4.OA Operations and Algebraic Thinking

- Interpret a multiplication equation as a comparison. (4.OA.A.1)
- Represent verbal statements of multiplicative comparisons as multiplication equations. (4.OA.A.1)
- Multiply or divide to solve word problems involving multiplicative comparison. (4.OA.A.2)
- Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations. (4.OA.A.3)
- Represent problems using equations with a letter standing for the unknown quantity. (4.OA.A.3)
- Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4.OA.A.3)
- Find all factor pairs for a whole number in the range 1–100. (4.OA.B.4)
- Recognize that a whole number is a multiple of each of its factors. (4.OA.B.4)
- Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. (4.OA.B.4)
- Determine whether a given whole number in the range 1–100 is prime or composite. (4.OA.B.4)
- Generate a number or shape pattern that follows a given rule. (4.OA.C.5)
- Identify apparent features of the pattern that were not explicit in the rule itself. (4.OA.C.5)

Essential Questions	**Enduring Understandings**
How does knowing basic facts make problem solving easier? Where does multiplication occur in real life? Why is memorizing basic facts better than finger counting?	There are different ways to calculate mentally. Most involve breaking numbers apart or replacing them with numbers that are easy to compute with; Multiplication and division are inverse operations; Real situations can be represented by writing variable expressions, and those expressions can be evaluated by substituting values for the variable.
Suggested Activities and Resources (in addition to guided reading and leveled materials) Play “3-way Concentration” – students match 3 cards depicting a given number; Play Empty Set Hunt: Spread cards, face down on a table. Students turn over cards & only keep the ones where zero would name how many are in the set; Pantomime a short scenario relative to using math & ask students to identify the specific use(s) of math that were depicted. Then have students cite, find, or draw their own examples.	**Suggested Assessments** Create a set of pictures showing the different uses of number (or you can use pictures already created or cut out of magazines by students). Students take turns, take a picture, & name the use(s) of number that are depicted. Then ask the other students to signal if they agree or disagree, or see another use depicted.

4.NBT Number and Operations in Base Ten

- 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. (4.NBT.A.1)
- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. (4.NBT.A.2)
- Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (4.NBT.A.2)
- Use place value understanding to round multi-digit whole numbers to any place. (4.NBT.A.3)
- Fluently add and subtract multi-digit whole numbers using the standard algorithm. (4.NBT.B.4)
- Multiply a whole number of up to four digits by a one-digit whole number. (4.NBT.B.5)
- Multiply two two-digit numbers, using strategies based on place value and the properties of operations. (4.NBT.B.5)
- Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.B.5)
- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors. (4.NBT.B.6)
- Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.B.6)

Essential Questions	**Enduring Understandings**
What property do numbers belong to? Why should we order numbers? When do we use rounding? Why is it important to know the difference of digits in a number?	Place value can be used to write numbers in different but equivalent forms; Use place value periods to help understand, read, and write larger numbers; Place value can be used to write numbers in different but equivalent forms; Word problems tell us what is known and what needs to be figured out.
Suggested Activities and Resources **(in addition to guided reading and leveled materials)** Play “Say it & Press It” –display a 2- or 3-digit number using base-ten materials & have students say the number then enter it on their calculators; Use “ball park estimates”; begin with addition of 2-digit numbers without regrouping and when children seem comfortable with this, then move to subtraction of 2-digit numbers without regrouping	**Suggested Assessments** Show students 2 sets of multi-digit whole numbers & have them determine which set is ordered correctly from highest to lowest or vice versa. Then ask them to explain their rationale using appropriate manipulatives, etc.

