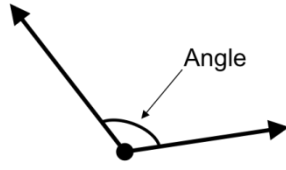
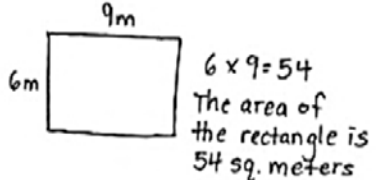
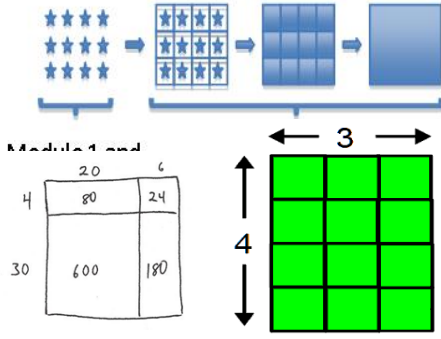
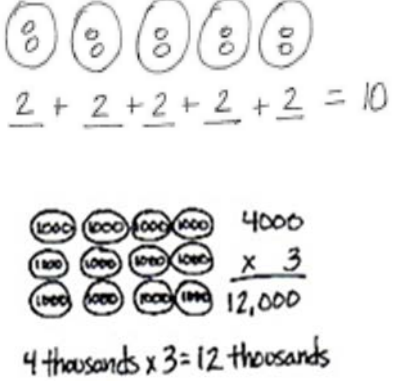


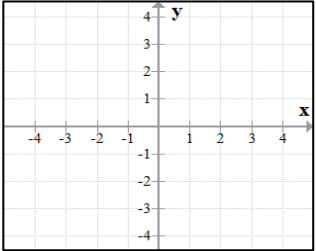
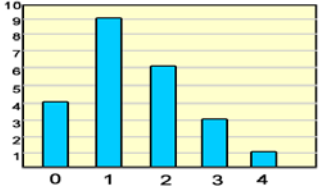
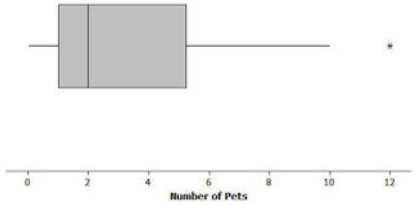
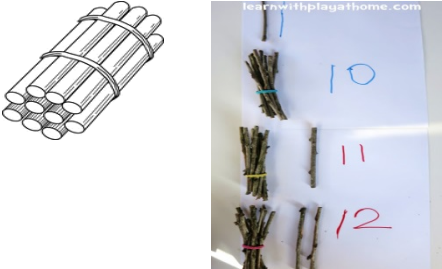
## Common Core Vocabulary and Representations

Vocabulary	Description	Representation																																																																																																				
<p style="text-align: center;"><b>2-Column Table</b></p>	<p>A two-column table shows the relationship between two values.</p>																																																																																																					
<p style="text-align: center;"><b>5 Group Columns</b></p>	<p>5 group columns represent 5 more or 5 less.</p>																																																																																																					
<p style="text-align: center;"><b>Absolute Value</b></p>	<p>The absolute value of a number is the distance between the number and zero on the number line.</p>																																																																																																					
<p style="text-align: center;"><b>Addition Chart</b></p>	<p>Addition Charts represent patterns in addition such as doubles one more one less, and 10 more and 10 less.</p>	<table border="1" style="font-size: small;"> <tbody> <tr><td>1+0</td><td>1+1</td><td>1+2</td><td>1+3</td><td>1+4</td><td>1+5</td><td>1+6</td><td>1+7</td><td>1+8</td><td>1+9</td></tr> <tr><td>2+0</td><td>2+1</td><td>2+2</td><td>2+3</td><td>2+4</td><td>2+5</td><td>2+6</td><td>2+7</td><td>2+8</td><td></td></tr> <tr><td>3+0</td><td>3+1</td><td>3+2</td><td>3+3</td><td>3+4</td><td>3+5</td><td>3+6</td><td>3+7</td><td></td><td></td></tr> <tr><td>4+0</td><td>4+1</td><td>4+2</td><td>4+3</td><td>4+4</td><td>4+5</td><td>4+6</td><td></td><td></td><td></td></tr> <tr><td>5+0</td><td>5+1</td><td>5+2</td><td>5+3</td><td>5+4</td><td>5+5</td><td></td><td></td><td></td><td></td></tr> <tr><td>6+0</td><td>6+1</td><td>6+2</td><td>6+3</td><td>6+4</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>7+0</td><td>7+1</td><td>7+2</td><td>7+3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8+0</td><td>8+1</td><td>8+2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>9+0</td><td>9+1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>10+0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8		3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7			4+0	4+1	4+2	4+3	4+4	4+5	4+6				5+0	5+1	5+2	5+3	5+4	5+5					6+0	6+1	6+2	6+3	6+4						7+0	7+1	7+2	7+3							8+0	8+1	8+2								9+0	9+1									10+0									
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<p style="text-align: center;"><b>Algorithm</b></p>	<p>a step-by-step procedure to solve a particular type of problem</p>	<p style="text-align: center;"><b>300 + 5 = 305</b></p>																																																																																																				

