

## Unit Plan (NUMBER)

### Standards


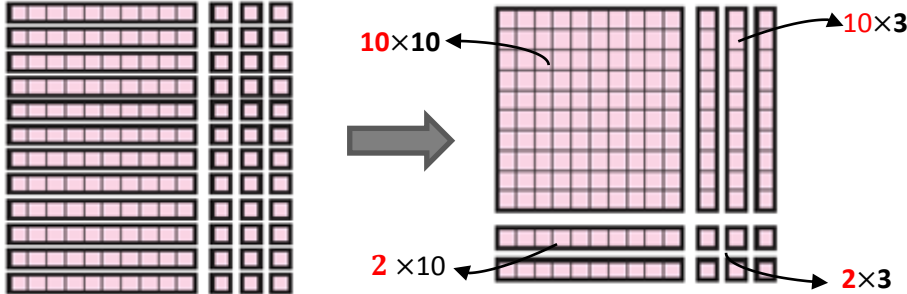
1. Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers.
2. Use the basic operations, number relationships, patterns, number facts, calculators and appropriate software to compute and estimate in order to solve real world problems involving fractions, percentages and decimals.

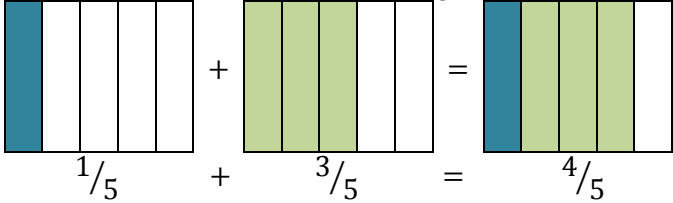
Objectives	Main Concepts	Teaching/Learning Activities	Assessment/Homework Activities																											
<ul style="list-style-type: none"> <li>• Distinguish between value, place value and face value of a digit</li> <li>• Identify the value of numbers up to seven digits</li> <li>• Read and write whole numbers with up to 7 digits.</li> </ul> <p><b>Benchmark</b> Read and write number names, and numerals using the Hindu – Arabic Place Value System up to 7 digits.</p>	<ul style="list-style-type: none"> <li>• Face value</li> <li>• Place value</li> <li>• Value</li> <li>• Census</li> <li>• Population</li> <li>• Standard Form</li> <li>• Expanded Form</li> <li>• Least</li> <li>• Largest</li> <li>• Digit</li> </ul>	<ol style="list-style-type: none"> <li>1. Revisit the place value chart and investigate the value, place value and face value of digits in numbers. Use the place value mat to help students read and write large numbers. For example, tell students that a man paid \$2,797,900 for a car. Place the number in a table as shown below to guide the reading of the number name.           <table border="1" data-bbox="989 740 1674 875"> <thead> <tr> <th colspan="3">Millions</th> <th colspan="3">Thousands</th> <th colspan="3">Ones</th> </tr> <tr> <th>H</th> <th>T</th> <th>O</th> <th>H</th> <th>T</th> <th>O</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>2</td> <td>7</td> <td>9</td> <td>7</td> <td>9</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>a. Write the number in expanded form to guide the discussion on face value, place value and value of each digit, also noting how each value changes as the place changes from right to left in the chart  <math>2,000,000 + 700,000 + 90,000 + 7,000 + 900</math>  <math>(2 \times 1,000,000) + (7 \times 100,000) + (9 \times 10,000) + (7 \times 1,000) + (9 \times 100)</math> </li> <li>b. Get students to compose and decompose numbers using <i>Learning Activity</i>.            (Number Resource Document Page 1)         </li> <li>c. Determine the digit with the largest value, smallest value</li> </ol> </li> <li>2. Play games to further build students' number sense. (Number Resource Document Pages 2 - 3)</li> </ol>	Millions			Thousands			Ones			H	T	O	H	T	O	H	T	O			2	7	9	7	9	0	0	<ol style="list-style-type: none"> <li>1. Suppose students' (or their mother's or their father's, or sister's, etc.) 7-digit phone number represented a sum of money that they have to spend.           <ol style="list-style-type: none"> <li>a. In groups, allow students to decide whose phone number they will use;</li> <li>b. Allow each group to make up a budget showing how they would spend the money represented by the phone number.</li> </ol> </li> <li>2. Carry out online research to determine the population size of various Caribbean countries. Identify the country with the smallest/largest population. Order the countries from smallest to largest in terms of their population size.</li> </ol>
Millions			Thousands			Ones																								
H	T	O	H	T	O	H	T	O																						
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		<p>3. Discuss the value of items people use, or make use of on a daily basis. <i>Allow students to identify items that would cost</i></p> <ol style="list-style-type: none"> <li><i>less than \$100</i></li> <li><i>between \$100 and 999</i></li> <li><i>between \$1,000 and \$9,999</i></li> <li><i>between \$10,000 and \$99,999</i></li> <li><i>between \$100,000 and \$999,000</i></li> <li><i>more than \$1,000,000.</i></li> </ol>	
<ul style="list-style-type: none"> <li>• Define the concepts of a set.</li> <li>• Describe a set</li> <li>• Name and list members of any given set</li> </ul> <p><b><u>Benchmark</u></b> <i>Use knowledge of sets to describe the set, name and list their elements/members.</i></p>	<ul style="list-style-type: none"> <li>• Sets</li> <li>• Groups</li> <li>• Characteristics</li> <li>• Similarities</li> <li>• Differences</li> <li>• Attributes</li> <li>• Members</li> <li>• Sorting</li> <li>• Varieties</li> <li>• Nutritional Value</li> </ul>	<ol style="list-style-type: none"> <li>Get students started with set by allowing them to put themselves into groups given a variety of classification.             <ol style="list-style-type: none"> <li>Give the first category (e.g. birth months,) then allow students to determine the other categories for grouping.</li> <li>Select students (names start with 'K' for example) without stating the reason, then allow them to guess/determine what you had in mind when you created the set by describing the set.</li> </ol> </li> <li>Using <i>Learning Activity</i>, allow students to sort items using a variety of attributes and explain the characteristics that they used. (<i>Number Resource Document , Pages 4 – 5</i>)</li> </ol>	<ol style="list-style-type: none"> <li>Challenge students to investigate how the concept of sets is helpful in real life. Have them explore how knowledge of sets assists workers of various industries- farmers, dress-makers etc. Students will write a summary of their findings in a journal</li> <li>Integrating information about Jamaica (parishes, capitals, rivers etc.) learnt in Social Studies class to create an electronic scrap book or otherwise of their groupings.</li> </ol>