4.NF Numbers and Operations - Fractions

- Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models. (4.NF.A.1)
- Use this principle to recognize and generate equivalent fractions. (4.NF.A.1)
- Compare two fractions with different numerators and different denominators. (4.NF.A.2)
- Recognize that comparisons are valid only when the two fractions refer to the same whole. (4.NF.A.2)
- Record the results of comparisons with symbols >, =, or <, and justify the conclusions. (4.NF.A.2)
- Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. (4.NF.A.3)
- Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (4.NF.B.4)
- Express a fraction with denominator 10 as an equivalent fraction with denominator 100. (4.NF.B.5)
- Use this technique to add two fractions with respective denominators 10 and 100. (4.NF.B.5)
- Use decimal notation for fractions with denominators 10 or 100. (4.NF.B.6)
- Compare two decimals to hundredths by reasoning about their size. (4.NF.B.7)
- Recognize that comparisons are valid only when the two decimals refer to the same whole. (4.NF.B.7)

Essential Questions	**Enduring Understandings**
How can I use fractions in real life? What is the relationship between fractions and division? How do we show a part of something?	The denominator of a fraction gives the number of equal parts in all, and the numerator tells how many equal parts are described; A set or group can be considered a whole, and fractional parts are parts of the set; Benchmark fractions are familiar fractions that are easy to visualize, such as halves, thirds, and fourths.
Suggested Activities and Resources (in addition to guided reading and leveled materials) Literature Connection: *The Doorbell Rang* (by Hutchins) – a plate of cookies must be shared by more & more children as the story progresses.	**Suggested Assessments** Students match the correct picture to an oral description. Example - Which picture show a half of a candy bar? Which show a whole candy bar?

4.MD Measurement and Data

- Know relative sizes of measurement units within one system of units including km, m, cm. mm; kg, g; lb, oz.; l, ml; hr, min, sec. (4.MD.A.1)
- Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. (4.MD.A.1)
- Record measurement equivalents in a two column table. (4.MD.A.1)
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money,. (4.MD.A.2)
- Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4.MD.A.2)
- Apply the area and perimeter formulas for rectangles in real world and mathematical problems. (4.MD.A.3)
- Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). (4.MD.B.4)
- Solve problems involving addition and subtraction of fractions by using information presented in line plots. (4.MD.B.4)
- Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint. (4.MD.C.5)
- Understand concepts of angle measurement. (4.MD.C.5)

Essential Questions	**Enduring Understandings**
How does what we measure influence how we measure? Why do we need standard units of measurement in real-life? What things would be impossible without measurement? Is there such a thing as exact measurement? Why do we need standard units of measure?	Some real-world problems can be solved using known concepts, skills, and strategies; The metric system of measurement is based on the decimal system of numeration. Metric units can be converted to other metric units by multiplying or dividing by a power of 10.
Suggested Activities and Resources (in addition to guided reading and leveled materials) Each day during opening exercises, have students refer to the calendar to determine the date; Play the "Coin Collector" game – Students take turns picking cards with pictures of coins on them, name the coin, & state its value. The winner is the first students to collect one of each coin type.	**Suggested Assessments** Give students a randomly ordered set of the target coins (penny nickel, dime, quarter, & a half dollar), and have them…name each one & state its value and put the set in order from least to greatest value; Show students 2 sets of numbers & have them use manipulatives to determine which set is ordered correctly from highest to lowest.

4.G Geometry

- Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. (4.G.A.1)
- Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines. (4.G.A.2)
- Recognize right triangles as a category, and identify right triangles. (4.G.A.2)
- 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. (4.G.A.3)
- Identify line-symmetric figures and draw lines of symmetry. (4.G.A.3)

Essential Questions	**Enduring Understandings**
What is the best shape? Why? How would the world look without (insert any shape)? How would the world look if there were only (insert shape)?	Polygons can be described by specific properties and named based on the number of sides and corners, or vertices; Triangles can be described and named based on the relative lengths of their sides and the sizes of their angles; Quadrilaterals can be classified by their angles and pairs of sides.
Suggested Activities and Resources (in addition to guided reading and leveled materials) Point out patterns in nature, art work, floor/ceiling tiles, wallpaper, upholstery fabrics; Play “Battleship”; Make a *Geometry to Real-Life Connection Chart* & add items when found; Students to draw simple 2-D shapes based on the teacher’s description of their orientation/direction.	**Suggested Assessments** Use direction/orientation vocabulary to direct students where to place the book; Have students pick a specific #D shape out of a collection