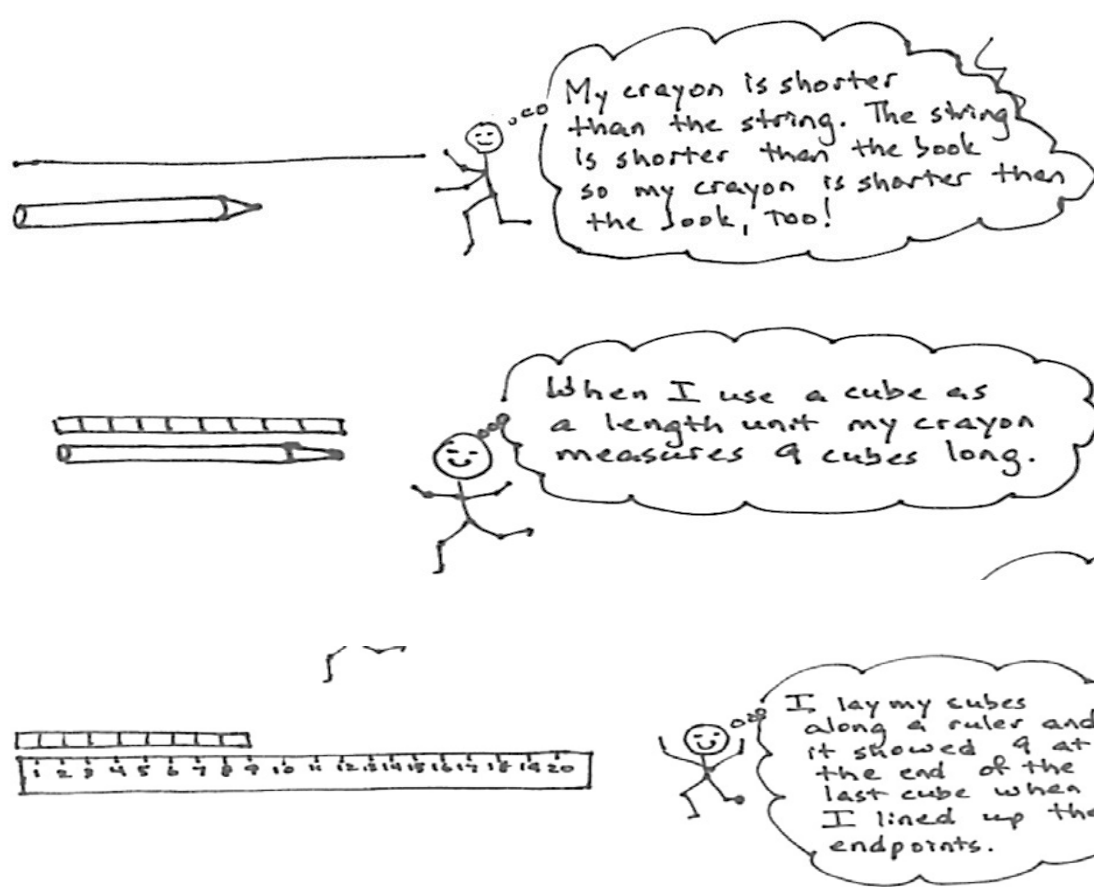
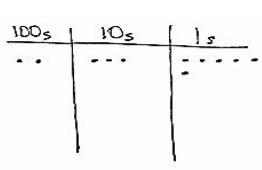
## Common Core Vocabulary and Representations

