Grade 3 Math Units

Foundation Unit: Exploring Addition and Subtraction within 1000
Unit 1: Understanding Multiplication & Division
Unit 2: Connecting & Using Multiplication & Division
Unit 3: Computing with Whole Numbers
Unit 4: Exploring Measurement and Data
Unit 5: Understanding Fractions
Unit 6: Reasoning with Fraction Comparison & Equivalence
Unit 7: Reasoning about 2-D Shapes

Grade 4 Math Units

Foundation Unit: Understanding Multiplication & Division
Foundation Unit: Connecting & Using Multiplication & Division
Foundation Unit: Computing with Whole Numbers
Unit 1: Multi-digit Whole Number Computation
Foundation Unit: Understanding Fractions
Foundation Unit: Reasoning w/Fraction Comparison & Equivalence
Unit 2: Compare Fractions & Understand Decimal Notation
Unit 3: Building Understanding of Addition, Subtraction, and Multiplication of Fractions

Grade 5 Math Units

Unit 1: Understanding the Place Value System
Foundation Unit: Compare Fractions & Understand Decimal Notation
Unit 2: Computing with Whole Numbers and Decimals
Foundation Unit: Building Understanding of Addition, Subtraction, and Multiplication of Fractions
Unit 3: Addition and Subtraction of Fractions
Unit 4: Making Sense of Multiplication of Fractions
Unit 5: Understand Division of Unit Fraction & Whole Number
Unit 6: Classifying 2-Dimensional Figures

K-12 Math Practice Standards
- Behaviors, habits and skills needed for students to be successful in Mathematics
- Consistent behaviors, habits and skills across K-12, growing in sophistication each year

Standards for Mathematical Practice
The K-12 Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. This page gives examples of what the practice standards look like at the specified grade level. Source: CT State Department of Education http://www.sde.ct.gov/sde/cwp/view.asp?a=2710&q=322592#mathematics2

Standards	*Explanations and Examples*
Students are expected to: **1. Make sense of problems and persevere in solving them**.	In **grades 3, 4 & 5**, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers. • **Third and fourth graders** may use concrete objects or pictures to help them conceptualize and solve problems. • **Fifth graders**, solve problems by applying their understanding of operations with whole numbers, decimals, and fractions including mixed numbers. They solve problems related to volume and measurement conversions. Students seek the meaning of a problem and look for efficient ways to represent and solve it. They may check their thinking by asking themselves, "What is the most *efficient way* to solve the problem?" and "Can I solve the problem in a different way?"
Students are expected to:. **2. Reason abstractly and quantitatively.**	• **Third, Fourth & Fifth graders** should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. • **Fourth and fifth graders** extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions that record calculations with numbers and represent or round numbers using place value concepts.
Students are expected to: **3. Construct viable arguments and critique the reasoning of others.**	• In **third grade**, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking. • In **fourth grade**, students explain their thinking and make connections between models and equations. • In **fifth grade**, students explain calculations based upon models and properties of operations and rules that generate patterns. They demonstrate and explain the relationship between volume and multiplication

Students are expected to: **4. Model with mathematics.**	In **grades 3,4 & 5,** students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. • **Third graders** should evaluate their results in the context of the situation and reflect on whether the results make sense. • **Fourth graders** should evaluate their results in the context of the situation and reflect on whether the results make sense. • **Fifth graders** should evaluate the utility of models to determine which models are most useful and efficient to solve problems.
Students are expected to: **5. Use appropriate tools strategically.**	In **grades 3, 4 & 5**, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance: • In **grade 3**, students may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles. • In **grade 4,** students may use graph paper or a number line to represent and compare decimals and protractors to measure angles. They use other measurement tools to understand the relative size of units within a system and express measurements given in larger units in terms of smaller units. • In **grade 5,** students may use unit cubes to fill a rectangular prism and then use a ruler to measure the dimensions. They use graph paper to accurately create graphs and solve problems or make predictions from real world data.
Students are expected to: **6. Attend to precision.**	In **grades 3, 4, & 5**, students develop their mathematical communication skills; they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance: • In **grade 3,** when figuring out the area of a rectangle, students record their answers in square units. • In **grade 4**, students use appropriate labels when creating a line plot. • In **grade 5**, Students continue to refine their mathematical communication skills using appropriate terminology when referring to expressions, fractions, geometric figures, and coordinate grids. When figuring out the volume of a rectangular prism they record their answers in cubic units.
Students are expected to: **7. Look for and make use of structure.**	In **grades 3, 4, & 5,** students look closely to discover a pattern or structure. For instance: • In **grade 3**, students use properties of operations as strategies to multiply and divide (commutative and distributive properties). • In **grade 4**, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as tree diagrams and arrays to the multiplication principal of counting. They generate number or shape patterns that follow a given rule.

	• In **grade 5**, students use properties of operations as strategies to add, subtract, multiply and divide with whole numbers, fractions, and decimals. They examine numerical patterns and relate them to a rule or a graphical representation.
Students are expected to: **8. Look for and express regularity in repeated reasoning**.	• Students in **third grade** should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of 7 x 8, they might decompose 7 into 5 and 2 and then multiply 5 x 8 and 2 x 8 to arrive at 40 + 16 or 56. In addition, third graders continually evaluate their work by asking themselves, "Does this make sense?" • Students in **fourth grade** should notice repetitive actions in computation to make generalizations. Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions. • **Fifth graders** use repeated reasoning to understand algorithms and make generalizations about patterns. Students connect place value and their prior work with operations to understand algorithms to fluently multiply multi-digit numbers and perform all operations with decimals to hundredths. Students explore operations with fractions with visual models and begin to formulate generalizations.

TABLE 1

To facilitate the daily use of Standards for Mathematical Practice and a problem-solving perspective, K–grade 2 teachers can use student-friendly language and terms with which students should already be familiar.

CCSS for Mathematical Practice	Student-friendly language
Make sense and persevere in solving problems.	I can try many times to understand and solve a math problem.
Reason abstractly and quantitatively.	I can think about the math problem in my head, first.
Construct viable arguments and critique the reasoning of others.	I can make a plan, called a *strategy*, to solve the problem and discuss other students' strategies too.
Model with mathematics.	I can use math symbols and numbers to solve the problem.
Use appropriate tools strategically.	I can use math tools, pictures, drawings, and objects to solve the problem.
Attend to precision.	I can check to see if my strategy and calculations are correct.
Look for and make use of structure.	I can use what I already know about math to solve the problem.
Look for and express regularity in repeated reasoning.	I can use a strategy that I used to solve another math problem.