

# COMMON CORE RESOURCE FOR GRADE 4

## OPERATIONS AND ALGEBRAIC THINKING

CCSS	Math Concept	Standards and References
4.OA.1.	<b>Multiplication as a Comparison</b>	<b>4.OA.1.</b> Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
	Interpret multiplication equations as a comparison of $x$ to $y$ , where $x$ is $n$ times "as much" as $y$ (or $x$ is $n$ times "more" than $y$ ).	
	<ul style="list-style-type: none"> <li>• Multiplicative comparison - Singapore math</li> </ul>	<a href="http://www.youtube.com/watch?v=OyvGHvDXStQ">http://www.youtube.com/watch?v=OyvGHvDXStQ</a>
	<ul style="list-style-type: none"> <li>• Multiplicative comparison problems.</li> </ul>	<a href="http://investigations.terc.edu/library/common_core/4U1_Session.pdf">http://investigations.terc.edu/library/common_core/4U1_Session.pdf</a>
	<ul style="list-style-type: none"> <li>• Multiplication as comparison</li> </ul>	<a href="http://www.helpingwithmath.com/by_subject/equations_expressions/equ_comparing01_4oa1.htm">http://www.helpingwithmath.com/by_subject/equations_expressions/equ_comparing01_4oa1.htm</a>
4.OA.2.	<b>Multiply or Divide to Solve Word Problems Involving Multiplicative Comparison</b>	<b>4.OA.2.</b> Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
	<b>Multiply or divide to solve word problems involving multiplicative comparison. Use equations with a symbol for the unknown or a visual model to represent the problem.</b>	
	<ul style="list-style-type: none"> <li>• Multiplicative comparison - Singapore math</li> </ul>	<a href="http://www.youtube.com/watch?v=bmJCKFpJqOE">http://www.youtube.com/watch?v=bmJCKFpJqOE</a>
	<ul style="list-style-type: none"> <li>• Solve comparison (measurement) multiplication and division problems - visual modeling</li> </ul>	<a href="http://learnzillion.com/lessons/1475-solve-comparison-measurement-multiplication-and-division-problems">http://learnzillion.com/lessons/1475-solve-comparison-measurement-multiplication-and-division-problems</a>
	<ul style="list-style-type: none"> <li>• Multiplicative comparison problems.</li> </ul>	<a href="http://investigations.terc.edu/library/common_core/4U1_Session.pdf">http://investigations.terc.edu/library/common_core/4U1_Session.pdf</a>

4.OA.3.	<b>Multistep Problems</b>	<b>4.OA.3.</b> Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.
a.	<b>Solve multistep whole-number word problems having whole-number answers and possibly remainders. Use the four operations and equations with a letter standing for an unknown quantity.</b>	
	<ul style="list-style-type: none"> <li>• Solve multi-step word problems by creating an equation</li> </ul>	<a href="http://learnzillion.com/lessons/1723-solve-multistep-word-problems-by-creating-an-equation">http://learnzillion.com/lessons/1723-solve-multistep-word-problems-by-creating-an-equation</a>
	<ul style="list-style-type: none"> <li>• Solve multi-step word problems by using model drawing</li> </ul>	<a href="http://learnzillion.com/lessons/1724-solve-multistep-word-problems-by-using-model-drawing">http://learnzillion.com/lessons/1724-solve-multistep-word-problems-by-using-model-drawing</a>
b.	<b>Interpret remainders.</b>	
	<ul style="list-style-type: none"> <li>• Interpret remainders in real-world problems</li> </ul>	<a href="http://learnzillion.com/lessons/1721-interpret-remainders-in-realworld-problems">http://learnzillion.com/lessons/1721-interpret-remainders-in-realworld-problems</a>
c.	<b>Check answers to multistep problems using estimation to check the reasonableness of an answer.</b>	
	<ul style="list-style-type: none"> <li>• Solve multi-step word problems by rounding on a number line</li> </ul>	<a href="http://learnzillion.com/lessons/1719-solve-multistep-word-problems-by-rounding-on-a-number-line">http://learnzillion.com/lessons/1719-solve-multistep-word-problems-by-rounding-on-a-number-line</a>
	<ul style="list-style-type: none"> <li>• Judge reasonableness by estimating</li> </ul>	<a href="http://learnzillion.com/lessons/61-judge-reasonableness-by-estimating">http://learnzillion.com/lessons/61-judge-reasonableness-by-estimating</a>
4.OA.4.	<b>Factors and Multiples</b>	<b>4.OA.4.</b> Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.
a.	<b>Find all of the factor pairs for whole numbers between 1 and 100.</b>	
	<ul style="list-style-type: none"> <li>• Find all factor pairs of a number using a t-charts</li> </ul>	<a href="http://learnzillion.com/lessons/785-find-all-factor-pairs-of-a-number-using-a-tchart">http://learnzillion.com/lessons/785-find-all-factor-pairs-of-a-number-using-a-tchart</a>
	<ul style="list-style-type: none"> <li>• Find all the factor pairs of a number using area models</li> </ul>	<a href="http://learnzillion.com/lessons/780-find-all-the-factor-pairs-of-a-number-using-area-models">http://learnzillion.com/lessons/780-find-all-the-factor-pairs-of-a-number-using-area-models</a>
	<ul style="list-style-type: none"> <li>• Factors and Multiples</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=20330&amp;CategoryID=15449">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=20330&amp;CategoryID=15449</a>
b.	<b>Determine whether a given whole number is a multiple of a given one-digit number.</b>	
	<ul style="list-style-type: none"> <li>• Determine multiples of a number using area models</li> </ul>	<a href="http://learnzillion.com/lessons/781-determine-multiples-of-a-number-using-area-models">http://learnzillion.com/lessons/781-determine-multiples-of-a-number-using-area-models</a>
c.	<b>Determine if a whole number is a multiple of each of its factors.</b>	
	<ul style="list-style-type: none"> <li>• Determine all multiples of a number using number bonds</li> </ul>	<a href="http://learnzillion.com/lessons/783-determine-all-multiples-of-a-number-using-number-bonds">http://learnzillion.com/lessons/783-determine-all-multiples-of-a-number-using-number-bonds</a>

d.	<b>4.OA.4. CONTINUED</b>	
	<b>Determine whether a whole number (in the range 1 - 100) is prime or composite</b>	
	• Prime and Composite Numbers	<a href="http://www.slideshare.net/Ms.DH/factors-primers-3058749#btnNext">http://www.slideshare.net/Ms.DH/factors-primers-3058749#btnNext</a>
	• Factors, Primes, and Composite Numbers	<a href="http://www.mathgoodies.com/lessons/vol3/prime_composite.html">http://www.mathgoodies.com/lessons/vol3/prime_composite.html</a>
	• Prime factorization - Factor Trees	<a href="http://www.nextvista.org/constructing-a-factor-tree/">http://www.nextvista.org/constructing-a-factor-tree/</a>

