STUDENT EXPECTATIONS

**Through the use of the processes of problem solving, reasoning and proof, communication, connections, and representation, the student will acquire knowledge of the following content standards:**

**A. NUMBER AND OPERATIONS STANDARD**— *The student should be able to understand numbers, ways of representing numbers, relationships among numbers, and number systems; understand meanings of operations and how they relate to one another; compute fluently and make reasonable estimates.*

- 3.A.1 Identify patterns on the hundreds chart and beyond.
- 3.A.2 Count by 10's or 100's from a specified number.
- 3.A.3 Read, write, and compare whole numbers up to four digits.
- 3.A.4 Find equivalent names for numbers.
- 3.A.5 Identify place value to four digits.
- 3.A.6 Use single-digit addition facts and the related subtraction facts fluently and efficiently.
- 3.A.7 Solve addition and subtraction multi-digit number stories.
- 3.A.8 Demonstrate focus algorithm for addition and subtraction. (partial-sum addition and trade-first subtraction)
- 3.A.9 Determine and apply the most appropriate and efficient computational procedures and tools (estimation, mental math, calculator, or paper/pencil) to solve problems..
- 3.A.10 Know and understand multiplication and division facts. (0,1,2,5, and 10's)
- 3.A.11 Solve equal grouping and equal sharing number stories.
- 3.A.12 Identify fractions as parts of whole, as part of a set, and as numbers.
- 3.A.13 Read, write, and model simple fractions.

**B. PATTERNS AND ALGEBRA STANDARD** —*The student should be able to understand patterns, relations, and functions; represent and analyze mathematical situations and structures using algebraic symbols; use mathematical models to represent and understand quantitative relationships; analyze change in various contexts.*

- 3.B.1 Identify, describe, and extend geometric and numeric patterns.
- 3.B.2 Use patterns and relationships between operations to solve problems.
- 3.B.3 Represent and record patterns using tools such as tables and graphs.

**C. GEOMETRY AND SPATIAL SENSE** —*The students should be able to analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships; specify locations and describe spatial relationships using coordinate geometry and other representational systems; apply transformations and use symmetry to analyze mathematical situations; use visualization, spatial reasoning, and geometric modeling to solve problems.*

- 3.C.1 Identify 2-Dimensional and 3-Dimensional shapes.
- 3.C.2 Identify symmetric figures and draw lines of symmetry.

**D. MEASUREMENT STANDARD** — *The student should be able to understand measurable attributes of objects and the units, systems, and processes of measurement; apply appropriate techniques, tools, and formulas to determine measurements*

- 3.D.1 Measure length to the nearest centimeter or  $\frac{1}{2}$ ".
- 3.D.2 Tell and show times to the nearest minute.
- 3.D.3 Estimate and find the perimeter of shapes.
- 3.D.4 Calculate the values of combinations of bills and coins and write the total in dollars-and-cents notation.

**E. DATA ANALYSIS, STATISTICS, AND PROBABILITY STANDARD**— *The student should be able to formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them; select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on data; understand and apply basic concepts of probability.*

- 3.E.1** Collect, organize, and interpret real data using bar graphs and frequency tables.

## **FOURTH GRADE- MATHEMATICS STANDARDS AND STUDENT EXPECTATIONS**

**Through the use of the processes of problem solving, reasoning and proof, communication, connections, and representation, the student will acquire knowledge of the following content standards:**

**A. NUMBER AND OPERATIONS STANDARD** – *The student should be able to understand numbers, ways of representing numbers, relationships among numbers, and number systems; understand meanings of operations and how they relate to one another; compute fluently and make reasonable estimates.*

- 4.A.1 Identify and use characteristics of numbers to solve problems: odd, even, factor, multiple.
- 4.A.2 Identify and use landmark numbers (multiples of 10 to 10,000) to compare and order quantities.
- 4.A.3 Identify the “whole” for fractions and fractional parts of a region or set.
- 4.A.4 Read and write numbers to 100,000,000 and relate the place values to the meaning of the numbers.
- 4.A.5 Read, write, and understand fractions and decimals (tenths and hundredths).
- 4.A.6 Demonstrate the meaning of multiplication and division using fact families, sets, partial products and repeated addition or repeated subtraction for products up to 100.
- 4.A.7 Develop fluency (4 second recall) with single-digit multiplication and division facts.
- 4.A.8 Add and subtract money.
- 4.A.9 Estimate and calculate whole-number addition and subtraction problems using the focus algorithm.
- 4.A.10 Estimate and calculate whole-number multiplication and division problems using the focus algorithm.
- 4.A.11 Use single-digit basic facts (+, -, x, /) fluently (4 second recall) and efficiently.
- 4.A.12 Determine and apply the most appropriate and efficient computational procedures and tools (estimation, mental math, calculator, or paper/pencil) to solve problems.

