

**Westside Consolidated School District**     **DRAFT June, 2014**  
*Common Core State Standards*  
**Curriculum Guide for Grade 3 Mathematics**

### **Grade 3 Overview**

#### **Operations and Algebraic Thinking**

Represent and solve problems involving multiplication and division.

Understand properties of multiplication and the relationship between multiplication and division.

Multiply and divide within 100.

Solve problems involving the four operations, and identify & explain patterns in arithmetic – *use order of operations.*

#### **Number and Operations in Base Ten**

Use place value understanding and properties of operations to perform multi-digit arithmetic – *round whole numbers to the nearest 10 or 100; add/subtract within 1000; multiply 1-digit whole numbers by multiples of 10 in the range 10 – 90.*

#### **Number and Operation – Fractions (with denominators: 2, 3, 4, 6, 8)**

Develop understanding of fractions as numbers -- *partitioning a whole into equal parts; representing a fraction as a number on the number line; equivalence of fractions.*

#### **Measurement and Data**

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects -- *time to the nearest minute and time intervals in minutes; liquid volumes and masses of objects using standard units of g, k, and l.*

Represent and interpret data – *with several categories. Use scaled picture graphs & scaled bar graphs; use line plots with markings in appropriate units – whole numbers, halves, or quarters.*

Geometric measurement: understand concepts of *area* and relate area to multiplication and to addition.

Geometric measurement: recognize *perimeter* as an attribute of plane figures and distinguish between *linear* and *area* measures.

#### **Geometry**

Reason with shapes and their attributes. *Identify shared attributes of shapes in different categories. Partition shapes into parts with equal areas; express the area of each part as a unit fraction of the whole.*

### **Resources:**

Textbook Series: enVision Math, 2009, Scott Foresman-Addison Wesley

#### **Investigations in Number, Data, and Space**, Pearson Publishing

*Investigations and the Common Core State Standards in Math* Home Page: HYPERLINK "<http://investigations.terc.edu/components/CCSS/CommonCore.cfm>" <http://investigations.terc.edu/components/CCSS/CommonCore.cfm>

*Math Common Core State Standards* Kindergarten Correlation: HYPERLINK "[http://investigations.terc.edu/library/common\\_core/GK\\_InvCCSS\\_Corr.pdf](http://investigations.terc.edu/library/common_core/GK_InvCCSS_Corr.pdf)" [http://investigations.terc.edu/library/common\\_core/GK\\_InvCCSS\\_Corr.pdf](http://investigations.terc.edu/library/common_core/GK_InvCCSS_Corr.pdf)

The Common Core State Standards Home Page: HYPERLINK "<http://www.corestandards.org/>" <http://www.corestandards.org/>

The Common Core State Standards for Mathematics: HYPERLINK "[http://www.corestandards.org/assets/CCSSI\\_Math%20Standards.pdf](http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf)" [http://www.corestandards.org/assets/CCSSI\\_Math%20Standards.pdf](http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf)

Common Core Unpacking resource: C2 Collaborative, Inc.: HYPERLINK "<http://ccstudio.org/Home.aspx>" <http://ccstudio.org/Home.aspx>

Wynne County Public Schools, NC: Curriculum Guides: HYPERLINK "<http://www.waynecountyschools.org/Page/375>" <http://www.waynecountyschools.org/Page/375>

## **CCSS: Standards for Mathematical Practice**

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**



# Grade 3 Mathematics • Unpacked Content

***At A Glance:*** Comparing the new *Common Core State Standards* to the old *Arkansas Frameworks*.

This page provides a snapshot of the mathematical concepts that are **NEW** or have been **MOVED** from this grade level.

## **NEW to 3<sup>rd</sup> Grade:**

Area and perimeter (3.MD.5, 3.MD.6, 3.MD.7, 3.MD.8)

## **MOVED from 3<sup>rd</sup> Grade:**

Permutation and combinations (4.02, 4.03)

Rectangular Coordinate System (3.02)

Circle graphs (4.01)

## **Note:**

**For more information on deconstructed standards and performance based assessments visit [ccstudio.org](http://ccstudio.org)**

## Directions:

**This is a live document that will be the foundation for math instruction. The next four pages outline what should be taught during each nine-week period for Common Core Standards and vocabulary as a pacing guide. The fifth page is all of the nine-week periods on one page for all the information at-a-glance.**

**The Pacing Guide- In the last column write in the Topic and lesson number from envisionMATH 2011 edition. This will allow you to decide what Topics best fit the standard. You can also add the Big Ideas if you would like to. Add any more information as necessary. Since this is a working document, feel free to make comments for adjustments in the future.**