<b>4.OA.5.</b>	<b>Patterns</b>	<b>4.OA.5.</b> Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why.
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a.	<b>Generate a number or shape pattern that follows a given rule.</b>	
	• Generate a pattern sequence using a t-chart	<a href="http://learnzillion.com/lessons/797-generate-a-pattern-sequence-using-a-tchart">http://learnzillion.com/lessons/797-generate-a-pattern-sequence-using-a-tchart</a>

b.	<b>Given a number or shape pattern, determine the rule that the pattern is following.</b>	
	• Find missing elements in growing patterns	<a href="http://learnzillion.com/lessons/792-find-missing-elements-in-growing-patterns">http://learnzillion.com/lessons/792-find-missing-elements-in-growing-patterns</a>
	• Find missing elements in growing patterns	<a href="http://learnzillion.com/lessons/792-find-missing-elements-in-growing-patterns">http://learnzillion.com/lessons/792-find-missing-elements-in-growing-patterns</a>
	• Patterns of multiplication of some whole numbers	<a href="http://illustrativemathematics.org/illustrations/959">http://illustrativemathematics.org/illustrations/959</a>

<b>NUMBERS AND OPERATIONS IN BASE TEN</b>
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<b>4.NBT.1.</b>	<b>Place Value and Whole Numbers</b>	<b>4.NBT.1.</b> Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.
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a.	<b>Recognize that in a multi-digit whole number, the value of each place is 10 times the value of the place next to it on the right.</b>	
	• The value of each place is 10 times the value of the place next to it on the right.	<a href="http://www.linkslearning.k12.wa.us/Kids/1_Math/2_Illustrated_Lessons/3_Place_Value/index.html">http://www.linkslearning.k12.wa.us/Kids/1_Math/2_Illustrated_Lessons/3_Place_Value/index.html</a>

b.	<b>Use place value to determine what each digit in a number stands for.</b>	
	• The value of a number is determined by its place	<a href="http://www.linkslearning.k12.wa.us/Kids/1_Math/2_Illustrated_Lessons/3_Place_Value/index.html">http://www.linkslearning.k12.wa.us/Kids/1_Math/2_Illustrated_Lessons/3_Place_Value/index.html</a>
	• Understand relationships between digits and their place value	<a href="http://learnzillion.com/lessons/516-understand-relationships-between-digits-and-their-place-value">http://learnzillion.com/lessons/516-understand-relationships-between-digits-and-their-place-value</a>

<b>4.NBT.2.</b>	<b>Using Place Value to Compare Whole Numbers</b>	<b>4.NBT.2.</b> Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.
<b>a.</b>	<b>Read and write multi-digit whole numbers using numerals, number names, and expanded form.</b>	
	• Whole Numbers: Place Value and Expanded Form	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=33260&amp;CategoryID=15452">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=33260&amp;CategoryID=15452</a>
	• Write numbers in expanded form	<a href="http://learnzillion.com/lessons/13-write-numbers-in-expanded-form">http://learnzillion.com/lessons/13-write-numbers-in-expanded-form</a>
<b>b.</b>	<b>Compare two multi-digit numbers based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</b>	
	• Compare numbers: using place values	<a href="http://learnzillion.com/lessons/15-compare-numbers-using-place-values">http://learnzillion.com/lessons/15-compare-numbers-using-place-values</a>
	• Exercise - Ordering 4-digit numbers	<a href="http://illustrativemathematics.org/illustrations/459">http://illustrativemathematics.org/illustrations/459</a>
<b>4.NBT.3.</b>	<b>Rounding and Estimating Whole Numbers</b>	<b>4.NBT.3.</b> Use place value understanding to round multi-digit whole numbers to any place.
<b>a.</b>	<b>Round multi-digit whole numbers to any specified place.</b>	
	• Round numbers to a specified place on a number line	<a href="http://learnzillion.com/lessons/525-round-numbers-to-a-specified-place-on-a-number-line">http://learnzillion.com/lessons/525-round-numbers-to-a-specified-place-on-a-number-line</a>
	• Round numbers to the nearest ten	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23152&amp;CategoryID=15453">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23152&amp;CategoryID=15453</a>
	• Round numbers to the nearest hundred	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23150&amp;CategoryID=15453">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23150&amp;CategoryID=15453</a>
	• Round numbers to the nearest thousand	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23151&amp;CategoryID=15453">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23151&amp;CategoryID=15453</a>
<b>b.</b>	<b>Use rounding to estimate multi-digit whole numbers to the greatest place.</b>	
	• Round numbers to the Greatest Place (i.e. Leading Digit) using a vnumber line	<a href="http://learnzillion.com/lessons/524-round-numbers-to-the-leading-digit-using-a-number-line">http://learnzillion.com/lessons/524-round-numbers-to-the-leading-digit-using-a-number-line</a>
<b>4.NBT.4.</b>	<b>Adding Whole Numbers</b>	<b>4.NBT.4.</b> Fluently <u>add</u> and subtract multi-digit whole numbers using the standard algorithm.
<b>a.</b>	<b>Fluently add multi-digit whole numbers using the standard algorithm. Use place value to understand the process of regrouping.</b>	
	• Adding Three and Four Digit Numbers With Regrouping	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=34233&amp;CategoryID=15454">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=34233&amp;CategoryID=15454</a>
	• Addition with Regrouping	<a href="http://teachertube.com/viewVideo.php?title=Addition_with_Regrouping&amp;video_id=236500">http://teachertube.com/viewVideo.php?title=Addition_with_Regrouping&amp;video_id=236500</a>
	• Practice Regrouping using interactive base blocks	<a href="http://nlvm.usu.edu/en/nav/frames_asid_264_g_1_t_1.html">http://nlvm.usu.edu/en/nav/frames_asid_264_g_1_t_1.html</a>