<p style="text-align: center;"><b>Angle</b></p>	<p>Union of two different rays sharing a common vertex.</p>	
<p style="text-align: center;"><b>Area</b></p>	<p>The amount of two-dimensional space in a bounded region.</p>	
<p style="text-align: center;"><b>Area Models</b></p>	<p>A model for multiplication problems, in which the length and width of a rectangle represents the factors. Relates rectangular arrays to area.</p>	
<p style="text-align: center;"><b>Arrays</b></p>	<p>An array is an arrangement of objects into equal rows and columns</p>	

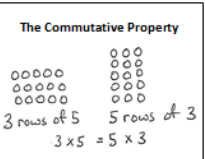
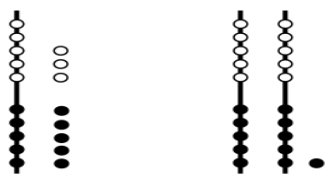

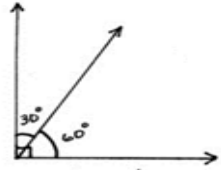
## Common Core Vocabulary and Representations

<p><b>Arrow Notation</b></p>	<p>Greater than and less a number represented by an arrow and 10 more or 10 less.</p>	<p style="text-align: center;"> <math display="block">26 \xrightarrow{+10} 36</math> </p> <p style="text-align: center;">26 is ten more than 36</p>
<p><b>Axis</b></p>	<p>Vertical or horizontal scale in a graph.</p>	
<p><b>Bar Graph</b></p>	<p>Graph generated from categorical data with bars to represent a quantity.</p>	<p style="text-align: center;"><b>Number of Siblings of Students in Mr. N's class</b></p> 
<p><b>Box Plot</b></p>	<p>A graph of five numerical summary measures: the minimum, lower quartile, median, upper quartile, and the maximum. It conveys information about center and variability in a data set.</p>	
<p><b>Bundle Bundling</b></p>	<p>A bundle is a representation of tens or bundling 10 tens to make 100</p>	

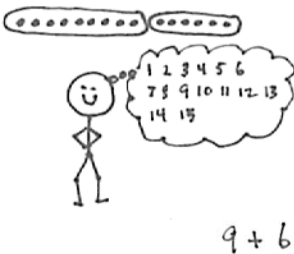
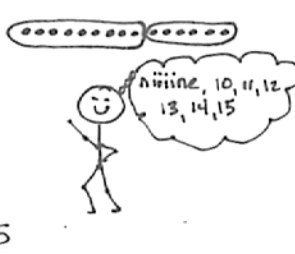
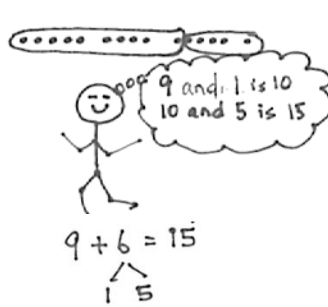
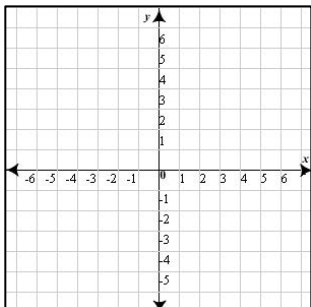
# Common Core Vocabulary and Representations

<h2 style="margin: 0;">Centimeter Cubes and String</h2>	<p>Centimeter cubes and string measure the length of objects.</p>	
 <p>The illustrations show a stick figure comparing a string and a crayon. A thought bubble says: "My crayon is shorter than the string. The string is shorter than the book so my crayon is shorter than the book, too!"</p> <p>Next, the stick figure uses cubes to measure the crayon. A thought bubble says: "When I use a cube as a length unit my crayon measures 9 cubes long."</p> <p>Finally, the stick figure uses a ruler to measure the cubes. A thought bubble says: "I lay my cubes along a ruler and it showed 9 at the end of the last cube when I lined up the endpoints."</p>		
<h2 style="margin: 0;">Chip Model</h2>	<p>A chip model, drawing dots on a labeled place value chart</p>	