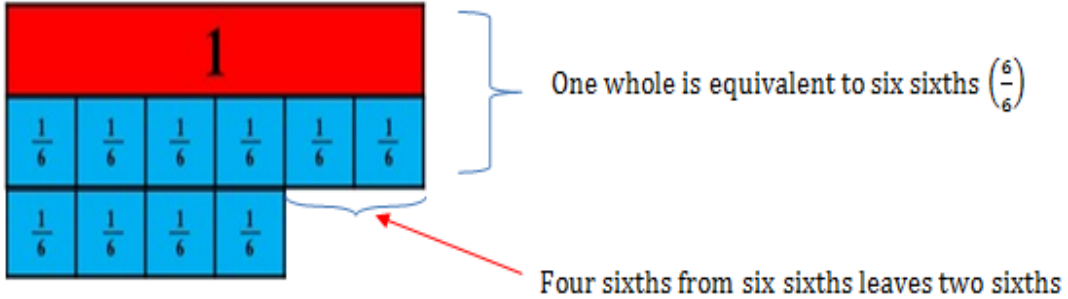
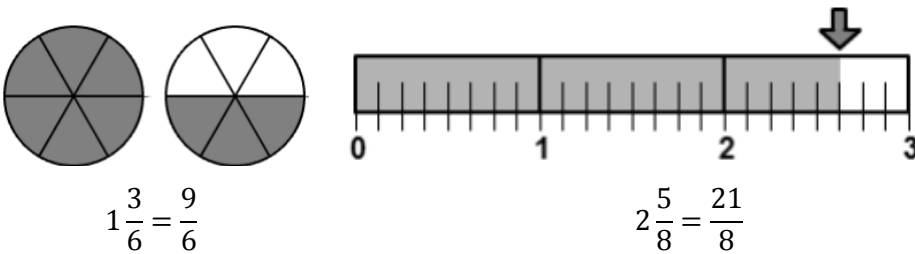
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<ul style="list-style-type: none"> <li>Distinguish among whole numbers, proper fractions, improper fractions and mixed numbers.</li> <li>Recognize like fractions (fractions with equal denominators).</li> <li>Order fractions with different denominators</li> </ul> <p><b><u>Benchmark</u></b> <i>Use knowledge of sets to describe the set, name and list their elements/members.</i></p>	<ul style="list-style-type: none"> <li>Common fraction</li> <li>Numerator</li> <li>Denominator</li> <li>Improper Fraction</li> <li>Whole number</li> <li>Mixed number</li> <li>Like fraction</li> </ul>	<ol style="list-style-type: none"> <li>Use fraction tiles to explore fractional parts/unit fractions:               <ol style="list-style-type: none"> <li>Allow students to explore how many thirds, fourths, fifths, etc. are in a whole;</li> <li>Identify what fractions are less than or more than a whole and practice writing fractions as proper/improper fractions and as mixed numbers;</li> <li>Use matching and visual inspection to determine which fractions are equivalent.</li> </ol> </li> <li>Using fraction tiles and/or <i>Learning Activity</i> to build students skill on benchmarking fractions and using the benchmarks to order and compare fractions. <a href="#">(Number Resource Document, Page 8)</a> <ul style="list-style-type: none"> <li>➤ <b>See also Sample Lesson 1 on Benchmarking Fractions attached</b></li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>Worksheet – this worksheet provides students with the opportunity to use fractions to describe the various parts of a partitioned shape. <a href="#">(Number Resource Document, Page 6)</a></li> <li>Worksheet – this worksheet is a pictorial approach to concepts of equivalence, whole and more than a whole. <a href="#">(Number Resource Document, Page 7)</a></li> <li>Worksheet – this worksheet allows students to practice ordering fractions by using benchmarks of 0, <math>\frac{1}{2}</math> and 1. <a href="#">(Number Resource Document, Page 9)</a></li> </ol>
<ul style="list-style-type: none"> <li>Investigate the base ten place value system when it is extended to show tenths and hundredths.</li> <li>Express fractional numbers with denominators 10 or 100 in decimal form and vice versa.</li> <li>Complete sequence of fractional numbers in decimal form counting</li> </ul>	<ul style="list-style-type: none"> <li>Decimal</li> <li>decimal point</li> <li>tenth</li> <li>hundredth</li> </ul>	<ol style="list-style-type: none"> <li>Engage in mathematical discourse to introduce the concept of decimal fraction using what they already know about whole number place value. <a href="#">(Number Resource Document, Pages 10 &amp; 11)</a></li> <li>Allow students to use manipulatives (base ten blocks) to explore the concepts of tenths and hundredths. Explain the manipulatives, but allow them to discover the concepts. Allow students to model numbers like 1.23 with their blocks. In the absence of base ten blocks, you may allow students to shade the fraction of hundred grid(s) representative of the decimal numbers. <b>See 2 sample lessons – lessons 2 and 3 – attached that demonstrate how students can use manipulatives to discover decimals.</b></li> <li>Allow student to model decimal numbers using <i>Learning Activity</i>. <a href="#">(Number Resource Document, Page 12 – 13)</a></li> </ol>	<ol style="list-style-type: none"> <li>Worksheet – In this worksheet, students will determine the size of a decimal number with the use of the number line. <a href="#">(Number Resource Document, Page 16)</a></li> <li>Worksheet – This worksheet uses the number line to test students' estimation skills. <a href="#">(Number Resource Document, Page 17)</a></li> </ol>

