

A Blueprint for Learning

Mathematics

Fourth Grade

The *Blueprint for Learning* is a companion document for the Tennessee Curriculum Standards which are located at www.tennessee.gov/education. Although the curriculum adopted by the State Board of Education in its entirety remains on the web for additional reference, this reformatted version makes the curriculum more accessible to classroom teachers.

Key features of the reformatted version are:

- All grades for each content area are provided in the printed manual.
- The skills within each grade are identified as to whether they are introduced, developed, or have been mastered and are now being maintained at that level.
- The skills correlating with the state criterion referenced test (CRT) are also identified for classroom instruction.
- In the Language Arts section, the assessed skills (performance indicators) are identified not only for the state's CRT in grades 3-8 but also for the writing assessment in grades 5 and 8.
- This guide makes the planning of instruction for students with varying abilities easier to accomplish.
- Teachers can plan and work together to improve school wide student achievement through curriculum integration across content areas and grade levels.
- Teachers can identify current grade level skills as well as those needed to prepare students for the next year.

Skills are coded and identified as Introduced (I), Developing (D), State CRT and Writing Assessed (A), and Mastered and Maintained (M).

- Introduced (I) skills are new skills presented at that grade level. Even though a skill is considered introduced at a grade level, some development would also occur.
- Developing (D) skills are skills that have been introduced at a previous grade level. At this stage of development the skills are being refined and expanded.
- Assessed (A) skills are those skills that are correlated to the state performance indicators for the CRT portion of the achievement test (grades 3-8) and the writing assessment (grades 5 and 8). The identified skills are formally assessed through the CRT; however, all skills are informally assessed in the classroom.
 - For the purpose of data reporting, assessed (A) skills are grouped into categories indicating related skills and knowledge. For example, grammar, mechanics, and usage are grouped together under the grammar (G) category. Each state assessed indicator included on the Blueprint carries a legend showing that it is assessed and indicating the category in which it will be reported (e.g., Assessed/Grammar=A/G).
- Mastered and Maintained (M) indicates a skill that has been introduced, developed, and assessed. Even though a skill may be formally assessed, the development and expansion of the skill still continues.

KEY

I = Introduced D = Developing A = State Assessed M = Mastered

REPORTING CATEGORY

**N = Number & Operations AT = Algebraic Thinking C = Computation R = Real World Problem Solving
DP = Data Analysis & Probability ME = Measurement G = Geometry GR = Graphs & Graphing**

**NOTE: "A" Indicates the state curriculum (CRT) assessment only.
All the skills ("I" ... "D" ... "A" ... "M") are addressed in classroom assessment.**

MATHEMATICS

Fourth Grade

NUMBER AND OPERATIONS

The student will identify, represent, order, and compare numbers; and estimate, compute, and solve problems.

Key	SPI's	Reporting Category	
A	2.1	N	Read and write numbers from hundred-thousands to hundredths.
A	1.1	N	Represent whole numbers to 9999.
A	2.2	N	Identify the place value of a given digit from hundred-thousands to hundredths.
A	1.2	N	Compare and order whole numbers to 9999 using the appropriate symbols (>, <, and =).
A	2.3	N	Identify fractions as parts of whole units, as parts of sets, as locations on number lines, and as divisions of whole numbers.
A	3.2	N	Generate equivalent forms of whole numbers, commonly used fractions, and decimals.
A	3.1	N	Represent numbers as both improper fractions and mixed numbers.
D			Use concrete or pictorial representations to compare and order commonly used fractions.
D			Use concrete and pictorial representations to compare decimals.
D			Use various models and equivalent forms to represent, order, and compare whole numbers and commonly used fractions and mixed numbers (e.g., number lines, base ten blocks, expanded notation, Venn diagrams, and hundred boards).
A	2.7	N	Represent whole numbers up to 10,000 in expanded form (1,000's + 100's + 10's + 1's).
D			Demonstrate knowledge and understanding of grade level mathematical terms.
D			Explain the relationship between addition and subtraction.
I			Explain the relationship between multiplication and division.
I			Explain how addition, subtraction, multiplication, and division affect the size and order of numbers.
D			Estimate the results of whole-number computations.
A	2.5	N	Use estimation to select a reasonable solution to a whole number computation involving addition, subtraction, or multiplication.
A	2.8	C	Add and subtract fractions with like denominators.
A	2.4	C	Multiply efficiently and accurately with single-digit whole numbers.
D			Divide efficiently and accurately with single-digit whole numbers.
A	2.6	C	Add and subtract decimals (includes monetary units).
I			Multiply decimals (includes monetary units).
I			Select appropriate methods and tools for computing with whole numbers (e.g., mental computation, estimation, calculators, paper and pencil, guess and check).
A	1.3, 3.3	C	Solve one-step real-world problems involving addition or subtraction of whole numbers and/or decimals.
A	3.3	R	Solve one-step real-world problems involving multiplication of whole numbers and/or decimals.
I			Identify missing information and/or too much information in word problems.
I			Apply logical reasoning to solve real-world problems.
D			Select the appropriate computational and operational method to solve word problems.
D			Solve story problems using whole numbers, fractions, and decimals (includes money).