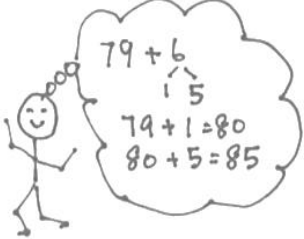
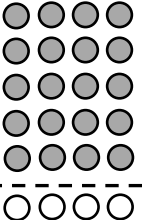
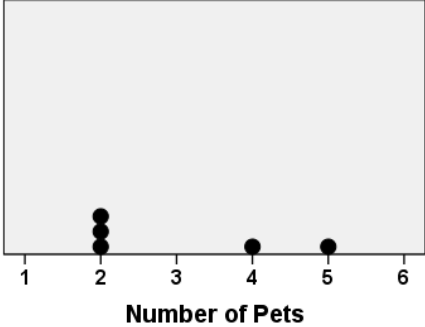
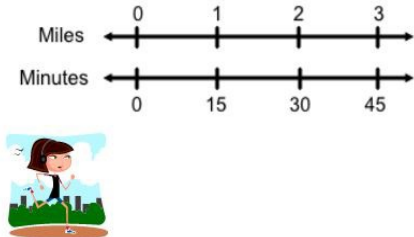
## Common Core Vocabulary and Representations

<p style="text-align: center;"><b>Commutative Property</b></p>	<p>The property that states when the order of two is changes, the product remains the same.</p>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 20px;"> <p style="text-align: center; margin: 0;">The Commutative Property</p>  </div> <div> <math display="block">6 + 3 = 9</math> <math display="block">3 + 6 = 9</math> <math display="block">9 = 6 + 3</math> <math display="block">9 = 3 + 6</math> </div> </div>
<p style="text-align: center;"><b>Comparison</b></p>	<p>Comparing numbers that are greater than or less that and representing the numbers using a 5 group column.</p>	<div style="text-align: center;">  <p>18 is less than 21</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid gray; padding: 2px 10px; margin-right: 10px;">18</div>  <div style="border: 1px solid gray; padding: 2px 10px; margin-left: 10px;">21</div> </div> </div>
<p style="text-align: center;"><b>Complementary Angles</b></p>	<p>Two angles with a sum of 90 degrees.</p>	<div style="text-align: center;">  <p>complementary angles</p> <math display="block">30^\circ + 60^\circ = 90^\circ</math> </div>
<p style="text-align: center;"><b>Compose</b></p>	<p>Composing Numbers are numbers that are put together to create one number.</p>	$\begin{array}{r} 12 + 3 \\ / \ \backslash \\ 10 \ 2 \end{array} \quad 12 + 3 = 10 + 2 + 3 = 10 + 5$ $\begin{array}{r} 92 + 3 \\ / \ \backslash \\ 90 \ 2 \end{array} \quad 92 + 3 = 90 + 2 + 3 = 90 + 5$


## Common Core Vocabulary and Representations

<p><b>Compose And Decompose (Addition &amp; Subtraction)</b></p>	<p>Composing Numbers are number that are put together to create one number. For example;   <math>300 + 30 + 3 = 331</math>. Decomposing means to take apart a number for example; <math>333 = 300 + 30 + 3</math>.</p>	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Level 1: Count all</p>  </div> <div style="text-align: center;"> <p>Level 2: Count on</p>  </div> <div style="text-align: center;"> <p>Level 3: Decompose an addend to compose</p>  </div> </div>		
<p><b>Convert</b></p>	<p>To express a measurement in a different unit.</p>	<p><b>1000g = 1 kilogram</b>  <b>1000ml = 1 litre</b>  <b>100cm = 1 metre</b></p>
<p><b>Coordinate Plane</b></p>	<p>Plane spanned by the <math>x</math>-axis and <math>y</math>-axis in which the coordinates of a point are distances from the two perpendicular axes.</p>	
<p><b>Decimal Expanded Form</b></p>	<p>The expanded form of a decimal number is the number written as the sum of its whole number and decimal place values.</p>	<p><math>(2 \times 10) + (4 \times 1) + (5 \times 0.1) + (9 \times 0.01) = 24.59</math></p>

