

MATHEMATICS

Number Sense

Grade 3	Grade 4	Grade 5
<p>1. Students understand place value of whole numbers.</p> <p>3.1.1 count, read, and write whole numbers to 100,000</p> <p>3.1.2 compare and order whole numbers to 100,000</p> <p>3.1.3 identify the place value for each digit in numbers to 100,000</p> <p>3.1.4 round off numbers to 100,000 to the nearest ten, hundred, thousand and ten thousand</p> <p>3.1.5 use expanded notation to represent numbers (e.g., $3,206 = 3,000 + 200 + 6$)</p>	<p>1. Students understand place value of whole numbers and decimals to two decimal places, how these relate to simple fractions, and use concepts of negative numbers.</p> <p>4.1.1 read and write whole numbers in the millions</p> <p>4.1.2 order and compare whole numbers and decimals to two decimal places</p> <p>4.1.3 round whole numbers through the millions to the nearest ten, hundred, thousand, ten thousand or hundred thousand</p> <p>4.1.4 decide when a rounded solution is called for, and explain why this is the case</p> <p>4.1.5 interpret different meanings for fractions including parts of a whole, parts of a set, indicated division of whole numbers and quantities (and measures) between whole numbers on a number line; and relate to simple decimals on a number line</p> <p>4.1.6 write tenths and hundredths in decimal and fraction notation and know fraction/decimal equivalents for halves and fourths (e.g., $1/2 = 0.5$ or $.50$; $7/4 = 1 \frac{3}{4} = 1.75$)</p> <p>4.1.7 write the fraction represented by a drawing of parts of a figure; represent a given fraction using drawings</p>	<p>1. Students compute with very large and very small numbers, positive and negative numbers, decimals and fractions and understand the relationship between decimals, fractions and percents.</p> <p>5.1.1 read, write, estimate, round, and manipulate very large (e.g., billions) and very small (e.g., ten- thousandths) numbers</p> <p>5.1.2 interpret percents as part of a hundred; find decimal and percent equivalents for common fractions; explain why they represent the same value; and compute a given percent of a whole number</p> <p>5.1.3 understand and compute positive integer powers and compute examples as repeated multiplication</p> <p>5.1.4 determine the prime factors of all numbers through 50 and write numbers as the product of their prime factors using exponents to show multiples of a factor (e.g., $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$)</p> <p>5.1.5 identify and represent positive and negative integers, decimals, fractions and mixed numbers on a number line</p> <p>5.1.6 explain whether a situation calls for an accurate answer or an estimate, and explain the choice of using paper/pencil, mental computation or a calculator</p>

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<p>2. Students calculate and solve problems involving addition, subtraction, multiplication and division.</p> <p>3.2.1 find the sum or difference of two whole numbers between 0 and 100,000</p> <p>3.2.2 memorize the multiplication table for numbers between 1 and 10 for an automatic response</p> <p>3.2.3 use and understand the inverse relationship of multiplication and division to compute and check results</p> <p>3.2.4 solve simple problems involving multiplication of multi-digit numbers by one-digit numbers ($3,671 \times 3 = \underline{\quad}$)</p> <p>3.2.5 solve division problems in which a multi-digit number is evenly divided by a one-digit number ($135/5$)</p> <p>3.2.6 understand the special properties of 0 and 1 in multiplication and division</p>	<p>4.1.8 use concepts of negative numbers (e.g., on a number line, in counting, in temperature, "owing")</p> <p>4.1.9 identify the relative position of fractions, mixed numbers, and decimals to two decimal places on the number line</p> <p>2. Students extend their use and understanding of whole numbers to addition and subtraction of simple decimals.</p> <p>4.2.1 estimate and compute the sum or difference of whole numbers and positive decimals to two places</p> <p>4.2.2 round two place decimals to one decimal or the nearest whole number, and use rounding to judge the reasonableness of an answer</p>	<p>5.1.7 understand the concept of a variety of base number systems.</p> <p>2. Students perform calculations and solve problems involving addition, subtraction, multiplication and division of whole numbers, fractions and decimals.</p> <p>5.2.1 add, subtract, multiply and divide large whole numbers, decimals and negative numbers, know when to use each operation and verify the reasonableness of the results</p> <p>5.2.2 are proficient with division, including division with positive decimals and long division with multi-digit divisors</p> <p>5.2.3 solve problems involving the addition, subtraction, multiplication and division of fractions and mixed numbers and express answers in simplest form</p> <p>5.2.4 understand and use the language and vocabulary of basic operations using whole numbers (addends, factors, products), fractions (numerators, reciprocals, simplest form) and decimals</p>

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<p>3.2.7 determine the unit cost when given the total cost and number of units</p> <p>3.2.8 solve problems which combine two or more of the skills above</p> <p>3. Students understand the relationship between whole numbers, simple fractions and decimals.</p> <p>3.3.1 compare fractions represented by drawings or concrete materials to show equivalency, and to add and subtract simple fractions in context (e.g., 1/2 of a pizza is the same amount as 2/4 of another pizza that is the same size; show that 3/8 is more than 1/8)</p> <p>3.3.2 add and subtract simple fractions and reduce to simplest form (e.g., determine that $1/8 + 3/8$ is the same as $1/2$)</p> <p>3.3.3 solve problems involving addition, subtraction, multiplication and division of money amounts in decimal notation and multiply and divide money amounts in decimal notation using whole number multipliers and divisors</p> <p>3.3.4 know and understand that fractions and decimals are two different representations of the same concept (e.g., 50 cents is 1/2 of a dollar, 75 cents is 3/4 of a dollar)</p>	<p>3. Students solve problems involving addition, subtraction, multiplication and division of whole numbers, including the addition and subtraction of negative numbers, and understand the relationships among the operations.</p> <p>4.3.1 demonstrate understanding of, and the ability to use standard algorithms for addition and subtraction of multi-digit numbers</p> <p>4.3.2 demonstrate understanding of, and ability to use standard and alternative algorithms for multiplying a multi-digit number by a two digit number and long division for dividing a multi-digit number by a two-digit number; use relationships between them to simplify computations and to check results</p> <p>4.3.3 solve problems involving multiplication of multi-digit numbers by two-digit numbers</p> <p>4.3.4 solve problems involving division of multi-digit numbers by two-digit numbers</p>	<p>5.2.5 solve real world problems involving one or two step operations with whole, decimal or fractional numbers</p>

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	<p>4. Students know how to factor whole numbers up to twenty five.</p> <p>4.4.1 understand that many whole numbers decompose in different ways (e.g., $12 = 4 \times 3 = 2 \times 6 = 2 \times 2 \times 3$)</p> <p>4.4.2 know that numbers such as 2, 3, 5, 7, 11 do not have any factors except 1 and themselves, and that such numbers are called prime numbers</p>	