BALLSTON SPA CENTRAL SCHOOL DISTRICT

The Common Core State Standards in Our Schools

Third Grade Math

Standard	In school, I am learning to…
OPERATIONS AND ALGEBRAIC THINKING	
Represent and solve problems involving multiplication and division	
3.OA.1.Interpret products of whole numbers, e.g., interpret 5 × 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 × 7.* **3.OA.2.** Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 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 ÷ 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. **3.OA.4.** Determine the unknown whole number in a multiplication or division equation relating three whole	• Tell in my own words what equal size groups are. • Define the words product and factor. • Multiply and name each number as a factor or product. • Read an array. • Draw an array. • Explain an array using repeated addition and number lines. • Find the product using objects in groups, arrays, number lines, or models. • Apply multiplication to real life situations. • Define the words quotient, divisor, and dividend. • Break a whole number into equal parts using measurement models. • Use a measurement model to represent a division equation. • Break a whole number into equal parts using picture models. • Use a picture model to represent a division equation. • Name each number in a division equation as a quotient, divisor, or dividend. • Use multiplication facts and strategies to solve word problems within 100 using groups. • Use multiplication facts and strategies to solve word problems within 100 using arrays. • Use multiplication facts and strategies to solve word problems within 100 using number lines. • Use multiplication facts and strategies to solve word problems within 100 using equations. • Use division facts and strategies to solve word problems within 100 using groups. • Use division facts and strategies to solve word problems within 100 using arrays. • Use division facts and strategies to solve word problems within 100 using number lines.

numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*	• Use division facts and strategies to solve word problems within 100 using equations. • Identify key words and relate words to operations. • Explain that an unknown number is represented with a symbol/variable. • Find the unknown number/variable/symbol to make a multiplication equation true. • Find the unknown number/variable/symbol to make a division equation true.
Understand properties of multiplication and the relationship between multiplication and division	
3.OA.5. Apply properties of operations as strategies to multiply and divide.[2] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* **3.OA.6.** Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	• Create and model an example of Commutative Property using multiplication. (Students can use objects.) • Create and model an example of Associative Property using multiplication facts. • Create and model an example of the Multiplicative Identity Property of 1 using multiplication facts. • Create and model an example of Distributive Property using addition and/or multiplication. • Create and model an example of Zero Property using multiplication and division. • Create and model an example of Identity Property of 1 using division. • Model the Distributive Property with the order of operations. • Use multiplication fact families to solve for an unknown number. • Use division fact families to solve for an unknown number.
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 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	• Fluently multiply numbers 0-5. • Fluently multiply numbers 6-10 • Fluently divide with a dividend up to 50. • Fluently divide with a dividend up to 100. • Recall from memory all products of two 1-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. **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*	• Construct an equation with a letter (variable) for the unknown quantity. • Read a word problem and interpret it into an equation using numbers and letters (variables). • Recognize key words to determine the number of steps in a word problem. • Explain or demonstrate how to solve two-step word problems using addition and subtraction (Of numbers within 1,000). • Explain or demonstrate how to solve two-step word problems using multiplication and division (Of single digit factors and products less than 100). • Solve two-step word problems which include multiple operations. • Use mental math to estimate the answer of a single step word problem. • Use mental math to estimate the answer of a two-step word problem. • Justify my answers using mental math and estimation • Use an addition table to locate examples of the commutative and identity properties of addition. • Use a multiplication table to locate examples of the commutative, identity, and zero properties of multiplication. • Explain and model the relationship of odd and even number patterns with addition facts. • Examples: ○ Recognize that the sum of two even numbers is even. ○ Recognize that the sum of two odd numbers is even. ○ Recognize that the sum of an even and an odd number is odd. ○ 3.OA.9 Explain and model the relationship of odd and even number patterns with multiplication facts. ○ Count by 10's, recognize that 4 times a number is always even, using skip counting, repeated addition, arrays, etc.
Standard	**In school, I am learning to…**
NUMBERS & OPERATIONS - FRACTIONS	
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*.	• Identify numerators. • Identify denominators. • Model fractional parts must be equal size. • Show a fraction as a part of a whole or part of a group with a model. • Explain and compare as the number of equal pieces in the whole get bigger, the size of the fractional pieces get smaller.

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. **b.** 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. **c.** 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.	• Divide a whole number on a number line into equal parts. • Locate and name each equal part on a number line with a fraction. • Divide the space between 0 and 1 on a number line into equal parts using a common denominator and a numerator of 1. • Locate a given fraction on a number line. • Label a given fraction on a number line • Divide the space between 0 and 1 on a number line into equal parts using a common denominator and a numerator in the range of 0-8.
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.	• Explain that equivalent means equal. • Use a model to compare fractions as having the same size. • Use a number line to compare fractions as having the same size. • Recognize equivalent fractions using a model. • Create an accurate model to represent equal fractions. • Tell in my own words that any number (a/1) over a denominator of 1 will equal that whole number of (a). • Explain that a fraction with the same numerator and denominator will always equal 1. • Use <,>,or = to compare two whole numbers. • Compare and explain two fractions with the same numerator using a visual model (using <,>,=). • Compare and explain two fractions with the same denominator using a visual model (using <,>,=).
Standard	**In school, I am learning to…**
NUMBERS AND OPERATIONS IN BASE TEN	
Use place value understanding and properties of operations to perform multi-digit arithmetic	
3.NBT.1. Use place value understanding to round whole numbers to the nearest 10 or 100.	• Round numbers to the nearest ten. • Round numbers to the nearest hundred. • Identify the place value of the ones, tens, hundreds, and thousands place in a whole number. • Explain the process for rounding numbers using place value.