b.	<b>4.NBT.4. CONTINUED</b>	
	<b>Use rounding to estimate the sum of multidigit numbers.</b>	
	• Estimating Sums	<a href="http://www.aaamath.com/est46ax2.htm">http://www.aaamath.com/est46ax2.htm</a>
	• Rounding to Estimate Sums	<a href="http://www.youtube.com/watch?v=INfZQNWZkII">http://www.youtube.com/watch?v=INfZQNWZkII</a>
	• Estimating Addition and Subtraction Problems Involving Whole Numbers	<a href="http://www.youtube.com/watch?v=bSemNdW9_wE">http://www.youtube.com/watch?v=bSemNdW9_wE</a>
	• Estimation When Adding Whole Numbers	<a href="http://www.youtube.com/watch?v=YOexIpnvh-A">http://www.youtube.com/watch?v=YOexIpnvh-A</a>
c.	<b>Fluently subtract multi-digit whole numbers using the standard algorithm. Use place value to understand the process of regrouping.</b>	
	• Introduction to Borrowing or Regrouping	<a href="http://www.khanacademy.org/math/arithmetic/addition-subtraction/v/subtraction-3---introduction-to-borrowing-or-regrouping">http://www.khanacademy.org/math/arithmetic/addition-subtraction/v/subtraction-3---introduction-to-borrowing-or-regrouping</a>
	• Subtraction with Regrouping	<a href="http://teachertube.com/viewVideo.php?video_id=42955">http://teachertube.com/viewVideo.php?video_id=42955</a>
d.	<b>Use rounding to estimate the difference of multidigit numbers.</b>	
	• Estimate subtraction of multidigit numbers	<a href="http://www.ixl.com/math/grade-4/estimate-differences">http://www.ixl.com/math/grade-4/estimate-differences</a>
<b>4.NBT.5. Multiplying Whole Numbers</b>		
<b>4.NBT.5.</b> Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.		
a.	<b>Multiply a whole number up to four digits by a one-digit number. Use strategies based on place value and the properties of multiplication. Explain using equations and visual models.</b>	
	• Use an array to multiply a two digit number by a one digit number	<a href="http://learnzillion.com/lessons/1875-use-an-array-to-multiply-a-two-digit-number-by-a-one-digit-number">http://learnzillion.com/lessons/1875-use-an-array-to-multiply-a-two-digit-number-by-a-one-digit-number</a>
b.	<b>Multiply two two digit whole numbers. Use strategies based on place value and the properties of multiplication. Explain using equations and visual models.</b>	
	• Multiply multi-digit whole numbers using the standard algorithm	<a href="http://www.youtube.com/watch?v=S9HhNxXQEc4">http://www.youtube.com/watch?v=S9HhNxXQEc4</a>
	• Use place value understanding to multiply three and four digit numbers	<a href="http://learnzillion.com/lessons/1878-use-place-value-understanding-to-multiply-three-and-four-digit-numbers">http://learnzillion.com/lessons/1878-use-place-value-understanding-to-multiply-three-and-four-digit-numbers</a>
	• Use an area model to multiply two digit numbers by two digit numbers	<a href="http://learnzillion.com/lessons/1879-use-an-area-model-to-multiply-two-digit-numbers-by-two-digit-numbers">http://learnzillion.com/lessons/1879-use-an-area-model-to-multiply-two-digit-numbers-by-two-digit-numbers</a>
	• Multiply multi-digit numbers using partial products	<a href="http://learnzillion.com/lessons/529-multiply-multidigit-numbers-using-partial-products">http://learnzillion.com/lessons/529-multiply-multidigit-numbers-using-partial-products</a>

4.NBT.6.	<b>Dividing Whole Numbers with One-Digit Divisors</b>	<b>4.NBT.6.</b> Find whole-number quotients and remainders with up to four-digit dividends and one-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.
a.	<b>Find whole number quotients and remainders using a one-digit divisor with up to four-digit dividends. Use strategies based on place value. Explain using equations and visual models.</b>	
	<ul style="list-style-type: none"> <li>• How do you do long division - visual model</li> </ul>	<a href="http://www.mathplayground.com/howto_longdivision.html">http://www.mathplayground.com/howto_longdivision.html</a>
b.	<b>Divide Whole Number by one-digit divisors using the relationship between multiplication and division. Explain using equations and visual models.</b>	
	<ul style="list-style-type: none"> <li>• Divide two-digit dividends using friendly multiples</li> </ul>	<a href="http://learnzillion.com/lessons/1482-divide-twodigit-dividends-using-friendly-multiples">http://learnzillion.com/lessons/1482-divide-twodigit-dividends-using-friendly-multiples</a>
	<ul style="list-style-type: none"> <li>• Divide four-digit dividends</li> </ul>	<a href="http://learnzillion.com/lessons/1484-divide-fourdigit-dividends">http://learnzillion.com/lessons/1484-divide-fourdigit-dividends</a>
<b>NUMBERS AND OPERATIONS - FRACTIONS</b>		
4.NF.1.	<b>Equivalent Fractions</b>	<b>4.NF.1.</b> Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
a.	<b>Explain why the fraction <math>a/b</math> is equivalent to the fraction <math>(n \bullet a)/(n \bullet b)</math> using visual models. Explain why the fractions are the same size even though the number and size of the parts in the visual model differ.</b>	
	<ul style="list-style-type: none"> <li>• Create equivalent fractions by multiplying the numerator and denominator by the same number. Show equivalence on a number line</li> </ul>	<a href="http://learnzillion.com/lessons/1245-create-equivalent-fractions-using-a-number-line">http://learnzillion.com/lessons/1245-create-equivalent-fractions-using-a-number-line</a>
	<ul style="list-style-type: none"> <li>• Generate equivalent fractions using area models</li> </ul>	<a href="http://learnzillion.com/lessons/618-generate-equivalent-fractions-using-area-models">http://learnzillion.com/lessons/618-generate-equivalent-fractions-using-area-models</a>
	<ul style="list-style-type: none"> <li>• Generate equivalent fractions using number lines</li> </ul>	<a href="http://learnzillion.com/lessons/619-generate-equivalent-fractions-using-number-lines">http://learnzillion.com/lessons/619-generate-equivalent-fractions-using-number-lines</a>
	<ul style="list-style-type: none"> <li>• Interactive Practice Making Equivalent Fractions</li> </ul>	<a href="http://nlvm.usu.edu/en/nav/frames_asid_159_g_2_t_1.html">http://nlvm.usu.edu/en/nav/frames_asid_159_g_2_t_1.html</a>