## Common Core Vocabulary and Representations

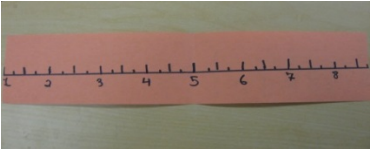
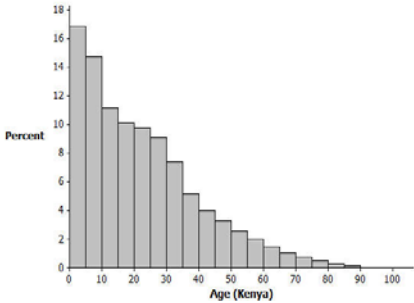
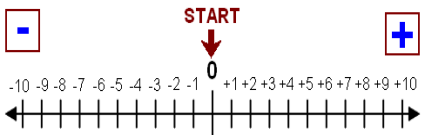
<p style="text-align: center;"><b>Decompose</b></p>	<p>Decomposing means to take apart a number for example;</p> $79+6$ $1+5$ $79+1=80$ $80+5=85$	
<p style="text-align: center;"><b>The Distributive Property</b></p>	<p>A multiplication fact can be broken into the sum of two other multiplication facts.</p>	<p style="text-align: center;"><b>The Distributive Property</b></p> <p><math>6 \times 4 = \underline{\quad}</math></p>  <p><math>(5 \times 4) = 20</math></p> <p><math>(1 \times 4) = 4</math></p> $(6 \times 4) = (5 \times 4) + (1 \times 4)$ $= 20 + 4$
<p style="text-align: center;"><b>Dot Plot</b></p>	<p>A plot of numerical data along a number line.</p>	
<p style="text-align: center;"><b>Double Number Line</b></p>	<p>A graphic diagram that shows a proportional relationship between two quantities.</p>	

## Common Core Vocabulary and Representations

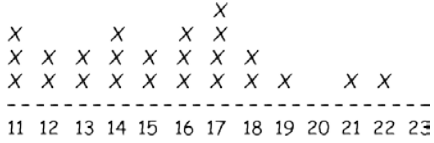
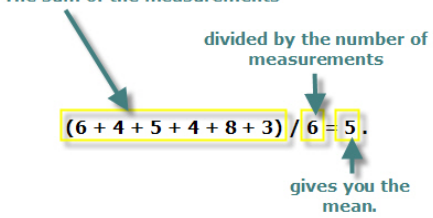
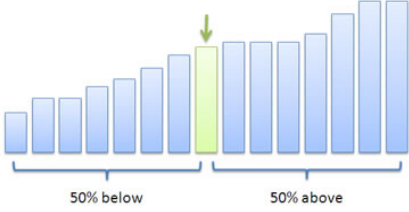
<b>Equation</b>	Statement that two mathematical expressions have the same value, indicated by use of the symbol.	$12 = 4 \times 2 + 4$
<b>Equivalent Ratios</b>	Ratios that have the same value.	 $1:2$ $2:4$ $4:8$
<b>Exponential Notation for Whole Number Exponents</b>	Let $m$ be a non-zero whole number. For any number $a$ , we define $a^m$ to be the product of $m$ factors of $a$	$a^m = \underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{m \text{ times}}$ <p>The number <math>a</math> is called the <i>base</i>, and <math>m</math> is called the <i>exponent</i>, or <i>power</i> of <math>a</math>.</p>
<b>Exponents</b>	How many times a number is to be used in a multiplication sentence.	<p style="text-align: right; color: green;">Exponent (index or power)</p> <div style="display: flex; align-items: center; justify-content: center;"> <span style="color: red; font-size: 2em; margin-right: 10px;">6<sup>3</sup></span> <span style="font-size: 2em; margin-right: 20px;">=</span> <span style="color: blue; font-size: 2em;">6 x 6 x 6</span> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p style="color: red; font-size: 0.8em;">Base</p> <p style="color: blue; font-size: 0.8em;">Shorthand way of representation</p> </div> <div style="text-align: center;"> <p style="color: blue; font-size: 0.8em;">Normal representation (Base multiplied exponent number of times)</p> </div> </div>
<b>Expression</b>	Expression represent a mathematical equation.	$6 + 3 = 9$  $9 - 6 = 3$