**The At-A-Glance - Add page numbers, Topics, or lesson numbers next to the standard listed. At the bottom of each nine-weeks section list any projects, resources, or manipulatives to supplement the text.**

**1<sup>st</sup> Nine Weeks**

<b>Unit</b> <i>Domain(s) Addressed</i>	<i>Common Core State Standards</i>	<b>Major Topics/Concepts</b>	<b>Textbook Alignment</b> <i>enVision Math©2011</i>	<b>Resources/ Lit. Connections</b>
<b>Numeration</b>  <i>Number &amp; Operations in Base Ten</i>	<b>3.NBT.1</b>	<b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b> <ul style="list-style-type: none"> <li>• <b>3. NBT.1</b> – Use <i>place value</i> understanding to round whole numbers to the nearest 10 or 100.</li> </ul>		
<b>Problem Solving with Addition and Subtraction</b>  <i>Number &amp; Operations in Base Ten</i>  <i>Operations &amp; Algebraic Thinking</i>	<b>3.NBT.2</b>	<b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b> <ul style="list-style-type: none"> <li>• <b>3. NBT.2</b> - Fluently add and subtract within 1,000 using a variety of strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul>		
	<b>3.OA.8</b>  <i>Focus on Addition &amp; Subtraction Word Problems</i>	<b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b> <ul style="list-style-type: none"> <li>• <b>3. OA.8</b> – Solve two-step word problems using the four operations -- <i>for this 9-weeks, focus on <b>addition &amp; subtraction word problems</b>.</i> Represent these problems using equations with a letter standing for the unknown quantity.</li> </ul>		
	<b>3.OA.9</b>	<b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b>		

	<b><i>Focus on Addition Patterns</i></b>	<ul style="list-style-type: none"> <li>• <b>3. OA.9</b> – Identify arithmetic patterns (including patterns in the addition or multiplication table), and explain them using properties of operations. <i>For this 9-weeks, focus on addition patterns. Identify/discuss patterns on the hundreds chart.</i></li> </ul>		
<b>Data</b>  <i>Measurement &amp; Data</i>	<b>3.MD.3</b>	<p><b>Represent and interpret data.</b></p> <ul style="list-style-type: none"> <li>• <b>3. MD.3</b> - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step <i>how many more</i> and <i>how many less</i> problems using the scaled bar graphs.</li> </ul>		

2<sup>nd</sup> Nine Weeks

<b>Unit</b>  <i>Domain(s) Addressed</i>	<b>Common Core State Standards</b>	<b>Major Topics/Concepts</b>	<b>Textbook Alignment</b>  <i>enVision Math©2011</i>	<b>Resources/ Lit. Connections</b>
<b>Multiplication</b>  <i>Operations &amp; Algebraic Thinking</i>  <i>Number &amp; Operations in Base Ten</i>	<b>3.OA.1</b>  <i>Multiplication</i>	<b>Represent and solve problems involving multiplication and division.</b> <ul style="list-style-type: none"> <li>3. OA.1 - Interpret <i>products</i> of whole numbers.</li> </ul>		
	<b>3.OA.3</b>  <i>Multiplication</i>	<b>Represent and solve problems involving multiplication and division.</b> <ul style="list-style-type: none"> <li>3. OA.3 – Solve word problems using multiplication and division within 100. <i>Focus on multiplication this 9-wks.</i></li> </ul>		
	<b>3.OA.4</b> <i>Multiplication Equation relating 3 whole numbers</i>	<b>Represent and solve problems involving multiplication and division.</b> <ul style="list-style-type: none"> <li>3. OA.4 – Find the unknown whole number in multiplication or division equations. <i>Focus on multiplication this 9-wks.</i></li> </ul>		
	<b>3.OA.5</b>  <i>Multiplication</i>	<b>Understand properties of multiplication and the relationship between multiplication and division.</b> <ul style="list-style-type: none"> <li>3. OA.5 – Apply properties of operations as strategies to multiply &amp; divide. <i>Focus on properties of multiplication.</i></li> </ul>		
	<b>3.OA.7</b>  <i>Multiplication</i>	<b>Multiply and divide within 100.</b> <ul style="list-style-type: none"> <li>3. OA.7 – Fluently multiply &amp; divide within 100, using strategies of multiplication &amp; division. <i>Focus on multiplication.</i></li> </ul>		
	<b>3.OA.8</b> <i>Focus on</i>	<b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b>		