4.NF.2.	<b>Comparing Fractions</b>	4.NF.2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.
a.	<b>Compare two fractions with different numerators and denominators using a visual model. Use the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math> to indicate comparative size. Explain the comparison using a visual model.</b>	
	<ul style="list-style-type: none"> <li>Compare fractions with different denominators using number lines</li> </ul>	<a href="http://learnzillion.com/lessons/1433-compare-fractions-with-different-denominators-using-number-lines">http://learnzillion.com/lessons/1433-compare-fractions-with-different-denominators-using-number-lines</a>
	<ul style="list-style-type: none"> <li>Compare fractions with different denominators using area models</li> </ul>	<a href="http://learnzillion.com/lessons/1434-compare-fractions-with-different-denominators-using-area-models">http://learnzillion.com/lessons/1434-compare-fractions-with-different-denominators-using-area-models</a>
	<ul style="list-style-type: none"> <li>Compare fractions to a benchmark of one using area models</li> </ul>	<a href="http://learnzillion.com/lessons/849-compare-fractions-to-a-benchmark-of-one-using-area-models">http://learnzillion.com/lessons/849-compare-fractions-to-a-benchmark-of-one-using-area-models</a>
	<ul style="list-style-type: none"> <li>Compare fractions with different numerators and denominators using a number line</li> </ul>	<a href="http://learnzillion.com/lessons/843-compare-fractions-with-different-numerators-and-denominators-using-a-number-line">http://learnzillion.com/lessons/843-compare-fractions-with-different-numerators-and-denominators-using-a-number-line</a>
	<ul style="list-style-type: none"> <li>Compare fractions with different numerators and denominators using area models</li> </ul>	<a href="http://learnzillion.com/lessons/844-compare-fractions-with-different-numerators-and-denominators-using-area-models">http://learnzillion.com/lessons/844-compare-fractions-with-different-numerators-and-denominators-using-area-models</a>
b.	<b>Compare two fractions with different numerators and denominators by comparing them to a benchmark number (e.g. <math>\frac{1}{2}</math>)</b>	
	<ul style="list-style-type: none"> <li>Compare fractions using the benchmark fraction <math>\frac{1}{2}</math></li> </ul>	<a href="http://learnzillion.com/lessons/1431-compare-fractions-using-the-benchmark-fraction-12">http://learnzillion.com/lessons/1431-compare-fractions-using-the-benchmark-fraction-12</a>
c.	<b>Understand that comparisons between two fractions are valid only when both fractions refer to the same size whole.</b>	
	<ul style="list-style-type: none"> <li>Compare fractions with different denominators using area models</li> </ul>	<a href="http://learnzillion.com/lessons/1434-compare-fractions-with-different-denominators-using-area-models">http://learnzillion.com/lessons/1434-compare-fractions-with-different-denominators-using-area-models</a>
4.NF.3.	<b>Understanding Fractions</b>	4.NF.3. Understand a fraction $\frac{a}{b}$ (with $a > 1$ ) as a sum of fractions $\frac{1}{b}$ .
a.	<b>Define the numerator and denominator of a fraction. Explain why, in adding fractions with equal denominators, the numerators add but the denominators do not.</b>	
	<ul style="list-style-type: none"> <li>Denominator specifies the number of pieces in One Whole. The Numerator states the number of pieces that Exist.</li> </ul>	<a href="http://learnzillion.com/lessons/352-find-a-fraction-identifying-the-parts-of-a-whole">http://learnzillion.com/lessons/352-find-a-fraction-identifying-the-parts-of-a-whole</a>
b.	<b>Understand a fraction <math>\frac{a}{b}</math> (with <math>a &gt; 1</math>) as the addition (a times) of the unit fraction <math>\frac{1}{b}</math>. Understand that this is equivalent to <math>a \cdot (\frac{1}{b})</math></b>	
	<ul style="list-style-type: none"> <li>Unit Fractions - see especially "1. What is a unit fraction?"</li> </ul>	<a href="http://www.themathpage.com/arith/unit-fractions.htm">http://www.themathpage.com/arith/unit-fractions.htm</a>

4.NF.3.a.	<b>Adding and Subtracting Fractions and Mixed Numbers</b>	4.NF.3.a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
a.	<b>Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</b>	
	<ul style="list-style-type: none"> <li>• Add fractions with like denominators using a number line</li> </ul>	<a href="http://learnzillion.com/lessons/1631-add-fractions-with-like-denominators-using-a-number-line">http://learnzillion.com/lessons/1631-add-fractions-with-like-denominators-using-a-number-line</a>
	<ul style="list-style-type: none"> <li>• Subtract fractions with like denominators using a number line</li> </ul>	<a href="http://learnzillion.com/lessons/1632-subtract-fractions-with-like-denominators-using-a-number-line">http://learnzillion.com/lessons/1632-subtract-fractions-with-like-denominators-using-a-number-line</a>
	<ul style="list-style-type: none"> <li>• Using visual modeling to show addition of mixed numbers.</li> </ul>	<a href="http://illustrativemathematics.org/illustrations/856">http://illustrativemathematics.org/illustrations/856</a>
<ul style="list-style-type: none"> <li>• Practice adding and subtracting fractions.</li> </ul>	<a href="http://www.mathscore.com/math/practice/Fraction%20Parts/">http://www.mathscore.com/math/practice/Fraction%20Parts/</a>	
4.NF.3.b.	<b>Understanding Fractions</b>	4.NF.3.b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ ; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$ ; $2 \frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$ .
a.	<b>Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.</b>	
	<ul style="list-style-type: none"> <li>• Understand that fractions are equal parts of wholes</li> </ul>	<a href="http://learnzillion.com/lessons/353-understand-that-fractions-are-equal-parts-of-wholes">http://learnzillion.com/lessons/353-understand-that-fractions-are-equal-parts-of-wholes</a>
	<ul style="list-style-type: none"> <li>• Decompose fractions: using addition</li> </ul>	<a href="http://learnzillion.com/lessons/112-decompose-fractions-using-addition">http://learnzillion.com/lessons/112-decompose-fractions-using-addition</a>
<ul style="list-style-type: none"> <li>• Decompose a fraction into a sum of fractions using an area model</li> </ul>	<a href="http://learnzillion.com/lessons/1630-decompose-a-fraction-into-a-sum-of-fractions-using-an-area-model">http://learnzillion.com/lessons/1630-decompose-a-fraction-into-a-sum-of-fractions-using-an-area-model</a>	
b.	<ul style="list-style-type: none"> <li>• <b>Decompose a fraction <math>\frac{a}{b}</math> into the sum of fractions with the denominator <math>b</math>, and a set of numerators that add to the numerator <math>a</math>.</b></li> </ul>	
	<ul style="list-style-type: none"> <li>• Decompose fractions by breaking up the fraction into a sum of fractions</li> </ul>	<a href="http://learnzillion.com/lessons/1423-decompose-fractions">http://learnzillion.com/lessons/1423-decompose-fractions</a>
	<ul style="list-style-type: none"> <li>• Add unit fractions to make 1 whole</li> </ul>	<a href="http://learnzillion.com/lessons/111-add-unit-fractions-to-make-1-whole">http://learnzillion.com/lessons/111-add-unit-fractions-to-make-1-whole</a>
<ul style="list-style-type: none"> <li>• Decompose fractions: using addition</li> </ul>	<a href="http://learnzillion.com/lessons/112-decompose-fractions-using-addition">http://learnzillion.com/lessons/112-decompose-fractions-using-addition</a>	