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ALGEBRA

The student will analyze and use symbols to generalize patterns, use properties of operations, and analyze change in various situations.

D			Generalize and extend or complete patterns involving geometric figures or numbers.
A	2.9	AT	Extend numerical and geometric patterns.
D			Represent and analyze patterns and relationships using words, tables, and graphs.
A	2.10	AT	Determine the function rule for data in a function table.
A	3.4	AT	Apply basic function rules.
A	1.4	AT	Solve open sentences involving addition and subtraction.
A	2.122	AT	Solve open sentences involving multiplication and division.
A	2.11	AT	Connect open sentences to real-world situations.
I			Represent the idea of a variable as an unknown quantity by using a letter or a symbol.
D			Demonstrate understanding that an equation is a number sentence stating that two quantities are equal.
D			Use the commutative, associative, zero, and identity properties for addition and multiplication.
I			Investigate how a change in one variable relates to a change in a second variable.

GEOMETRY

The student will analyze and describe characteristics and properties of 2- and 3-dimensional shapes, locate and specify points on a grid, and use geometric concepts (e.g., symmetry and transformations) and reasoning to solve problems.

D			Identify, compare, and analyze attributes of two- and three-dimensional shapes.
A	3.5	G	Identify two- or three-dimensional shapes given defining attributes.
D			Develop and use mathematical language to describe characteristics and properties of geometric figures.
D			Identify and draw points, lines, line segments, rays, and angles.
A	1.5	G	Identify points, lines, and rays.
I			Describe the relationships between lines and the characteristics of angles (e.g., parallel, perpendicular, intersecting, right, acute, and obtuse).
D			Compare properties of two- and three-dimensional geometric figures.
D			Investigate and describe the results of subdividing and combining two-dimensional geometric figures.
A	2.13	G	Recognize congruent geometric figures.
D			Identify and draw lines of symmetry for two-dimensional geometric figures.
A	2.14	G	Identify lines of symmetry for two-dimensional geometric figures.
A	3.6	AT	Locate and specify points in Quadrant I of a coordinate system.
D			Identify, predict, and describe the results of transformations of two-dimensional geometric figures (i.e., slides, and turns).
A	2.15	G	Identify the result of a transformation (flip or slide) that has been applied to a simple two-dimensional geometric shape.
I			Describe a motion that will show that two shapes are congruent.
D			Construct and draw two- and three-dimensional geometric figures.
D			Create and describe mental images of objects, patterns, and paths.
I			Use geometric models to solve real-world problems.

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MEASUREMENT

The student will estimate and determine time, length, perimeter, area, weight, capacity, and temperature and solve real-world problems involving measurement.

D			Demonstrate understanding of the concepts of length, perimeter, area, weight, capacity, volume, time, and measure.
D			Estimate using standard units of measure.
A	3.8	ME	Select appropriate standard units to measure length, perimeter, area, capacity, volume, weight, time, temperature, and angles.
A	2.19	ME	Use estimation to determine if a length or volume measurement is reasonable.
I			Demonstrate understanding that measurements are approximations.
D			Demonstrate understanding of the relationships among units of length.
D			Explore perimeter and area using a variety of models (e.g., geoboards, graph paper).
A	2.16	ME	Find the perimeter of rectangles.
D			Select and use tools to measure weight and volume in customary or metric units.
A	2.18	ME	Measure length to the nearest 1/4 inch or nearest centimeter.
A	2.17	ME	Tell time to the nearest minute.
A	1.6	ME	Read temperature using Fahrenheit and Celsius thermometers.
D			Develop strategies for estimating the perimeters and areas (such as counting square units) of geometric figures.
A	3.7	ME	Apply the formula for finding the area of a rectangle.
A	2.20	R	Solve real-world problems involving addition and subtraction of measurements.
A	2.21	R	Solve real-world problems involving elapsed time to the quarter-hour.

DATA ANALYSIS AND PROBABILITY

The student will collect, organize, analyze, interpret, and display data in tables and graphs and determine the probabilities of outcomes in simple experiments.

I			Collect data using observations, surveys, and experiments.
I			Understand how data-collection methods could affect the results.
D			Construct tables, pictographs, line graphs, and bar graphs.
D			Interpret simple charts, tables, pictographs, line graphs, and bar graphs.
A	1.7	DP	Interpret data displayed in bar graphs and pictographs.
A	2.22	DP	Connect data in tables to pictographs, line graphs, or bar graphs.
I			Evaluate how well various representations show the collected data.
D			Explore and determine measures of central tendency (i.e., mean, median, and mode).
A	3.9	DP	Determine the median of a data set.
D			Make predictions from data.
I			Design investigations to try to answer a question.
M			Describe the likelihood or chance of events as certain, possible, or impossible.
M			Explain whether an event is likely or unlikely.
A	2.23	DP	Determine the most likely, least likely, or equally likely outcomes in simple experiments.
A	2.24	DP	Select all possible outcomes of a simple experiment (i.e., spinner, coin toss, number or color cube).

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