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 × 80, 5 × 60) using strategies based on place value and properties of operations.	• Correctly align digits according to place value, in order to add or subtract. • Fluently add two 2-digit numbers. (horizontal and vertical set up) • Fluently add two 3-digit numbers. (horizontal and vertical set up) • Apply the commutative property of addition to solve problems. • Apply the associative property of addition to solve problems. • Explain and demonstrate the process of regrouping. • Fluently subtract two 2-digit numbers with and without regrouping. (horizontal and vertical set up) • Fluently subtract two 3-digit numbers with and without regrouping. (horizontal and vertical set up) • Check an addition problem using subtraction. • Check a subtraction problem using addition. • Correctly align digits according to place value, in order to multiply. • Explain and demonstrate the process of multiplying a two digit number by a one digit number using various algorithms. • Multiply 1-digit whole numbers by multiples of 10 in the range of 10-50 using base ten blocks. • Multiply 1 digit whole numbers by multiples of 10 in the range of 10-50 using diagrams. • Multiply 1 digit whole numbers by multiples of 10 in the range of 10-50 using hundred charts. • Multiply 1-digit whole numbers by multiples of 10 in the range of 60-90 using base ten blocks. • Multiply 1-digit whole numbers by multiples of 10 in the range of 60-90 using diagrams. • Multiply 1-digit whole numbers by multiples of 10 in the range of 60-90 using hundred charts.
Standard	**In school, I am learning to…**
MEASUREMENT AND DATA	
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).[1] 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.	• Identify minute marks on an analog clock. • Identify minute position on a digital clock. • Use a colon to separate hours and minutes when writing time. • Write time to the nearest minute. • Relate the minute intervals on a clock to a number line 0-60. • Relate and explain a number line to the minute marks on a clock. • Explain time intervals using the terms quarter past, half past, and quarter till. • Use a "time" number line to measure and solve addition word problems to the nearest minute. • Use a "time" number line to measure and solve subtraction word problems to the nearest minute. • Recognize and identify what a gram is using manipulatives. • Recognize and identify what a kilogram is using manipulatives. • Recognize and identify what a liter is using manipulatives. • Recognize and identify what a milliliter is using manipulatives. • Measure liquid volume in customary units (gallons, quarts, pints, cups). • Measure liquid volume in metric units (liters, milliliters). • Measure mass in customary units (pounds, ounces). • Measure mass in metric units (kilograms, grams).

	• Estimate liquid volume using customary units (gallons, quarts, pints, cups). • Estimate liquid volume using metric units ((liters, milliliters). • Estimate mass in customary units (pounds, ounces). • 3.MD.2 Estimate mass in metric units (kilograms, grams). • Use the four basic operations to solve one step word problems with mass. • Use the four basic operations to solve one step word problems with volume.
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.	• Read and analyze a horizontal and vertical scaled bar graph. • Read and analyze a scaled picture graph. • Use a key to solve word problems for a picture graph. • Collect and organize data to create a graph. • Create a scaled picture graph to represent data. • Create a scaled bar graph to represent data. • Explain the data on a graph. • Answer questions about a graph to analyze and interpret data. • Use a bar graph to solve 1-step "how many more" and "how many less" questions. • Use a bar graph to solve 2-step "how many more" and "how many less" questions. • Use a ruler to measure an object to the nearest whole, half, and quarter inch. • Create a line plot using given measurement data. • Collect and organize data to create a line plot. • Create a line plot where the horizontal scale is marked off in appropriate units (evenly spaced). • Read and analyze a line plot with given data. • Label a line plot to show whole numbers, halves, and quarters.
Geometric measurement: Understand concepts of area and relate area to multiplication and addition	
***3*.MD.5.** Recognize area as an attribute of plane figures and understand concepts of area measurement. **a**. 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. **b**. 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.	• Identify what a unit square is. • Tell in my own words what area is. • Relate the area to real world objects. • Determine the area of an object by counting the unit squares in that object.
3.MD.6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	• Determine the area of an object by counting the unit squares in cm, m, in., ft., and other units.

3.MD.7. Relate area to the operations of multiplication and addition. **a**. 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. **b**. 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. **c.** 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 $a \times c$. **d.** Use area models to represent the distributive property in mathematical reasoning. **e.** 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.	• Use tiles to show the area of an rectangle. • Multiply L x W to determine the area of a rectangle. • Justify that the area of a side will be the same using different methods. (Tiling and formula) • Solve word problems using the formula L x W. (real world objects) • Use pictures, words, or numbers to explain the understanding of the distributive property in area problems. • Model and separate a rectilinear figure into 2 different rectangles. • Determine the area of a figure by separating the figure into smaller rectangles and adding the area of each rectangle together. • Understand that a rectilinear figure is composed of smaller rectangles. • Explain a rectilinear figure is composed of smaller rectangles.
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.	• Recognize what a polygon is. • Explain that perimeter is the distance around an object. • Tell in my own words and distinguish between the area and the perimeter. • Calculate the lengths of the sides to find the perimeter of an object. • Name real world objects to go around a space (example – fence or cable) relating to perimeter. • Calculate the perimeter of a polygon when there is an unknown side length. • Draw rectangles with equal perimeter and different area. • Draw rectangles with equal area and different perimeter.

Standard	In school, I am learning to…
GEOMETRY	
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.*	• Identify and classify the following shapes: triangle, quadrilateral, pentagon, hexagon, heptagon, octagon, nonagon, and decagon. • Compare and contrast quadrilaterals using a Venn Diagram or other mapping tools. • Sort geometric figures to identify rhombuses, rectangles, and squares as quadrilaterals. • Draw examples of quadrilaterals that are Not squares, rhombuses, or rectangles. • Recognize that shapes can be divided into equal parts. (pie graph) • Separate a given object into equal parts. • Describe the area of each part as a fractional part of the whole. • Label each part as a fractional part of the whole.