	<b><i>Multiplication Word Problems</i></b>	<ul style="list-style-type: none"> <li>• <b>3. OA.8</b> – Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. <b><i>Focus on multiplication.</i></b></li> </ul>		
	<b>3.OA.9</b> <b><i>Focus on Addition &amp; Multiplication Patterns</i></b>	<p><b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b></p> <ul style="list-style-type: none"> <li>• <b>3. OA.9</b> – Identify arithmetic patterns (including patterns in the addition or multiplication tables), and explain them using properties of operations. <b><i>Focus on patterns using addition &amp; multiplication.</i></b></li> </ul>		
	<b>3.NBT.3</b>	<p><b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b></p> <ul style="list-style-type: none"> <li>• <b>3. NBT.3</b> – Multiply one-digit numbers by multiples of 10 in the range 10-90.</li> </ul>		
<b>Reasoning with Two-Dimensional Shapes</b> <i>Geometry</i>	<b>3.G.1</b>	<p><b>Reason with shapes and their attributes.</b></p> <ul style="list-style-type: none"> <li>• <b>3. G.1</b> - Understand that shapes in different categories may share attributes. Investigate &amp; classify 2 dimensional shapes.</li> </ul>		
	<b>3.G.2</b>	<p><b>Reason with shapes and their attributes.</b></p> <ul style="list-style-type: none"> <li>• <b>3. G.2</b> - Partition shapes into parts with <i>equal areas</i>.</li> </ul>		

**3<sup>rd</sup> Nine Weeks**

Unit <i>Domain(s) Addressed</i>	<i>Common Core State Standards</i>	Major Topics/Concepts	Textbook Alignment <i>enVision Math©2011</i>	Resources/ Lit. Connections
Exploring Area and Perimeter  <i>Measurement and Data</i>	3.MD.5	<b>Geometric measurement: understand concepts of area and relate area to multiplication &amp; to addition.</b> <ul style="list-style-type: none"> <li>3. MD.5 - Explore area of plane figures with the concept of “a unit square.”</li> </ul>		
	3.MD.6	<b>Geometric measurement: understand concepts of area and relate area to multiplication &amp; to addition.</b> <ul style="list-style-type: none"> <li>3. MD.6 - Measure area by counting <i>unit squares</i>.</li> </ul>		
	3.MD.7	<b>Geometric measurement: understand concepts of area and relate area to multiplication &amp; to addition.</b> <ul style="list-style-type: none"> <li>3. MD.7 - Relate area to multiplication &amp; addition.</li> </ul>		
	3.MD.8	<b>Geometric measurement: recognize <i>perimeter</i> as an attribute of plane figures and distinguish between linear and area measures.</b> <ul style="list-style-type: none"> <li>3. MD.8 - Solve real world problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</li> </ul>		
Understanding Fractions  <i>Number and Operations -- Fractions</i>	3.NF.1	<b>Develop understanding of fractions as numbers.</b> <ul style="list-style-type: none"> <li>3. NF.1 - Express fractions as <i>fair sharing, parts of a whole, parts of a set—partitioning into equal parts</i>.</li> </ul>		
	3.NF.2	<b>Develop understanding of fractions as numbers.</b>		

		<ul style="list-style-type: none"> <li>• <b>3. NF.2</b> - Represent fractions on a number line.</li> </ul>		
	<b>3.NF.3</b>	<p><b>Develop understanding of fractions as numbers.</b></p> <ul style="list-style-type: none"> <li>• <b>3. NF.3</b> – Explain equivalence of fractions; compare fractions by reasoning about their size.</li> </ul>		
<p><b>Time</b></p> <p><i>Measurement and Data</i></p>	<b>3.MD.1</b>	<p><b>Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</b></p> <ul style="list-style-type: none"> <li>• <b>3. MD.1</b> – Tell/write time to the nearest minute; measure time intervals in minutes. Solve world problems involving elapsed time by using a number line diagram.</li> </ul>		