## Common Core Vocabulary and Representations

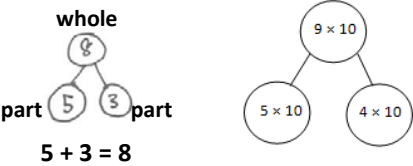
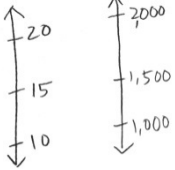
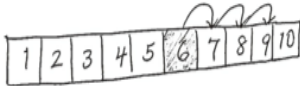
<p style="text-align: center;"><b>Fraction Expanded Form</b></p>	<p>The expanded form of a fraction is the number written as the sum of its whole number and fractional place values.</p>	$(2 \times 10) + (4 \times 1) + \left(5 \times \frac{1}{10}\right) + \left(9 \times \frac{1}{100}\right) = 24 \frac{59}{100}$
<p style="text-align: center;"><b>Greatest Common Factor</b></p>	<p>The largest quantity that factors evenly into two or more integers.</p>	<p>The GCF of 24 and 36 is 12 because when all of the factors of 24 and 36 are listed, the largest factor they share is 12.</p>
<p style="text-align: center;"><b>Hash Marks</b></p>	<p>Hash marks are the lines on ruler use for measurement</p>	
<p style="text-align: center;"><b>Histogram</b></p>	<p>A graphical representation of a numerical data set that has been grouped into intervals. Each interval is represented by a bar drawn above that interval that has a height corresponding to the number of observations in that interval.</p>	
<p style="text-align: center;"><b>Integers</b></p>	<p>The numbers on a number line.</p>	

## Common Core Vocabulary and Representations

<p style="text-align: center;"><b>Least Common Multiple</b></p>	<p>The smallest quantity that is divisible by two or more given quantities without a remainder.</p>	<p>The LCM of 4 and 6 is 12 because when the multiples of 4 and 6 are listed, the smallest or first multiple they share is 12.</p>
<p style="text-align: center;"><b>Line Plot</b></p>	<p>A line plot is a graph that shows frequency of data along a number line. It is best to use a line plot when comparing fewer than 25 numbers. It is a quick, simple way to organize data.</p>	<p>The following numbers are the result from a test taken by a class of 24 students:</p> <p style="text-align: center;">16, 14, 17, 11, 14, 19, 11, 17, 12, 21, 22, 18, 11, 16, 15, 14, 18, 12, 13, 16, 17, 15, 13, 17</p> 
<p style="text-align: center;"><b>Mean</b></p>	<p>It is the average of the values in the data set.</p>	<p>The sum of the measurements</p> 
<p style="text-align: center;"><b>Median</b></p>	<p>It is the middle value when the data are ordered from smallest to largest if there are an odd number of observations and half way between the middle two observations if the number of observations is even.</p>	<p style="text-align: center;"><b>Median</b></p> 
<p style="text-align: center;"><b>Minuend Subtrahend</b></p>	<p>The minuend is the first number to be subtracted. The subtrahend is the second number being subtracted</p>	$\begin{array}{r} 68 \text{ minuend} \\ - 42 \text{ subtrahend} \\ \hline 26 \text{ difference} \end{array}$

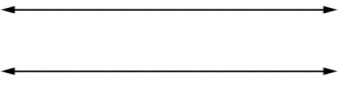


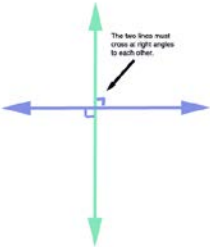

















## Common Core Vocabulary and Representations

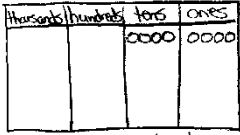
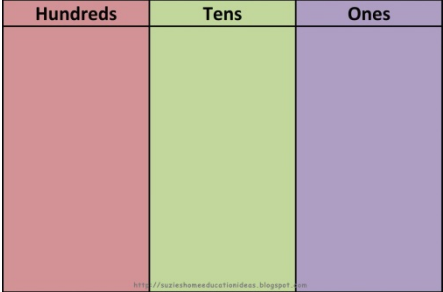

