

**Hardin County Schools Combined Curriculum Guide  
Mathematics -- Fourth Grade – Number Properties and Operations  
DRAFT**

Big Idea	<b>NUMBER PROPERTIES AND OPERATIONS</b>			
Academic Expectations	<b>2.7</b> Students understand number concepts and use numbers appropriately and accurately. <b>2.8</b> Students understand various mathematical procedures and use them appropriately and accurately.			
POS Understandings	<b>MA-4-NPO-U-1</b> Students will understand that numbers, ways of representing numbers, relationships between numbers and number systems are means of representing real-world quantities.		9 Weeks Taught	<b>1   2   3   4</b>
POS Skills & Concepts	Date(s) Taught	Core Content for Assessment	Objective	Essential Vocabulary
<p><b>MA-4-NPO-S-NS1</b> Students will apply multiple representations (e.g., drawings, manipulatives, base-10 blocks, number lines, expanded form, symbols) to represent whole numbers (0 to 1,000,000).</p> <p><b>MA-4-NPO-S-NS2</b> Students will read, write and model whole numbers from 0 to 1,000,000, developing place value for hundred thousands and millions.</p> <p><b>MA-4-NPO-S-NS3</b> Students will order and compare numbers to 1,000,000 and understand their relative magnitude.</p> <p><b>MA-4-NPO-S-NS4</b> Students will investigate and apply multiple representations of commonly used and equivalent fractions through twelfths (e.g., <math>1/2=3/6</math>) and decimals through thousandths with manipulatives (e.g., drawings, manipulatives, base-10 blocks, number lines, expanded form, symbols).</p> <p><b>MA-4-NPO-S-NS5</b> Students will explore the use of simple ratios to describe problem situations.</p> <p><b>MA-4-NPO-S-NS8</b> Students will explain how the base 10 number system relates to place value.</p> <p><b>MA-4-NPO-S-PNO1</b> Students will determine factors/multiples of a whole number.</p>		<p><b>MA-04-1.1.1</b> Students will:</p> <ul style="list-style-type: none"> <li>• apply multiple representations (e.g., drawings, manipulatives, base-10 blocks, number lines, expanded form, symbols) to represent whole numbers (0 to 99,999);</li> <li>• apply multiple representations (e.g., drawings, manipulatives, base-10 blocks, number lines, symbols) to describe commonly used fractions through tenths and decimals through hundredths;</li> <li>• apply these numbers to represent real-world problems and • explain how the base 10 number system relates to place value.</li> </ul> <p style="text-align: right;"><b>DOK 2</b></p> <p><i>MA-04-1.1.2</i> <i>Students will read, write and rename whole numbers, fractions and decimals, and apply to real-world and mathematical problems.</i></p> <p><b>MA-04-1.1.3</b> Students will compare (&lt;, &gt;, =) and order whole numbers, commonly used fractions and decimals, and explain the relationships (equivalence, order) between and among them.</p> <p style="text-align: right;"><b>DOK 2</b></p> <p><i>MA-04-1.3.2</i> <i>Students will skip-count forward and backward by 2s, 3s, 4s, 5s, 10s, 20s, 25s, 50s, 100s, 1,000, and 10,000s.</i></p> <p><b>MA-04-1.5.1</b> Students will identify and determine odd numbers, even numbers, multiples of a number and factors of a number, and will apply these numbers to solve real-world problems.</p> <p style="text-align: right;"><b>DOK 2</b></p>	<p>I can use place value to read and write numbers through millions.</p> <p>I can use place value to read and write decimals through hundredths.</p> <p>I can use whole numbers and decimals when solving real world problems.</p> <p>I can explain how the Base-Ten number system relates to place value (e.g., Ten tens make one hundred, etc.)</p> <p>I can compare and order whole numbers and explain their relationships by using &lt; &gt; and =.</p> <p>I can skip-count by 2, 3, 4, 5, 10, 20, 25, 50, 100, 1,000 and 10,000.</p> <p>I can identify and explain the difference between odd and even numbers.</p> <p>I can list the multiples and all the factors of a given number and apply them to real-world situations.</p>	<p>Whole numbers</p> <p>Place value</p> <p>Standard form</p> <p>Decimal</p> <p>Fraction</p> <p>Numerator</p> <p>Denominator</p> <p>Compare</p> <p>Order</p> <p>Equivalent</p> <p>Greater than</p> <p>Less than</p> <p>Skip count</p> <p>Odd number</p> <p>Even number</p> <p>Multiple</p> <p>Factor</p> <p>Factor tree</p> <p>Factor rainbow</p>

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<p><b>MA-4-NPO-S-PNO2</b> Students will skip-count forwards and backwards by 2s, 3s, 4s, 5s, 10s, 20s, 25s, 50s, 100s, 1,000s and 10,000s and use manipulatives, mental math and written and electronic means to communicate understanding.</p> <p><b>MA-4-NPO-S-PNO3</b> Students will identify and provide examples of odd and even numbers.</p> <p><b>MA-4-NPO-S-PNO4</b> Students will explore and use properties of numbers for written and mental computations (e.g., use commutative property of addition to rearrange addition such as change <math>12+4+8</math> to <math>12+8+4</math> to simplify the addition).</p>				
<b>Strategies &amp; Activities</b>	<b>Resources</b>		<b>Common Assessments</b>	
	<b>Essential Questions</b>		<b>Higher Order Questions</b>	

