Correlation

The following is a correlation of *Investigations 3* to the Common Core State Standards for Mathematics. Assessment Benchmarks are included with their associated standards.

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
Operations and Algebraic Thinking 3.OA	
Represent and solve problems involving multi	plication and division.
3.OA.A.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 .	 Unit 1 Investigation 1, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 4.2, 4.3, 4.5, 4.6 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 1.1, 1.2, 1.3 Benchmark 5: Multiply a single-digit number by a multiple of 10, up to 90.
3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.	 Unit 1 4.1, 4.2, 4.3, 4.5, 4.6 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 1.2, 1.3, 1.4, 1.5, 3.6 Benchmark 3: Solve division problems (2-digit number divided by a single-digit number). Unit 8 1.1, 1.3 Benchmark 1: Solve multiplication and division problems within 100.
3.OA.A.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.	 Unit 1 Investigation 1, 2.3, 2.4, 2.5, 2.6, Investigation 4 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 1.4, 1.5, 2.5, 2.6, 3.1, 3.2, 3.3, 3.5, 3.6 Benchmark 2: Solve multiplication and division word problems and write equations to represent the problems. Unit 8 1.1, 1.3, 1.4, 1.5, 1.6, 2.1, 2.3, 2.4, 2.5 Benchmark 1: Solve multiplication and division problems within 100.

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
3.0A.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48, 5 = ? \div 3, 6 \times 6 = ?.$	 Unit 1 1.3, 1.4, 2.6, 4.3, 4.4, 4.5, 4.6 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 2 TMM 1.1, TMM 1.2 Unit 5 2.4, 3.4 Benchmark 1: Represent and explain the relationship between multiplication and division. Unit 7 TMM1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 1.7, TMM 3.1, TMM 3.2 Unit 8 1.1 Benchmark 1: Solve multiplication and division problems within 100.
Understand properties of multiplication and t	he relationship between multiplication and division.
3.OA.B.5 Apply properties of operations as strategies to multiply and divide. <i>Examples:</i> If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)	 Unit 1 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 Investigation 2, 3.3, 3.4 Benchmark 6: Solve multi-step problems involving multiplication and addition. Unit 8 1.3, 1.6, Investigation 2, 3.4 Benchmark 1: Solve multiplication and division problems within 100.
3.OA.B.6 Understand division as an unknown- factor problem. <i>For example, find 32 ÷ 8</i> <i>by finding the number that makes 32 when</i> <i>multiplied by 8.</i>	 Unit 1 4.1, 4.2, 4.4, 4.5, 4.6 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 1.4, 1.5, 2.4 Benchmark 1: Represent and explain the relationship between multiplication and division. Unit 7 TMM 3.1, TMM 3.2, TMM 3.3 Unit 8 1.1, 1.2, 1.6, 2.3 Benchmark 1: Solve multiplication and division problems within 100.

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
Multiply and divide within 100.	
3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	 Unit 1 3.3, 3.4, 3.5, 3.6, 3.7, 4.5, 4.6 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Benchmark 4: Demonstrate fluency with multiplication facts ×1, ×2, ×5, and ×10. Unit 3 TMM 3.1, TMM 3.2, TMM 3.3, TMM 3.4 Unit 5 Investigation 2, 3.1, 3.2, 3.4, 3.5, 3.6 Benchmark 1: Represent and explain the relationship between multiplication and division. Benchmark 4: Demonstrate fluency with multiplication facts to 10 × 10. Unit 6 TMM 2.1, TMM 2.2, TMM 2.3 Unit 8 Investigation 1, Investigation 2 Benchmark 2: Demonstrate fluency with the division facts.
Solve problems involving the four operations,	and identify and explain patterns in arithmetic.
3.OA.D.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.	 Unit 2 1.5 Unit 4 1.3, 1.4, 1.5 Unit 5 3.3, 3.4, 3.5, 3.6 Benchmark 2: Solve multiplication and division word problems and write equations to represent the problems. Benchmark 6: Solve multi-step problems involving multiplication and addition. Unit 7 1.3, 1.4, 1.5, 1.6, 1.7, 2.4, 2.5, 3.5, 3.6 Benchmark 2: Solve 3-digit addition problems using at least one strategy fluently. Benchmark 3: Solve 3-digit subtraction problems fluently. Unit 8 2.4, 2.5, Investigation 3 Benchmark 3: Solve multi-step problems involving more than one operation.
3.OA.D.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.	 Unit 1 1.3, 2.1, 2.2, 2.5, 2.6, 3.5, 3.6, 3.7 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 2: Solve multiplication and related division problems by using skip counting or known multiplication facts. Unit 3 1.4, 2.1 Benchmark 1: Use knowledge of place value to read, write, sequence, and round numbers up to 1,000. Unit 5 1.1, 1.2, 1.3, 3.1, 3.2 Benchmark 5: Multiply a single-digit number by a multiple of 10, up to 90. Unit 7 TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 1.7 Unit 8 1.2, Investigation 3 Benchmark 1: Solve multiplication and division problems within 100.