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by tenths or hundredths.		<ol style="list-style-type: none"> <li>Use hundred grids to get students comfortable using the correct number name for decimals and be able to represent same symbolically. (<i>Learning Activity – Number Resource Document, page 14</i>)</li> <li>Use the number line in <i>Learning Activity</i> to further build students' conceptual understanding of decimal. (<i>Resource Document Page 15</i>)</li> </ol>	
<ul style="list-style-type: none"> <li>• Make reasonable estimate when computing whole numbers.</li> <li>• Use the properties of addition and subtraction (commutative, associative).</li> <li>• Add or subtract 2- digit whole numbers mentally.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate</li> <li>• Approximate</li> <li>• Commutative</li> <li>• associative</li> </ul>	<ol style="list-style-type: none"> <li>Use hundred grids to allow students to discover the commutative properties of addition. For example, in order to add <math>35 + 28</math>, students can start at 35 and count on 28 or can start at 28 and count on 35. Use this as a basis for discussing whether the order in which numbers are added affects the outcome.</li> <li>Use a game approach to get students to add or subtract two-digit whole numbers mentally. (<i>Number Resource Document, Page 18 – 19</i>).</li> <li>Use '<i>expansion</i>' to decompose two digit numbers in order to encourage students to add them mentally. Provide students with practice in decomposing numbers so that they end in 0. For example, encourage them to see <math>48 + 36</math> as <math>40 + 36 + 8</math> <b>or as</b> <math>40 + 30 + 6 + 8</math> <ul style="list-style-type: none"> <li>➤ See Sample Lesson Plan 4 attached that is aimed at building students' estimation skills.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>Worksheet –In this worksheet, students apply the properties of addition to balance equations. (<i>Number Resource Document, Page 20</i>)</li> </ol>