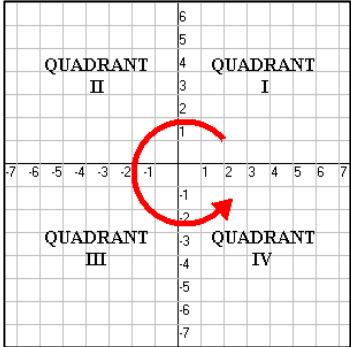
<p><b>Multiplicative Inverses</b></p>	<p>Two numbers whose product is 1 are multiplicative inverses of one another.</p>	<p>For example, <math>\frac{3}{4}</math> and <math>\frac{4}{3}</math> are multiplicative inverses of one another because</p> $\frac{3}{4} \times \frac{4}{3} = \frac{4}{3} \times \frac{3}{4} = 1.$
<p><b>Number Bonds</b></p>	<p>Number bond uses a part-whole-part concept to present the relation between the 3 numbers.</p>	
<p><b>Number Lines</b></p>	<p>A number line is a picture of a straight line on which every point is assumed to correspond to a real number and every real number to a point. Can be vertical or horizontal.</p>	
<p><b>Number Path</b></p>	<p>Number Path represent addition and subtraction. For example 6 and 3 more is 9 or 9 and 6 less is</p>	 <p>6 + <u>  </u> = 9 9 - 6 = <u>  </u></p>
<p><b>Ordered Pair</b></p>	<p>Two quantities written in a given fixed order, usually written as <math>(x, y)</math>.</p>	<p>Ordered Pair</p> $( X, Y )$ <p>( <span style="color: blue;">X-value</span> or <span style="color: blue;">x-coordinate</span> , <span style="color: red;">Y-value or y-coordinate</span> )</p>




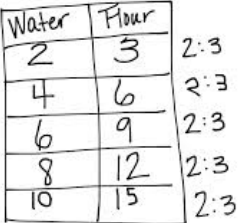
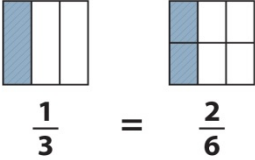
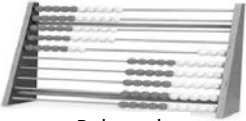
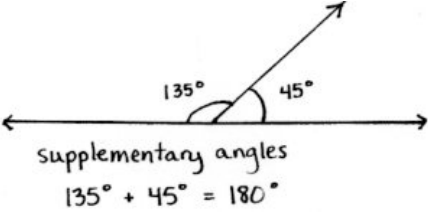
## Common Core Vocabulary and Representations

<p style="text-align: center;"><b>Parallel</b> <b>Parallel Lines</b> <b>Parallel Planes</b></p>	<p>Two lines in a plane that do not intersect.</p>													
<p style="text-align: center;"><b>Partition</b></p>	<p>Divide a whole into equal parts.</p>													
<p style="text-align: center;"><b>Percent</b></p>	<p>Percent of a quantity is a rate per 100.</p>	 <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-left: 10px;"> <p style="text-align: center;"><b>80% of the pentagon is shaded.</b></p> </div>												
<p style="text-align: center;"><b>Perpendicular</b></p>	<p>Two lines are <i>perpendicular</i> if they intersect, and any of the angles formed between the lines are <math>90^\circ</math> angles.</p>													
<p style="text-align: center;"><b>Picture Graph</b></p>	<p>A graph generated from categorical data with graphics to represent a quantity.</p>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr style="background-color: #ADD8E6;"> <th colspan="2">Favorite Pizza Toppings</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ADD8E6;">cheese</td> <td></td> </tr> <tr> <td style="background-color: #ADD8E6;">mushroom</td> <td></td> </tr> <tr> <td style="background-color: #ADD8E6;">sausage</td> <td></td> </tr> <tr> <td style="background-color: #ADD8E6;">pepperoni</td> <td></td> </tr> <tr style="background-color: #ADD8E6;"> <td colspan="2">Key  = 5 pizzas</td> </tr> </tbody> </table>	Favorite Pizza Toppings		cheese		mushroom		sausage		pepperoni		Key  = 5 pizzas	
Favorite Pizza Toppings														
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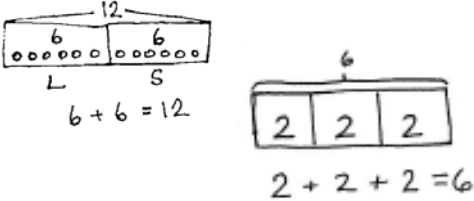
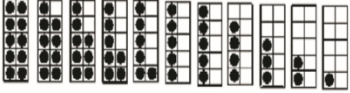