4<sup>th</sup> Nine Weeks

Unit <i>Domain(s) Addressed</i>	<i>Common Core State Standards</i>	Major Topics/Concepts	Textbook Alignment <i>enVision Math©2011</i>	Resources/ Lit. Connections
<b>Measurement and Data</b>  <i>Measurement and Data</i>	3.MD.2	<p><b>Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</b></p> <ul style="list-style-type: none"> <li>3. MD.2 – Measure and estimate liquid volumes and masses of objects using standard units. Add, subtract, multiply, or divide to solve one-step word problems.</li> </ul>		
	3.MD.4	<p><b>Represent and interpret data.</b></p> <ul style="list-style-type: none"> <li>3. MD.4 – Generate measurement data by measuring lengths to nearest whole, <math>\frac{1}{2}</math> (half), or <math>\frac{1}{4}</math> (fourth or quarter) of an inch; record on a line plot.</li> </ul>		
<b>Division</b>  <i>Operations and Algebraic Thinking</i>	3.OA.2	<p><b>Represent and solve problems involving multiplication and division.</b></p> <ul style="list-style-type: none"> <li>3. OA.2 - Interpret whole-number <i>quotients</i> of whole numbers. Model division with <i>partitioning equally</i> and <i>repeated subtraction</i>.</li> </ul>		
	3.OA.3  <i>Division</i>	<p><b>Represent and solve problems involving multiplication and division.</b></p> <ul style="list-style-type: none"> <li>3. OA.3 - Solve word problems using multiplication and division within 100. <i>Focus on division this 9-wks.</i></li> </ul>		
	3.OA.4  <i>Division</i>	<p><b>Represent and solve problems involving multiplication and division.</b></p> <ul style="list-style-type: none"> <li>3. OA.4 - Find the unknown whole number in a multiplication or division equation relating 3 whole numbers. <i>Focus on division equations this 9-wks.</i></li> </ul>		
	3.OA.5  <i>Division</i>	<p><b>Understand properties of multiplication and the relationship between multiplication and division.</b></p> <ul style="list-style-type: none"> <li>3. OA.5 - Apply properties of operations as strategies to multiply and divide. <i>Focus on properties of division.</i></li> </ul>		
	3.OA.6	<p><b>Understand properties of multiplication and the relationship between multiplication and division.</b></p>		

	<b>Division</b>	<ul style="list-style-type: none"> <li>• <b>3. OA.6</b> - Understand division as an <i>unknown-factor</i> problem. <i>Use division to find an unknown factor.</i></li> </ul>		
	<b>3.OA.7</b> <b>Division</b>	<b>Multiply and divide within 100.</b> <ul style="list-style-type: none"> <li>• <b>3. OA.7</b> – Fluently multiply and divide within 100, using strategies of multiplication and division. <i>Focus on division.</i></li> </ul>		
	<b>3.OA.8</b> <b>Division</b> <i>Use all 4 operations with a focus on division this 9-wks</i>	<b>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</b> <ul style="list-style-type: none"> <li>• <b>3. OA.8</b> – Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity.</li> </ul>		

## Westside Consolidated School District *Common Core State Standards* – Mathematics 3<sup>rd</sup> Grade At-A-Glance-Guide

*Essential Questions should be incorporated into daily math activities in order to engage students in real life problem solving.*

Domain	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
<b>Number and Operations in Base Ten</b>	3.NBT.1 3.NBT.2	3.NBT.3		
<b>Operations and Algebraic thinking</b>	3.OA.8 3.OA.9	3.OA.1 3.OA.3 3.OA.4 3.OA.5 3.OA.7 3.OA.8 3.OA.9		3.OA.2 3.OA.3 3.OA.4 3.OA.5 3.OA.6 3.OA.7 3.OA.8
<b>Measurement and Data</b>	3.MD.3		3.MD.5 3.MD.6 3.MD.7 3.MD.8 3.MD.1	3.MD.2 3.MD.4
<b>Geometry</b>		3.G.1 3.G.2		

<b>Number and Operations - Fractions</b>			<b>3.NF.1</b> <b>3.NF.2</b> <b>3.NF.3</b>	
Document resources/ Page numbers in textbooks/ links to sites/ projects				

Textbook Resource: **Grade 3 enVision Math**, © 2011, Scott Foresman- Addison Wesley, Pearson Education, Inc.

Alignment of Textbook Topic Content to the *Math CCSS*:

**NOTE: Not all sections of each Topic are aligned to the *Math CCSS* – be sure to use *ONLY* the sections that are aligned to the *Math CCSS*.**

**Table of Topics**

## Third Grade – Common Core State Standards -- MATH

### **Critical Areas**

- 1. Developing understanding of multiplication and division and strategies for multiplication and division within 100** – Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.
- 2. Developing understanding of fractions, especially unit fractions (fractions with numerator 1)** – Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example,  $\frac{1}{2}$  of the paint in a small bucket could be less paint than  $\frac{1}{3}$  of the paint in a larger bucket; but  $\frac{1}{3}$  of a ribbon is longer than  $\frac{1}{5}$  of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.
- 3. Developing understanding of the structure of rectangular arrays and of area** – Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.
- 4. Describing and analyzing two-dimensional shapes** – Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