TMM = Ten-Minute Math

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
Number and Operations in Base Ten 3.NB ⁻	г
Use place value understanding and properties	of operations to perform multi-digit arithmetic.
3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.	 Unit 3 2.4, 3.2, 3.3, 3.4, 3.5 Benchmark 1: Use knowledge of place value to read, write, sequence, and round numbers up to 1,000. Unit 4 TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 2.4, TMM 2.5, TMM 2.6, TMM 3.2, TMM 3.5 Unit 5 1.3, TMM 1.3, TMM 1.4, TMM 1.5, TMM 2.1, TMM 2.2 Unit 7 TMM 2.1, TMM 2.2, TMM 2.3, TMM 2.4, TMM 2.5, TMM 3.4, TMM 3.5, TMM 3.6 Unit 8 TMM 2.1, TMM 2.2, TMM 2.3, TMM 2.4, TMM 2.5, TMM 3.1, TMM 3.2, TMM 3.3
3.NBT.A.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.	 Unit 1 TMM 3.2, TMM 3.3, TMM 4.3, TMM 4.4, TMM 4.5, TMM 4.6 Unit 2 TMM 2.1, TMM 2.2, TMM 2.3 Unit 3 1.2, 1.5, 2.3, 2.4, 3.2, 3.3, 3.4, 3.5, Investigation 4, Investigation 5 Benchmark 2: Solve addition problems with 3-digin numbers (up to 400) by using strategies that involve breaking each number apart by place, or by adding one number in parts. Benchmark 3: Solve subtraction problems with 2- and 3-digit numbers (up to 300) by using strategies that involve either subtracting one number in parts, adding up, or subtracting back. Unit 4 TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 2.4, TMM 2.5, TMM 2.6, TMM 3.2, TMM 3.5 Unit 5 1.3, TMM 1.3, TMM 1.4, TMM 1.5, TMM 2.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 2.1, TMM 2.2, TMM 2.3 Unit 7 Investigation 1, Investigation 2, Investigation 3 Benchmark 1: Solve addition and subtraction problems involving masses or volumes. Benchmark 2: Solve 3-digit addition problems using at least one strategy fluently.
3.NBT.A.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.	Unit 5 3.1, 3.2, 3.4, 3.5 Benchmark 5: Multiply a single-digit number by a multiple of 10, up to 90.

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
Number and Operations—Fractions 3.NF	
Develop understanding of fractions as number	ers.
3.NF.A.1 Understand a fraction 1/ <i>b</i> as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction <i>a/b</i> as the quantity formed by a parts of size 1/ <i>b</i> .	Unit 6 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 2.1, 2.3, 2.4, 2.5 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions.
3.NF.A.2 Understand a fraction as a number on number line diagram.	the number line; represent fractions on a
3.NF.A.2.a Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.	 Unit 6 1.5, 2.2 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions. Benchmark 2: Represent fractions as numbers on a number line.
3.NF.A.2.b Represent a fraction <i>a/b</i> on a number line diagram by marking off a lengths 1/ <i>b</i> from 0. Recognize that the resulting interval has size <i>a/b</i> and that its endpoint locates the number <i>a/b</i> on the number line.	Unit 6 1.5, 1.6, 1.7, 2.2, 2.5 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions. Benchmark 2: Represent fractions as numbers on a number line.
3.NF.A.3 Explain equivalence of fractions in spe their size.	cial cases, and compare fractions by reasoning about
3.NF.A.3.a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	Unit 6 1.4, 1.5, 1.7, 2.1, 2.3, 2.4 Benchmark 2: Represent fractions as numbers on a number line. Benchmark 4: Identify equivalent fractions.
3.NF.A.3.b Recognize and generate simple equivalent fractions, e.g., $\frac{1}{2} = \frac{2}{4}$, $\frac{4}{6} = \frac{2}{3}$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.	 Unit 6 1.4, 1.5, 1.7, 2.1, 2.3, 2.4 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions. Benchmark 2: Represent fractions as numbers on a number line. Benchmark 4: Identify equivalent fractions.
3.NF.A.3.c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form </i> $3 = \frac{3}{1}$; <i>recognize that</i> $\frac{6}{1} = 6$; <i>locate</i> $\frac{4}{4}$ <i>and 1 at the same point of a number line diagram.</i>	 Unit 6 1.3, 1.5, 1.7, 2.2 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions. Benchmark 2: Represent fractions as numbers on a number line.
3.NF.A.3.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.	 Unit 6 1.2, 2.2, 2.3, 2.4, 2.5 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions. Benchmark 2: Represent fractions as numbers on a number line. Benchmark 3: Compare fractions with the same numerator or same denominator by reasoning about their size.