4.NF.3.c.	<b>Adding and Subtracting Fractions and Mixed Numbers</b>	4.NF.3.c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
a	<b>Add and subtract mixed numbers using improper fractions</b>	
	<ul style="list-style-type: none"> <li>• Add mixed numbers using an area model</li> </ul>	<a href="http://learnzillion.com/lessons/1711-add-mixed-numbers-using-an-area-model-lesson-1-of-2">http://learnzillion.com/lessons/1711-add-mixed-numbers-using-an-area-model-lesson-1-of-2</a>
	<ul style="list-style-type: none"> <li>• Add mixed numbers using a number line</li> </ul>	<a href="http://learnzillion.com/lessons/1713-add-mixed-numbers-using-a-number-line">http://learnzillion.com/lessons/1713-add-mixed-numbers-using-a-number-line</a>
	<ul style="list-style-type: none"> <li>• Subtract mixed numbers using an area model</li> </ul>	<a href="http://learnzillion.com/lessons/1712-subtract-mixed-numbers-using-an-area-model">http://learnzillion.com/lessons/1712-subtract-mixed-numbers-using-an-area-model</a>
	<ul style="list-style-type: none"> <li>• Subtract mixed numbers using a number line</li> </ul>	<a href="http://learnzillion.com/lessons/1714-subtract-mixed-numbers-using-a-number-line">http://learnzillion.com/lessons/1714-subtract-mixed-numbers-using-a-number-line</a>
	<ul style="list-style-type: none"> <li>• Practice adding and subtracting mixed numbers</li> </ul>	<a href="http://www.mathscore.com/math/practice/Basic%20Fraction%20Subtraction/">http://www.mathscore.com/math/practice/Basic%20Fraction%20Subtraction/</a>
b	<b>Add and/or subtract mixed numbers adding fractions to fractions and integers to integers. Regroup as necessary.</b>	
	<ul style="list-style-type: none"> <li>• Adding mixed numbers</li> </ul>	<a href="http://www.aaamath.com/fra66dx2.htm">http://www.aaamath.com/fra66dx2.htm</a>
	<ul style="list-style-type: none"> <li>• Adding and subtracting mixed numbers</li> </ul>	<a href="http://www.math.com/school/subject1/lessons/S1U4L6GL.html">http://www.math.com/school/subject1/lessons/S1U4L6GL.html</a>
4.NF.3.d.	<b>Word Problems Using the Addition and/or Subtraction of Fractions</b>	4.NF.3.d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
a.	<ul style="list-style-type: none"> <li>• Word Problems Using the Addition or Subtraction of Fractions. Uses <b>Thinking Blocks</b> (a Visual Modeling tool) to solve the problems - <b>(STRONGLY RECOMMENDED)</b> - Use Video</li> </ul>	<a href="http://www.thinkingblocks.com/tb_fractions/fractions.html">http://www.thinkingblocks.com/tb_fractions/fractions.html</a>
b	<ul style="list-style-type: none"> <li>• Lesson Using fractions to solve word problems</li> </ul>	<a href="http://www.algebra.com/algebra/homework/NumericFractions/Using-fractions-to-solve-word-problems.lesson">http://www.algebra.com/algebra/homework/NumericFractions/Using-fractions-to-solve-word-problems.lesson</a>
4.NF.4. 4.NF.4.a. 4.NF.4.b.	<b>Multiplying Fractions and Whole Numbers</b>	4.NF.4. Apply and previous understandings of multiplication to multiply a fraction by a whole number. 4.NF.4.a. Understand a fraction $a/b$ as a multiple of $1/b$ . For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$ , recording the conclusion by the equation $5/4 = 5 \times (1/4)$ . 4.NF.4.b. Understand a multiple of $a/b$ as a multiple of $1/b$ , and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$ , recognizing this product as $6/5$ . (In general, $n \times (a/b) = (n \times a)/b$ .)
a.	<b>Understand the fraction <math>a/b</math> is a multiple of <math>1/b</math>. Use a visual model to show that <math>a/b = a \bullet (1/b)</math></b>	
	<ul style="list-style-type: none"> <li>• Multiply a fraction by a whole number using visual models and repeated addition</li> </ul>	<a href="http://learnzillion.com/lessons/126-multiply-fractions-by-whole-numbers-using-models">http://learnzillion.com/lessons/126-multiply-fractions-by-whole-numbers-using-models</a>

	<b>4.NF.4. CONTINUED</b>	
b.	Understand that a multiple of the fraction $a/b$ is a multiple of $1/b$ . Use this understanding to multiply a fraction by a whole number.	
	<ul style="list-style-type: none"> <li>Multiply a fraction by a whole number using visual models and repeated addition</li> </ul>	<a href="http://learnzillion.com/lessons/126-multiply-fractions-by-whole-numbers-using-models">http://learnzillion.com/lessons/126-multiply-fractions-by-whole-numbers-using-models</a>
<b>4.NF.4.c.</b>	<b>Word Problems using the Multiplication of Fractions by a Whole Number</b>	<b>4.NF.4.c.</b> Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?
a.	Solve problems of the type $x = n \cdot (a/b)$ . Use visual models and equations to explain the solution.	
	<ul style="list-style-type: none"> <li>Add tenths and hundredths by creating equivalent fractions</li> </ul>	<a href="http://learnzillion.com/lessons/1430-solve-word-problems-involving-multiplying-a-fraction-by-a-whole-number">http://learnzillion.com/lessons/1430-solve-word-problems-involving-multiplying-a-fraction-by-a-whole-number</a>
	<ul style="list-style-type: none"> <li>Using a visual model to show multiplication of a whole number <math>X</math> a fraction.</li> </ul>	<a href="http://illustrativemathematics.org/illustrations/857">http://illustrativemathematics.org/illustrations/857</a>
<b>4.NF.5.</b>	<b>Add two fractions with denominators 10 and 100</b>	<b>4.NF.5.</b> Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express $3/10$ as $30/100$ , and add $3/10 + 4/100 = 34/100$ .
	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.	
	<ul style="list-style-type: none"> <li>Show equivalence between hundredths and tenths.</li> </ul>	<a href="http://illustrativemathematics.org/illustrations/103">http://illustrativemathematics.org/illustrations/103</a>
	<ul style="list-style-type: none"> <li>Add tenths and hundredths by creating equivalent fractions</li> </ul>	<a href="http://learnzillion.com/lessons/1428-add-tenths-and-hundredths-by-creating-equivalent-fractions">http://learnzillion.com/lessons/1428-add-tenths-and-hundredths-by-creating-equivalent-fractions</a>
	<ul style="list-style-type: none"> <li>Add tenths and hundredths by creating equivalent fractions</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=53902&amp;CategoryID=15484">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=53902&amp;CategoryID=15484</a>
<b>4.NF.6.</b>	<b>Use decimal notation for fractions with denominators 10 or 100</b>	<b>4.NF.6.</b> Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $62/100$ ; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
	Use decimal notation for fractions with denominators 10 or 100.	
	<ul style="list-style-type: none"> <li>Convert decimals to fractions to the tenths place using number lines</li> </ul>	<a href="http://learnzillion.com/lessons/1424-convert-decimals-to-fractions-to-the-tenths-place-using-number-lines">http://learnzillion.com/lessons/1424-convert-decimals-to-fractions-to-the-tenths-place-using-number-lines</a>
	<ul style="list-style-type: none"> <li>Convert fractions to decimals to the hundredths place using division</li> </ul>	<a href="http://learnzillion.com/lessons/1427-convert-fractions-to-decimals-to-the-hundredths-place-using-division">http://learnzillion.com/lessons/1427-convert-fractions-to-decimals-to-the-hundredths-place-using-division</a>