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<ul style="list-style-type: none"> <li>Discover, memorize &amp; recall all multiplication facts up to at least <math>12 \times 12 = 144</math>.</li> <li>Multiply numbers of up to four digits by any one or two digit number (including money).</li> <li>Multiply a number by multiples of ten.</li> <li>Identify and correct wrong answers in problems involving multiplication.</li> <li>Reinforce the mental multiplication of two digit numbers by one digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Multiplication facts</li> <li>Multiply</li> <li>Multiples</li> <li>Factors</li> </ul>	<p><b>1. Multiplication facts</b></p> <p>Provide students with opportunities to practice their division and multiplication facts using <i>Games</i> and <i>Learning Activity</i>. (Number Resource Document, Pages 21-25)</p> <p><b>2. Multiplying by multiples of ten and other two digit numbers</b></p> <p>a. Use the base ten pieces to build students' concept of double digit multiplication. Example model <math>12 \times 13</math> by placing 12 groups of 13 as shown below (i.e. 12 groups of a long and 3 units ).</p>  <p>b. Further, expose students to alternative methods to multiply numbers. Use the ideas in <i>Teacher's Guide</i> to facilitate the improvement in students' procedural fluency, accuracy and to help them to better understand how numbers work when multiplying. (Number Resource Document, Pages 28 - 29)</p>	<p>Worksheet – This worksheet gives students the chance to use multiplication facts to complete multiplication grid. (Number Resource Document, Page 26)</p> <p>Worksheet – This worksheet allows students to demonstrate their understanding of factors and multiples. (Number Resource Document, Page 27)</p> <p>Worksheet – This worksheet gives students the chance to use non-traditional multiplication strategies. (Number Resource Document, Page 30)</p>
<ul style="list-style-type: none"> <li>Add and subtract decimal fractions (including money).</li> <li>Differentiate between the use of addition and multiplication, subtraction and division in problem situations</li> </ul>	<ul style="list-style-type: none"> <li>Addition</li> <li>Subtraction</li> <li>Estimate</li> </ul>	<p><b>1. Addition and subtraction of decimal fraction</b></p> <p>Use hundredth grids and base ten pieces to explore addition and subtraction of decimals as modelled in <i>Teacher's Guide</i>. Three supporting exercises are also provided for students. (Number Resource Document, Pages 31 – 36)</p> <p><b>Teachers guide</b> – this is broken down as follows</p> <ul style="list-style-type: none"> <li>Exploring addition of decimals using hundredth grids</li> <li>Exploring addition of decimals using base 10 pieces</li> </ul>	<p>Worksheet – This worksheet has problem solving activities to provide students with an opportunity to add decimal numbers (Number Resource Document, Pages 37).</p>