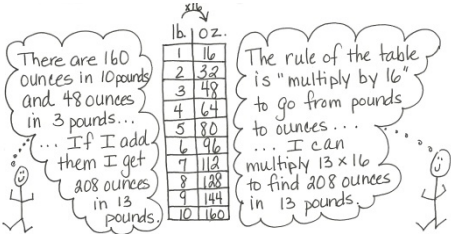
## Common Core Vocabulary and Representations

<b>Place Value</b>	<p>The numerical value that a digit has by virtue of its position in a number.</p>	 <p style="text-align: center;">place value chart</p>
<b>Place Value Chart</b>	<p>The value of a number according to the place it holds.</p>	
<b>Place Value Disks</b>	<p>Place value disk are used to represent the value of a number</p>	 <p style="text-align: center;">Unit form modeled with number disks: 7 hundreds 2 tens 6 ones = 72 tens 6 ones</p>
<b>Quadrants</b>	<p>The four sections of the coordinate plane formed by the intersection of the axes.</p>	
<b>Rate</b>	<p>Rate is a ratio that compares two quantities of different units.</p>	<p style="text-align: center;"><u>Rates and Unit Rates:</u></p> $\frac{60 \text{ miles}}{3 \text{ hours}} \quad \frac{20 \text{ miles}}{1 \text{ hour}} = 20 \text{ miles/hour}$ $\frac{40 \text{ words}}{2 \text{ min.}} \quad \frac{20 \text{ words}}{1 \text{ min.}} = 20$

## Common Core Vocabulary and Representations

<b>Ratio</b>	<p>A pair of non-negative numbers, <math>A:B</math>, where both are not zero, and that are used to indicate that there is a relationship between two quantities such that when there are <math>A</math> units of one quantity, there are <math>B</math> units of the second quantity.</p>	
<b>Ratio Table</b>	<p>A table listing pairs of numbers that form equivalent ratios.</p>	
<b>Rectangular Fraction Model</b>	<p>Rectangular Fraction Models help students see the relationship between fractions and help show equivalent fractions.</p>	 <p style="color: blue; font-size: small;">Example of a rectangular fraction model</p>
<b>Rekenrek</b>	<p>Rekenreks represent 10 more or 10 less used in addition and subtraction for base</p>	 <p style="text-align: center;">Rekenrek</p>
<b>Supplementary Angles</b>	<p>Two angles with a sum of 180 degrees.</p>	

## Common Core Vocabulary and Representations

<p><b>Tally Mark</b></p>	<p>A tally mark is a straight line used to represent an amount</p>	
<p><b>Tape Diagram</b></p>	<p>Tape diagrams show the relationship between two quantities.</p>	
<p><b>Tens Frames</b></p>	<p>Tens frames are used to compose or decompose numbers of 10</p>	
<p><b>Tens Strip</b></p>	<p>Tens Strip are used to compose or decompose numbers of 10</p>	
<p><b>Two-column Table</b></p>	<p>A two-column table shows the relationship between two values.</p>	
<p><b>Vertical Number Lines</b></p>	<p>A number line is a picture of a straight line on which every point is assumed to correspond to a real number and every real number to a point.</p>	