4.NF.7.	<b>Comparing Decimals</b>	<b>4.NF.7.</b> Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual model.
a.	<b>Compare two numbers containing decimals to the hundredths place. Use the symbols <math>&gt;</math>, <math>=</math>, <math>&lt;</math> to specify the results of the comparison. Support the results using a visual model.</b>	
	<ul style="list-style-type: none"> <li>• Comparing Decimals</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=32156&amp;CategoryID=15486">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=32156&amp;CategoryID=15486</a>
<ul style="list-style-type: none"> <li>• Comparing Decimals</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=1942&amp;CategoryID=15486">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=1942&amp;CategoryID=15486</a>	
b.	<b>Understand that comparisons between two decimals are valid only when both decimals refer to the same size whole.</b>	
	<ul style="list-style-type: none"> <li>• Comparison between decimal depend on the size of the whole.</li> </ul>	<a href="http://illustrativemathematics.org/illustrations/819">http://illustrativemathematics.org/illustrations/819</a>
<b>MEASUREMENT AND DATA</b>		
4.MD.1. Customary	<b>Customary Measurement Units</b>	<b>4.MD.1.</b> Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a twocolumn table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs: (1, 12), (2, 24), (3, 36), ...
a.	<b>Customary Measurement - General</b>	
	<ul style="list-style-type: none"> <li>• Measurement overview</li> </ul>	<a href="http://www.eduplace.com/math/mw/background/4/06/te_4_06_overview.html">http://www.eduplace.com/math/mw/background/4/06/te_4_06_overview.html</a>
	<ul style="list-style-type: none"> <li>• 4th Grade Measurement and Data</li> </ul>	<a href="http://www.k-5mathteachingresources.com/4th-grade-measurement-and-data.html">http://www.k-5mathteachingresources.com/4th-grade-measurement-and-data.html</a>
	<ul style="list-style-type: none"> <li>• Weights and Measures Problem - Recipe</li> </ul>	<a href="http://www.eduplace.com/math/mw/background/4/06/ts_4_6_dev-2s.pdf">http://www.eduplace.com/math/mw/background/4/06/ts_4_6_dev-2s.pdf</a>
<ul style="list-style-type: none"> <li>• Interactive Practice - Convert customary units</li> </ul>	<a href="http://www.ixl.com/math/grade-4/compare-and-convert-customary-units">http://www.ixl.com/math/grade-4/compare-and-convert-customary-units</a>	
b.	<b>LENGTH - <u>Examples</u> - Know real world objects corresponding to an inch, foot, yard and mile.</b>	
	<ul style="list-style-type: none"> <li>• Metric and Customary Units - with interactive problems</li> </ul>	<a href="http://www.studyzone.org/testprep/math4/d/measure4l.cfm">http://www.studyzone.org/testprep/math4/d/measure4l.cfm</a>
c.	<b>LENGTH - <u>Conversion</u> - Know how to convert between inches, feet, yards and miles. Create a two column table showing the common conversions between length.</b>	
	<ul style="list-style-type: none"> <li>• Converting Units of Length</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23554&amp;CategoryID=15487">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23554&amp;CategoryID=15487</a>
	<ul style="list-style-type: none"> <li>• Conversion of length - practice</li> </ul>	<a href="http://www.studyzone.org/testprep/math4/d/length4p.cfm">http://www.studyzone.org/testprep/math4/d/length4p.cfm</a>

	<b>4.MD.1 CONTINUED (customary)</b>	
	<ul style="list-style-type: none"> <li>Metric and Customary Units - with interactive problems</li> </ul>	<a href="http://www.studyzone.org/testprep/math4/d/measure4l.cfm">http://www.studyzone.org/testprep/math4/d/measure4l.cfm</a>
d.	<b>CAPACITY - Examples - Know real world objects containing a cup, pint, quart and gallon of liquid.</b>	
	<ul style="list-style-type: none"> <li>Measuring/Capacity</li> </ul>	<a href="http://www.studyzone.org/testprep/math4/e/measurecapacity3l.cfm">http://www.studyzone.org/testprep/math4/e/measurecapacity3l.cfm</a>
e.	<b>CAPACITY - Conversion - Know how to convert between cups, pints, quarts and gallons. Create a two column table showing the common conversions between length.</b>	
	<ul style="list-style-type: none"> <li>Measuring/Capacity</li> </ul>	<a href="http://www.studyzone.org/testprep/math4/e/measurecapacity3l.cfm">http://www.studyzone.org/testprep/math4/e/measurecapacity3l.cfm</a>
	<ul style="list-style-type: none"> <li>Cups, Pints, and Quarts</li> </ul>	<a href="http://www.eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/mw/help/eh_popup.shtml&amp;grade=1&amp;chapter=1&amp;lesson=2&amp;title=Cups,+Pints,+and+Quarts&amp;tm=tmfb1802e">http://www.eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/mw/help/eh_popup.shtml&amp;grade=1&amp;chapter=1&amp;lesson=2&amp;title=Cups,+Pints,+and+Quarts&amp;tm=tmfb1802e</a>
f.	<b>WEIGHT - Examples - Know real world objects corresponding to an ounce, and a pound.</b>	
	<ul style="list-style-type: none"> <li>What things weigh</li> </ul>	<a href="http://www.myfitnesspal.com/topics/show/738738-what-things-weigh-compared-to-what-you-ve-lost">http://www.myfitnesspal.com/topics/show/738738-what-things-weigh-compared-to-what-you-ve-lost</a>
g	<b>WEIGHT - Conversion Know how to convert between ounces and pounds. Create a two column table showing the common conversions between length.</b>	
	<ul style="list-style-type: none"> <li>Pounds to ounces</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23556&amp;CategoryID=15487">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23556&amp;CategoryID=15487</a>
	<ul style="list-style-type: none"> <li>How to Add Different Units of Weight</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23557&amp;CategoryID=15487">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=23557&amp;CategoryID=15487</a>
<b>4.MD.1. Metric</b>	<b>Metric Measurement Units</b>	<p><b>4.MD.1.</b> Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs: (1, 12), (2, 24), (3, 36), ...</p>
	<b>Metric Measurement</b>	
	<ul style="list-style-type: none"> <li>Basics of the Metric System</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=5878&amp;CategoryID=15487">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=5878&amp;CategoryID=15487</a>
	<ul style="list-style-type: none"> <li>Everyday usage of metric</li> </ul>	<a href="http://thinkmetric.org.uk/everyday.html">http://thinkmetric.org.uk/everyday.html</a>
	<ul style="list-style-type: none"> <li>Metric Measurement</li> </ul>	<a href="http://www.mathsisfun.com/measure/metric-system-introduction.html">http://www.mathsisfun.com/measure/metric-system-introduction.html</a>

