

GRADE 5 PRIORITY STANDARDS AND SKILLS for MATHEMATICS

The following guides are to help you and your student understand the skills required to show mastery of a standard. Depending on the planning and instruction of the classroom teacher, the skills may be taught in a different order. In general, students are expected to master these standards by the end of each school year for the specified grade level.

OPERATIONS & ALGEBRAIC THINKING

OA.2 Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Skills Within this Standard

- ☐ Given a mathematical expression in words, write the numerical expression, *e.g., Three times six added to seven would be written $(3 \times 6) + 7$*
- ☐ Given a numerical expression, translate it into words

OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms.

Skills Within this Standard

- ☐ Determine the rule used in a numerical pattern.
- ☐ Given a mathematical rule, make a table and generate a sequence of numbers based on the rule.
- ☐ Make a table to solve problems including problems with two rules.
- ☐ Describe patterns.

OA.3 Form ordered pairs consisting of corresponding terms from the two patterns and graph the ordered pairs on a coordinate plane. *For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Skills Within this Standard

- ☐ Plot pairs on a coordinate grid
- ☐ Interpret graphs on the coordinate plane
- ☐ Describe the graphs and generalize between patterns and their resulting graphs

NUMBER & OPERATIONS IN BASE TEN

NBT.3 Read, write, and compare decimals to thousandths. a) Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times 1/10 + 9 \times 1/100 + 2 \times 1/1000$ b) Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Skills Within this Standard

- ☐ Recognize and name place values for base-ten numerals to the thousandths place using place value charts and expanded form
- ☐ Demonstrate understanding of decimal place values: $\text{ten} = 0.1 = 1/10$, etc
- ☐ Read and write decimals (to thousandths) using numerals, words, and expanded form
- ☐ Demonstrate understanding of the equivalence of decimal numbers and fractions by connecting models to reading and writing equivalent numbers.
- ☐ Demonstrate understanding of equivalent decimal numbers by generating lists of equivalent decimals with different place values.
- ☐ Use a place value chart to compare decimals by comparing the digits in each decimal place.
- ☐ Explain their reasoning when comparing decimals numbers using objects, pictures, numbers, and words.

NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Skills Within this Standard

- ☐ Connect previous experience with division to dividing by multiples of 10 using place value and estimation
- ☐ Use strategy of rounding division problems to extended facts to determine reasonableness
- ☐ Explain their reasoning using pictures, words, and numbers
- ☐ Use rounding and estimation to divide by any two-digit number
- ☐ Solve problems that include various division situations

NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, relate the strategy to a written method and explain the reasoning used.

Skills Within this Standard

- ☐ Connect previous experiences with the meaning of addition and subtraction of whole numbers to addition and subtraction of decimal numbers using concrete models and place value structure.
- ☐ Solve a variety of addition and subtraction problems involving decimal numbers.
- ☐ Explain their reasoning using concrete models, pictures, words, and numbers.
- ☐ Connect previous experiences with the meaning of multiplication and division of whole numbers in multiplication and division of decimals using estimation, models and place value structure.
- ☐ Describe place value patterns in multiplication examples. (e.g. When I multiply tenths by tenths, the product is in the hundredths.)
- ☐ Describe place value patterns in division examples.
- ☐ Solve a variety of multiplication and division problems involving decimal numbers.
- ☐ Explain their reasoning using models, pictures, words, and numbers.

NUMBER & OPERATIONS - FRACTIONS

NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.

Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

Skills Within this Standard

- ☐ Use visual models including area models, fraction strips, number lines to solve addition and subtraction problems with fractions and mixed numbers.
- ☐ Explain their solution process using models, pictures, words, and numbers.
- ☐ Analyze results using models and benchmark fractions to determine whether an answer is reasonable.

NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Skills Within this Standard

- ☐ Model and solve division problems in which they interpret the remainder as a fraction and explain their thinking.
- ☐ Explain their reasoning for interpreting the remainder as a fraction
- ☐ Solve a variety of division problems determining what to do with the remainder. Explain their thinking.
- ☐ Model problems in which the divisor is greater than the dividend and share their thinking about the quotient being a fraction.
- ☐ Explain their reasoning, connecting to a generalization that a fraction is a type of division problem.

NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Skills Within this Standard

- ☐ Use a variety of strategies, including make a model, draw a picture, make a table, look for a pattern, and guess and check, to solve problems that provide a context for multiplying fractions and mixed numbers.
- ☐ Think about the reasonableness of their solutions in terms of the context and the numbers.
- ☐ Explain their solution process using models, pictures, words, and numbers.

NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

Skills Within this Standard

- ☐ Solve problems involving division of a unit fraction by a whole number using models and pictures.
- ☐ Explain their work using pictures, words, and numbers.
- ☐ Connect visual representations to writing division equations.
- ☐ Look for connections between division with fractions and multiplication with fractions using previous experiences with the relationship between multiplication and division.

MEASUREMENT & DATA

MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Skills Within this Standard

- ☐ Convert different-sized standard measurement units within the same measurement system.
- ☐ Solve word problems involving conversions of metric and customary units.
- ☐ Use the vocabulary associated with the metric and customary conversions.

MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

Skills Within this Standard

- ☐ Find the volume of a rectangular prism with whole-number side lengths by packing it with unit cubes, and demonstrate that the volume is the same as multiplying the height by the area of the base.
- ☐ Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of rectangular prisms with whole-number edge lengths as they solve real world and mathematical problems.
- ☐ Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

GEOMETRY

G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Skills Within this Standard

- ☐ Use the first quadrant of a coordinate grid to represent real-world problems.
- ☐ Interpret coordinate values of points in the context of the situation.
- ☐ Correctly use ordered pairs.

G.4 Classify two-dimensional figures in a hierarchy based on properties.

Skills Within this Standard

- ☐ Investigate properties of shapes. Sort and classify two-dimensional figures in a hierarchy based on properties.
- ☐ Use graphic organizers such as flow charts to compare and contrast the attributes of geometric shapes.