**B. PATTERN AND ALGEBRA STANDARD** – *The student should be able to understand patterns, relations, and functions; represent and analyze mathematical situations and structures using algebraic symbols; use mathematical models to represent and understand quantitative relationships; analyze change in various contexts.*

- 4.B.1 Identify, describe, and extend numeric and geometric patterns including growing, shrinking, and symmetrical patterns.
- 4.B.2 Solve number problems with an unknown quantity.
- 4.B.3 Represent and record patterns using tools such as tables and graphs.

**C. GEOMETRY AND SPATIAL SENSE** – *The students should be able to analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships; specify locations and describe spatial relationships using coordinate geometry and other representational systems; apply transformations and use symmetry to analyze mathematical situations; use visualization, spatial reasoning, and geometric modeling to solve problems.*

- 4.C.1 Describe, classify, and create polygons based on their properties.
- 4.C.2 Identify lines of symmetry, lines of reflection, reflected figures, and figures with line symmetry.
- 4.C.3 Name, draw and label 2-Dimensional shapes and their parts.
- 4.C.4 Name, draw and label line segments, lines and rays.

**D. MEASUREMENT STANDARD** – *The student should be able to understand measurable attributes of objects and the units, systems, and processes of measurement; apply appropriate techniques, tools, and formulas to determine measurements.*

- 4.D.1 Demonstrate an awareness of measurements as approximations and understand how the tools used to measure affect the level of precision.
- 4.D.2 Identify attributes such as length, area, and volume and know the type of unit and tool needed to measure each attribute.
- 4.D.3 Select and apply appropriate standard units and tools to estimate and measure length, area, volume, weight, time, and temperature.
- 4.D.4 Determine the perimeter, area, and volume of shapes and solids by counting segments, square units, or cubic units.

**E. DATA ANALYSIS, STATISTICS, AND PROBABILITY STANDARD** – *The student should be able to formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them; select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on data; understand and apply basic concepts of probability.*

- 4.E.1 Organize and interpret data using charts, tables, and graphs.
- 4.E.2 Formulate questions to collect, organize, describe, interpret, and justify data.
- 4.E.3 Describe key features of the shape of data (minimum and maximum range).
- 4.E.4 Use the median as a landmark in describing and comparing data.

## **FIFTH GRADE - MATHEMATICS STANDARDS AND STUDENT EXPECTATIONS**

**Through the use of the processes of problem solving, reasoning and proof, communication, connections, and representation, the student will acquire knowledge of the following content standards:**

**A. NUMBER AND OPERATIONS STANDARD** – *The student should be able to understand numbers, ways of representing numbers, relationships among numbers, and number systems; understand meanings of operations and how they relate to one another; compute fluently and make reasonable estimates.*

- 5.A.1 Use characteristics of numbers correctly: odd, even, factor, multiple, prime, square.
- 5.A.2 Order and compare numbers (whole numbers, fractions, decimals)
- 5.A.3 Identify place value in numbers to millions.
- 5.A.4 Read, write and use fractions and decimals.
- 5.A.5 Use addition, subtraction, multiplication, and division to solve problems.
- 5.A.6 Compute with fractions, decimals, and percents using everyday situations.
- 5.A.7 Use estimation, mental math, calculator, and paper/pencil appropriately.

**B. PATTERN AND ALGEBRA STANDARD** – *The student should be able to understand patterns, relations, and functions; represent and analyze mathematical situations and structures using algebraic symbols; use mathematical models to represent and understand quantitative relationships; analyze change in various contexts.*

- 5.B.1 Write and solve number sentences using all four operations.
- 5.B.2 Solve equations that contain a variable.

**C. GEOMETRY AND SPATIAL SENSE** – *The students should be able to analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships; specify locations and describe spatial relationships using coordinate geometry and other representational systems; apply transformations and use symmetry to analyze mathematical situations; use visualization, spatial reasoning, and geometric modeling to solve problems.*

- 5.C.1 Use formulas to find the area of polygons and circles.
- 5.C.2 Know the properties of geometric shapes and solids.
- 5.C.3 Plot ordered pairs on a coordinate grid.

**D. MEASUREMENT STANDARD** – *The student should be able to understand measurable attributes of objects and the units, systems, and processes of measurement; apply appropriate techniques, tools, and formulas to determine measurements.*

- 5.D.1 Estimate and measure angles.
- 5.D.2 Measure length, area, weight, volume, and time using US customary and metric units.

**E. DATA ANALYSIS, STATISTICS, AND PROBABILITY STANDARD** – *The student should be able to formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them; select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on data; understand and apply basic concepts of probability.*

- 5.E.1 Collect, organize, and represent data using line plots and tables.
- 5.E.2 Interpret tables, maps, and graphs, and line plots.
- 5.E.3 Use the median, mode, mean, minimum, maximum and range to describe data.