a.	<b>LENGTH - Examples - Know real world objects or measurements corresponding to a meter and a kilometer.</b>	
	<b>4.MD.1 CONTINUED (metric)</b>	
	• Metric and Customary Units - with interactive problems	<a href="http://www.studyzone.org/testprep/math4/d/measure4l.cfm">http://www.studyzone.org/testprep/math4/d/measure4l.cfm</a>
b.	<b>LENGTH - Conversion - Know how to convert between meters and kilometers. Create a two column table showing the common conversions between length.</b>	
	• Metric length	<a href="http://thinkmetric.org.uk/length.html">http://thinkmetric.org.uk/length.html</a>
	• Metric and Customary Units - with interactive problems	<a href="http://www.studyzone.org/testprep/math4/d/measure4l.cfm">http://www.studyzone.org/testprep/math4/d/measure4l.cfm</a>
c.	<b>CAPACITY - Examples - Know real world objects containing a milliliter and a liter of liquid.</b>	
	• Metric Units of Capacity	<a href="http://www.studyzone.org/testprep/math4/d/capacity4l.cfm">http://www.studyzone.org/testprep/math4/d/capacity4l.cfm</a>
d.	<b>CAPACITY - Conversion - Know how to convert between milliliters and liters. Create a two column table showing the common conversions between length.</b>	
	• Metric Units of Capacity	<a href="http://www.studyzone.org/testprep/math4/d/capacity4l.cfm">http://www.studyzone.org/testprep/math4/d/capacity4l.cfm</a>
e.	<b>WEIGHT - Examples - Know real world objects corresponding to a gram and a kilogram.</b>	
	• Mass using Grams 1	<a href="http://www.studyzone.org/testprep/math4/d/massgram4p.cfm">http://www.studyzone.org/testprep/math4/d/massgram4p.cfm</a>
	• Mass using Grams 2	<a href="http://www.studyzone.org/testprep/math4/d/massgram4l.cfm">http://www.studyzone.org/testprep/math4/d/massgram4l.cfm</a>
f.	<b>WEIGHT - Conversion - Know how to convert between grams and kilograms. Create a two column table showing the common conversions between length.</b>	
	• Metric weight	<a href="http://thinkmetric.org.uk/mass.html">http://thinkmetric.org.uk/mass.html</a>

4.MD.1.	<b>Units of Time</b>	<b>4.MD.1.</b> Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a twocolumn table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs: (1, 12), (2, 24), (3, 36), ...
a.	<b>Examples of time - Know real world measurements corresponding to a second, a minute and an hour.</b>	
	<ul style="list-style-type: none"> <li>• <a href="#">Worksheet - Conversion of time construction tool</a></li> </ul>	<a href="http://www.math-aids.com/Time/Conversion_Time_Units.html">http://www.math-aids.com/Time/Conversion_Time_Units.html</a>
b.	<b>Conversion of time - Know how to convert between seconds, minutes and hours. Create a two column table showing the common conversions between length.</b>	
	<ul style="list-style-type: none"> <li>• <a href="#">Worksheet - Time Conversion</a></li> </ul>	<a href="http://www.education.com/files/94701_94800/94798/converting-time-hours-minutes.pdf">http://www.education.com/files/94701_94800/94798/converting-time-hours-minutes.pdf</a>
4.MD.2.	<b>Solving Measurement Problems</b>	<b>4.MD.2.</b> Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
a.	<b>Solve word problems involving distance, time, capacity, weight and money. Problems may involve fractions or decimals. Show measurement quantities using diagrams such as number lines containing measurement scales.</b>	
	<ul style="list-style-type: none"> <li>• <a href="#">Worksheet - Time Conversion</a></li> </ul>	<a href="http://www.education.com/files/94701_94800/94798/converting-time-hours-minutes.pdf">http://www.education.com/files/94701_94800/94798/converting-time-hours-minutes.pdf</a>
	<ul style="list-style-type: none"> <li>• <a href="#">Metric Measurement conversion word problems</a></li> </ul>	<a href="http://www.k-5mathteachingresources.com/support-files/conversionwordproblems.pdf">http://www.k-5mathteachingresources.com/support-files/conversionwordproblems.pdf</a>
	<ul style="list-style-type: none"> <li>• <a href="#">Elapsed time ruler</a></li> </ul>	<a href="http://www.k-5mathteachingresources.com/support-files/elapsedtimerulersample1.pdf">http://www.k-5mathteachingresources.com/support-files/elapsedtimerulersample1.pdf</a>
	<ul style="list-style-type: none"> <li>• <a href="#">Volume conversion game</a></li> </ul>	<a href="http://files.pbslearningmedia.org/dlos/wnet/dlo6.html">http://files.pbslearningmedia.org/dlos/wnet/dlo6.html</a>
4.MD.3. Perimeter	<b>Measurement of the Perimeter of a Rectangular</b>	<b>4.MD.3.</b> Apply the perimeter formulas for rectangles in real world and mathematical problems. Solve problems where one element is missing (i.e. is the unknown factor) and must be derived from the perimeter information that is provided.
a.	<b>Solve problems involving the Perimeter of rectangles.</b>	
	<ul style="list-style-type: none"> <li>• <a href="#">Online interactive lesson</a></li> </ul>	<a href="http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/perimeter_and_area/index.html">http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/perimeter_and_area/index.html</a>
	<ul style="list-style-type: none"> <li>• <a href="#">Online interactive quiz</a></li> </ul>	<a href="http://www.thatquiz.org/tq-4/?-j8001-la-n35-p0">http://www.thatquiz.org/tq-4/?-j8001-la-n35-p0</a>