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
Measurement and Data 3.MD	
Solve problems involving measurement and exmasses of objects.	stimation of intervals of time, liquid volumes, and
3.MD.A.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.	 Unit 3 TMM 4.4, TMM 4.5, TMM 5.1, TNN 5.4, TMM 5.5, TMM 5.6 Benchmark 4: Tell time to the nearest minute. Unit 6 TMM 1.6, TMM 1.7, TMM 1.8, TMM 2.4, TMM 2.5 Unit 8 TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 3.4, TMM 3.5
3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). 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.	 Unit 7 1.1, 1.2, 1.4, 1.5, 1.6, 1.7 Benchmark 1: Solve addition and subtraction problems involving masses or volumes. Benchmark 4: Estimate and measure liquid volume and mass using standard units. Unit 8 2.4, 3.4 Benchmark 5: Solve multiplication and division problems involving masses or volumes.
Represent and interpret data.	
3.MD.B.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.	 Unit 2 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.6 Benchmark 1: Organize, represent, and describe categorical data, choosing categories that help make sense of the data. Benchmark 2: Make and interpret bar graph and a pictograph, including use of scales greater than 1. Benchmark 4: Describe and summarize a set of data, describing concentrations of data and what those concentrations mean in terms of the situation the data represent.
3.MD.B.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.	 Unit 2 2.2, 2.4, 2.5, 2.6 Benchmark 3: Make a line plot for a set of measurement data, with a scale that includes inches and half inches. Benchmark 4: Describe and summarize a set of data, describing concentrations of data and what those concentrations mean in terms of the situation the data represent. Benchmark 5: Generate measurement data by measuring lengths to the half inch. Unit 6 1.6 Benchmark 5: Measure to the nearest fourth inch and represent measurement data to the nearest fourth inch on a line plot.

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
Geometric measurement: understand concept to addition.	s of area and relate area to multiplication and
3.MD.C.5 Recognize area as an attribute of plan	ne figures and understand concepts of area measurement.
3.MD.C.5.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.	Unit 4 2.2, 2.3, 2.5, 2.6, 2.7 Benchmark 2: Find the area of 2-D figures using U.S. standard and metric units.
3.MD.C.5.b A plane figure which can be covered without gaps or overlaps by <i>n</i> unit squares is said to have an area of <i>n</i> square units.	Unit 4 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 Benchmark 2: Find the area of 2-D figures using U.S. standard and metric units.
3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	Unit 4 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 Benchmark 2: Find the area of 2-D figures using U.S. standard and metric units.
3.MD.C.7 Relate area to the operations of multi	plication and addition.
3.MD.C.7.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.	 Unit 1 3.1, 3.3, 3.4 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 4 2.4, 2.5, 2.6, 2.7 Benchmark 2: Find the area of 2-D figures using U.S. standard and metric units.
3.MD.C.7.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.	 Unit 1 3.3, 3.4, 3.5 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 2.1 Benchmark 4: Demonstrate fluency with multiplication facts to 10 × 10.
3.MD.C.7.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 $a \times c$. Use area models to represent the distributive property in mathematical reasoning.	 Unit 1 3.5 Benchmark 1: Demonstrate an understanding of multiplication and division as involving equal groups. Benchmark 3: Interpret and use multiplication and division notation. Unit 5 2.1, 2.2, 2.6 Benchmark 6: Solve multi-step problems involving multiplication and addition. Unit 8 2.2 Benchmark 4: Find the area of a rectangular array by breaking it apart (using the distributive property).

Common Core State Standards for Mathematics Grade 3	Grade 3 Investigations 3
3.MD.C.7.d 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.	Unit 4 2.5, 2.6, 2.7, 3.5 Benchmark 2: Find the area of 2-D figures using U.S. standard and metric units.
Geometric measurement: recognize perimeter linear and area measures.	as an attribute of plane figures and distinguish between
3.MD.D.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.	 Unit 4 Investigation 1, 2.4, 3.4, 3.5 Benchmark 1: Measure and find the perimeter of 2-D figures using U.S. standard and metric units. Unit 7 1.7
Geometry 3.G	
Reason with shapes and their attributes.	
3.G.A.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.	 Unit 4 3.3, 3.4, 3.5 Benchmark 3: Categorize quadrilaterals, including squares, rhombuses and rectangles, based on their attributes.
3.G.A.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 $\frac{1}{4}$ of the area of the shape.	Unit 6 1.1, 1.2, 1.4, 1.7, 1.8, 2.5 Benchmark 1: Partition a quantity into equal parts, and name those parts as fractions.