### **Mathematical Practices**

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**



## **Operations and Algebraic Thinking (Weight of Standard: 30 – 35%) 3.OA**

### **Represent and solve problems involving multiplication and division.**

- 3.OA.1** Interpret products of whole numbers, e.g., interpret  $5 \times 7$  as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as  $5 \times 7$ .*
- 3.OA.2** Interpret whole-number quotients of whole numbers, e.g., interpret  $56 \div 8$  as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example describe a context in which a number of shares or a number of groups can be expressed as  $56 \div 8$ .*
- 3.OA.3** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (Note: See CCSS Glossary & Table 2.)
- 3.OA.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations  $8 \times ? = 48$ ,  $5 = \square \div 3$ ,  $6 \times 6 = ?$ .*

### **Understand properties of multiplication and the relationship between multiplication and division.**

- 3.OA.5** Apply properties of operations as strategies to multiply and divide. (Note: Students need not use formal terms for these properties.) *Examples: If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known --commutative property of multiplication.  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$  --associative property of multiplication. Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$  --distributive property.*
- 3.OA.6** Understand division as an unknown-factor problem. *For example, find  $32 \div 8$  by finding the number that makes 32 when multiplied by 8.*

### **Multiply and divide within 100.**

- 3.OA.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ) or properties of operations. *By the end of Grade 3, know from memory all products of two one-digit numbers.*

### **Solve problems involving the four operations, and identify and explain patterns in arithmetic.**

- 3.OA.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (Note: This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order – *Order of Operations*.)
- 3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

## **Number and Operations in Base Ten (Weight of Standard: 5 – 10%) 3.NBT**

### **Use place value understanding and properties of operations to perform multi-digit arithmetic.** (Note: A range of algorithms may be used.)

- 3.NBT.1** Use place value understanding to round whole numbers to the nearest 10 or 100.
- 3.NBT.2** Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

**3.NBT.3** Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g.,  $9 \times 80$ ,  $5 \times 60$ ) using strategies based on *place value* and *properties of operations*.

**Number and Operations – Fractions (Weight of Std: 20 – 25%) 3.NF**

Note: Grade 3 expectations are limited to fractions with denominators 2, 3, 4, 6, and 8.

**Develop understanding of fractions as numbers.**

**3.NF.1** Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts of size  $1/b$ .

**3.NF.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction  $1/b$  on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into  $b$  equal parts. Recognize that each part has size  $1/b$  and that the endpoint of the part based at 0 locates the number  $1/b$  on the number line.

b. Represent a fraction  $a/b$  on a number line diagram by marking off a lengths  $1/b$  from 0. Recognize that the resulting interval has size  $a/b$  and that its endpoint locates the number  $a/b$  on the number line.

**3.NF.3** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

b. Recognize and generate simple equivalent fractions, e.g.,  $1/2 = 2/4$ ,  $4/6 = 2/3$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form  $3 = 3/1$ ; recognize that  $6/1 = 6$ ; locate  $4/4$  and 1 at the same point of a number line diagram.*

d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

**Measurement and Data (Weight of Standard: 22 – 27%) 3.MD**

**Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.**

**3.MD.1** Tell and write time to the *nearest minute* and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

**3.MD.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Note: Excludes compound units such as  $\text{cm}^3$  and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Note: Excludes multiplicative comparison problems – problems involving notions of “times as

much”; see *CCSS Glossary & Table 2.*)

**Represent and interpret data.**

- 3.MD.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*
- 3.MD.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.

**Geometric measurement: understand concepts of area and relate area to multiplication and to addition.**

- 3.MD.5** Recognize area as an attribute of plane figures and understand concepts of area measurement.
- A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.
  - A plane figure which can be covered without gaps or overlaps by  $n$  unit squares is said to have an area of  $n$  square units.
- 3.MD.6** Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
- 3.MD.7** Relate area to the operations of multiplication and addition.
- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
  - Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
  - Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths  $a$  and  $b + c$  is the sum of  $a \times b$  and  $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.
  - Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

**Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.**

- 3.MD.8** Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

**Geometry (Weight of Standard: 10 – 15%)**

**3.G**

**Reason with shapes and their attributes.**

- 3.G.1** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that

do not belong to any of these subcategories.

**3.G.2** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area,, and describe the area of each part as  $1/4$  of the area of the shape.*