4.MD.3. Area	<b>Measurement of the Area of Rectangular Figures</b>	<b>4.MD.3.</b> Apply the area formulas for rectangles in real world and mathematical problems. Solve problems where one element is missing (i.e. is the unknown factor) and must be derived from the perimeter and/or area information that is provided.
a.	<b>Solve problems involving the Area of rectangles.</b>	
	<ul style="list-style-type: none"> <li>• Area and perimeter of figures using an online Geoboard</li> </ul>	<a href="http://mste.illinois.edu/users/pavel/java/geoboard/">http://mste.illinois.edu/users/pavel/java/geoboard/</a>
	<ul style="list-style-type: none"> <li>• Which garden has more area problem</li> </ul>	<a href="http://www.illustrativemathematics.org/standards/k8">http://www.illustrativemathematics.org/standards/k8</a>
	<ul style="list-style-type: none"> <li>• Online interactive quiz</li> </ul>	<a href="http://www.thatquiz.org/tq-4/?-j8001-la-n35-p0">http://www.thatquiz.org/tq-4/?-j8001-la-n35-p0</a>
4.MD.5. 4.MD.5.a. 4.MD.5.b. 4.MD.5.6. 4.MD.5.7.	<b>Measurement of Angles</b>	<p><b>4.MD.5.</b> Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p> <p><b>4.MD.5.a.</b> An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through <math>\frac{1}{360}</math> of a circle is called a “one-degree angle,” and can be used to measure angles.</p> <p><b>4.MD.5.b.</b> An angle that turns through <math>n</math> one-degree angles is said to have an angle measure of <math>n</math> degrees. <b>4.MD.5.6.</b> Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p> <p><b>4.MD.5.7.</b> Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g. the unknown angle measure.</p>
a.	<b>Measure angles by the fraction that the turns relative to a 360 degree circle. Distinguish acute, right and obtuse angles.</b>	
	<ul style="list-style-type: none"> <li>• Video - How to measure angles</li> </ul>	<a href="http://www.brainpop.com/math/geometryandmeasurement/angles/">http://www.brainpop.com/math/geometryandmeasurement/angles/</a>
	<ul style="list-style-type: none"> <li>• Video - Angles (Kahn Academy)</li> </ul>	<a href="http://www.khanacademy.org/math/geometry/angles/v/angles--part-2">http://www.khanacademy.org/math/geometry/angles/v/angles--part-2</a>
<ul style="list-style-type: none"> <li>• Video - Definition of angles; number of degrees of an angle</li> </ul>	<a href="http://secc.sedl.org/common_core_videos/grade.php?action=view&amp;id=632">http://secc.sedl.org/common_core_videos/grade.php?action=view&amp;id=632</a>	
b.	<b>Measure angles using a protractor in whole degrees.</b>	
	<ul style="list-style-type: none"> <li>• Interactive protractor video</li> </ul>	<a href="http://educar-cdn.pbs.org/u/pr/KAET/Angle%20Action%20Part%201%20%20Math%20Interactive_dee2d9a5-eafe-4fe5-9e9e-dfb7ab24de3e/interface.swf">http://educar-cdn.pbs.org/u/pr/KAET/Angle%20Action%20Part%201%20%20Math%20Interactive_dee2d9a5-eafe-4fe5-9e9e-dfb7ab24de3e/interface.swf</a>
	<ul style="list-style-type: none"> <li>• Video - Using a protractor to measure angles</li> </ul>	<a href="http://www.youtube.com/watch?v=FeclDm7pVcl">http://www.youtube.com/watch?v=FeclDm7pVcl</a>

c.	<b>4.MD.5 CONTINUED</b>	
	<b>Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems</b>	
	• Adding and subtracting angles - Example problems	<a href="http://www.mathscore.com/math/practice/Angle%20Measurements/">http://www.mathscore.com/math/practice/Angle%20Measurements/</a>
	• Adding and subtracting angles	<a href="http://www.helpingwithmath.com/by_subject/geometry/geo_adding_angles_4md7.htm">http://www.helpingwithmath.com/by_subject/geometry/geo_adding_angles_4md7.htm</a>

<b>4.MD.4.</b>	<b>Display of Data - Line Plots</b>	<b>4.MD.4.</b> Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.
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	<b>Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Solve problems involving the addition and subtraction of information presented in the line plots.</b>	
	• Video - What is a line plot and how to make one	<a href="http://www.onlinemathlearning.com/line-plots-g4.html">http://www.onlinemathlearning.com/line-plots-g4.html</a>
	• Online Quiz	<a href="http://www.ixl.com/math/grade-4/interpret-line-plots">http://www.ixl.com/math/grade-4/interpret-line-plots</a>
	• Length of Ants problem	<a href="http://www.k-5mathteachingresources.com/support-files/lengthofantslineplot.pdf">http://www.k-5mathteachingresources.com/support-files/lengthofantslineplot.pdf</a>

**GEOMETRY**

<b>4.G.1.</b>	<b>Points, Lines, and Planes</b>	<b>4.G.1.</b> Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
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a.	<b>Identify and draw points, lines, line segments, and rays. Identify these in two-dimensional figures</b>	
	• Lines, Line Segments, and Rays	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=33428&amp;CategoryID=15496">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=33428&amp;CategoryID=15496</a>

b.	<b>Identify and draw perpendicular and parallel lines. Identify these in two-dimensional figures.</b>	
	• Parallel and Perpendicular Lines - Practice Problems	<a href="http://www.mathscore.com/math/practice/Parallel%20and%20Perpendicular%20Lines/">http://www.mathscore.com/math/practice/Parallel%20and%20Perpendicular%20Lines/</a>

c.	<b>Identify and draw angles and identify at acute, right, obtuse or straight. Identify these in two-dimensional figures.</b>	
	• Video lesson on angles	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=27157&amp;CategoryID=15496">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=27157&amp;CategoryID=15496</a>



4.G.2.	<b>Two-Dimensional Shapes</b>	<b>4.G.2.</b> Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
	<b>Identify shapes based on the presence of parallel and perpendicular lines and angles of a specified size</b>	
	<ul style="list-style-type: none"> <li>• Using Properties of Quadrilaterals</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=5504&amp;CategoryID=15497">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=5504&amp;CategoryID=15497</a>
	<ul style="list-style-type: none"> <li>• Basic Right Triangles (Interactive)</li> </ul>	<a href="http://ccss4.watchknowlearn.org/Video.aspx?VideoID=47865&amp;CategoryID=15497">http://ccss4.watchknowlearn.org/Video.aspx?VideoID=47865&amp;CategoryID=15497</a>
	<ul style="list-style-type: none"> <li>• Basic Polygons</li> </ul>	<a href="http://www.mathsisfun.com/geometry/polygons.html">http://www.mathsisfun.com/geometry/polygons.html</a>
4.G.3.	<b>Symmetry</b>	<b>4.G.3.</b> Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
	<b>Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</b>	
	<ul style="list-style-type: none"> <li>• Symmetry Activity</li> </ul>	<a href="http://www.haelmedia.com/OnlineActivities_txh/mc_txh4_001.html">http://www.haelmedia.com/OnlineActivities_txh/mc_txh4_001.html</a>
	<ul style="list-style-type: none"> <li>• Exercise - lines of symmetry of quadrilaterals</li> </ul>	<a href="http://illustrativemathematics.org/illustrations/1059">http://illustrativemathematics.org/illustrations/1059</a>
	<ul style="list-style-type: none"> <li>• Exercise - lines of symmetry of triangles</li> </ul>	<a href="http://illustrativemathematics.org/illustrations/1058">http://illustrativemathematics.org/illustrations/1058</a>