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<p>involving whole numbers.</p> <ul style="list-style-type: none"> <li>Select data relevant to a problem when finding its solution.</li> <li>Identify the 'hidden question' in a two-step problem.</li> <li>Write mathematical sentences for a two-step problem.</li> <li>Estimate and check answers to computations or problems</li> </ul>		<ul style="list-style-type: none"> <li>Addition of decimals using columns</li> <li>Exploring subtraction of decimals using base 10 pieces</li> </ul> <p><b>Exercises</b> – this is broken down as follows</p> <ul style="list-style-type: none"> <li><i>Worksheet</i> – Addition of decimals using hundredth grids</li> <li><i>Worksheet</i> – Addition of decimals using base 10 pieces</li> <li><i>Worksheet</i> – Addition of decimals using columns</li> </ul> <p>2. Use worded questions to get students to investigate multiplication and division situations. <i>For example, there were 82 birds. After each person took the same amount of birds and 5 were left behind. How many persons took birds?</i> Get students to explain their thinking.</p>	<p>Worksheet – In this worksheet, students will use addition to complete patterns and designs on the hundredth board (<a href="#">Number Resource Document, Page 38 - 39</a>).</p>
<ul style="list-style-type: none"> <li>Name whole numbers as fractions.</li> <li>Solve real world problems involving the addition or subtraction of fractions with like denominators.</li> <li>Add or subtract mixed numbers, improper fractions and proper fractions with equal denominators.</li> <li>Subtract a fractional number less than 1 or mixed number from a whole number</li> </ul>	<ul style="list-style-type: none"> <li>Fraction</li> <li>mixed number</li> <li>proper fraction</li> <li>improper fraction</li> </ul>	<p>1. <b>Addition and subtraction of fractions with like denominators</b></p> <p>Allow students to use diagrams to model the addition and subtraction of fractions with like denominators. Example <math>\frac{1}{5} + \frac{3}{5}</math></p>  <p style="text-align: center;"><math>\frac{1}{5} + \frac{3}{5} = \frac{4}{5}</math></p> <p>Check students' understanding by asking questions like:</p> <ol style="list-style-type: none"> <li>Why doesn't the denominator change when adding or subtracting fractions with like denominators?</li> <li>What values can <math>n</math> have to make the equation <math>\frac{3}{n} + \frac{5}{n} + \frac{8}{n} = 1</math> true?</li> </ol>	<p>Worksheet 6 – This worksheet explores the concept of mixed number and improper fraction (<a href="#">Number Resource Document Page 40</a>).</p>



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<ul style="list-style-type: none"> <li>Convert a mixed number to an improper fraction and vice versa.</li> </ul>		<p><b>2. Subtract fractional numbers from whole numbers</b></p> <p>Use fraction tiles or pictorial representation to model the subtraction of fractional numbers from whole numbers. Example:</p>  $1 - \frac{4}{6} = \frac{6}{6} - \frac{4}{6} = \frac{2}{6}$ <p><b>3. Mixed and improper fraction</b></p> <p>Use pictorial representation to get students to understand the concept behind representing a mixed number as an improper fraction and vice versa.</p> <p>For example:</p>  $1\frac{3}{6} = \frac{9}{6}$ $2\frac{5}{8} = \frac{21}{8}$	