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POS Understandings	MA-4-NPO-U-2 Students will understand that meanings of and relationships among operations provide tools necessary to solve realistic problems encountered in everyday life.		9 Weeks Taught	1   2   3   4
POS Skills & Concepts	Date(s) Taught	Core Content for Assessment	Objective	Essential Vocabulary
<p><b>MA-4-NPO-S-NS5</b> Students will explore the use of simple ratios to describe problem situations.</p> <p><b>MA-4-NPO-S-NS6</b> Students will explore the relationship between fractions, decimals and percents.</p> <p><b>MA-4-NPO-S-NS7</b> Students will apply whole numbers, commonly used fractions and decimals to represent real-world problems.</p> <p><b>MA-4-NPO-S-NS9</b> Students will develop equivalent relationships between commonly used fractions, decimals and whole numbers (e.g., <math>\frac{1}{2} = 0.5</math>, <math>\frac{4}{2} = 2</math>, <math>2=2.0</math>).</p> <p><b>MA-4-NPO-S-NS10</b> Students will graph a whole number, commonly used fraction or decimal on a number line.</p> <p><b>MA-4-NPO-S-NO1</b> Students will develop and apply computational procedures to add, subtract, multiply and divide whole numbers.</p> <p><b>MA-4-NPO-S-NO2</b> Students will use manipulatives and/or diagrams to add and subtract fractions with a common denominator.</p> <p><b>MA-4-NPO-S-NO3</b> Students will add and subtract decimals through thousandths.</p> <p><b>MA-4-NPO-S-PNO4</b> Students will explore and use properties of numbers for written and mental computations (e.g., use commutative property of addition to rearrange addition such as change <math>12 + 4 + 8</math> to <math>12 + 8 + 4</math> to</p>		<p><b>MA-04-1.3.1</b> Students will analyze real-world problems to identify appropriate representations using mathematical operations, and will apply operations to solve real-world problems with the following constraints:</p> <ul style="list-style-type: none"> <li>● add and subtract whole numbers with four digits or less;</li> <li>● multiply whole numbers with two digits or less;</li> <li>● divide whole numbers with three digits or less by single-digit divisors (with or without remainders);</li> <li>● add and subtract fractions with like denominators less than or equal to 10 and</li> <li>● add and subtract decimals through hundredths.</li> </ul> <p style="text-align: right;"><b>DOK 2</b></p> <p><b>MA-04-1.5.1</b> Students will identify and determine odd numbers, even numbers, multiples of a number and factors of a number, and will apply these numbers to solve real-world problems.</p> <p style="text-align: right;"><b>DOK 2</b></p> <p><i>MA-04-1.5.2</i> <i>Students will use the commutative properties of addition and multiplication, the associative properties of addition and multiplication, the identity properties of addition and multiplication and the zero property of multiplication in written and mental computation.</i></p>	<p>I can add and subtract up to four digit whole numbers.</p> <p>I can multiply whole numbers with two digits or less.</p> <p>I can divide whole numbers with three digits or less with 1 digit divisors (with/without remainders).</p> <p>I can add and subtract fractions with like denominators (less than or equal to 10).</p> <p>I can add and subtract decimals through hundredths.</p> <p>I can use skills and strategies to solve real-world problems for all operations, written and mental.</p> <p>I can round whole numbers.</p> <p>I can round to estimate answers when numbers are added, subtracted, multiplied or divided.</p>	<p>Addends Sum Difference Minuend Subtrahend Factor Product Divisor Dividend Quotient Remainder Fraction Numerator Denominator Tenths Hundredths Decimals Associate Property Commutative Property Identity Property Distributive Property Order of operations Estimate Round Estimation</p>

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simplify the addition).				
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Strategies & Activities	Resources	Common Assessments
	<a href="http://www.aaamath.com">www.aaamath.com</a> <a href="http://www.vmathlive.com">www.vmathlive.com</a> <a href="http://www.shsu.edu/~txcae">www.shsu.edu/~txcae</a> <a href="http://www.Internet14classrooms.com">www.Internet14classrooms.com</a>	
	<b>Essential Questions</b>	<b>Higher Order Questions</b>

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POS Understandings	<b>MA-4-NPO-U-3</b> Students will understand that computing fluently and making reasonable estimates increases the ability to solve realistic problems encountered in everyday life.		9 Weeks Taught	1	2	3	4
POS Skills & Concepts	Date(s) Taught	Core Content for Assessment	Objective	Essential Vocabulary			
<b>MA-4-NPO-S-E1</b> Students will explore appropriate estimation procedures for different situations.  <b>MA-4-NPO-S-E2</b> Students will apply and explain appropriate strategies for estimating quantities of objects and computational results.		<b>MA-04-1.2.1</b> Students will apply and describe appropriate strategies for estimating quantities of objects and computational results.  <div style="text-align: right;">DOK 2</div>					
Strategies & Activities		Resources	Common Assessments				
		Essential Questions	Higher Order Questions				