|  |
| --- |
| Operations and Algebraic Thinking (OA) |
| **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*. | * **Find the product of multiple groups of objects**
 | **I** | **R** | **S** | **E** | **E** | **\*** |
| * **Interpret products of whole numbers as a total number of objects in a number of groups**
 | **I** | **R** | **S** | **E** | **E** | **\*** |
| **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*. | * **Know what the numbers in a division problem represent**
 | **I** | **R** | **S** | **E** | **E** | **\*** |
| * **Explain what division means and how it relates to equal share**
 | **R** | **S** | **E** | **E** | **\*** |
| * **Interpret quotients as the number of shares or the number of groups when a set of objects is divided equally**
 | **I** | **R** | **S** | **E** | **E** | **\*** |
| **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. | * **Multiply within 100**
 | **I** | **R** | **S** | **S** | **E** |  |
| * **Divide within 100**
 | **I** | **R** | **S** | **E** |  |
| * **Solve word problems in situations involving equal groups**
 | **S** | **E** | **\*** |  |
| * **Solve word problems in situations involving arrays**
 | **S** | **E** | **\*** |  |
| * **Solve word problems in situations involving measurement quantities**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Represent a word problem using a picture, and an equation with a symbol for the unknown number**
 | **S** | **E** | **\*** | **\*** |
| **3.OA.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 × ? = 48, 5 = ? ÷ 3, 6 × 6 = ?.* | * **Multiply within 100**
 | **I** | **R** | **S** | **E** | **\*** | **\*** |
| * **Divide within 100**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Determine which operation of multiplication is needed to determine the unknown whole number**
 | **S** | **E** | **\*** | **\*** |
| * **Determine which operation of division is needed to determine the unknown whole number**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Solve to find the unknown whole number in a multiplication**
 | **S** | **E** | **\*** | **\*** |
| * **Solve to find the unknown whole number in a division equation**
 | **I** | **R** | **S** | **E** | **\*** |
| **3.OA.5**  Apply properties of operations as strategies to multiply and divide. *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).* | * **Multiply within 100**
 | **S** | **E** | **\*** | **\*** |
| * **Divide within 100**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Explain how the properties of operations work**
 | **S** | **E** | **\*** | **\*** |
| * **Apply properties of operations as strategies to multiply**
 | **S** | **E** | **\*** | **\*** |
| * **Apply properties of operations as strategies to divide**
 | **I** | **R** | **S** | **E** | **\*** |
| **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*. | * **Identify the multiplication problem as related to the division problem**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Identify the unknown factor in the related multiplication problem**
 | **S** | **E** | **\*** | **\*** |
| * **Recognize multiplication as related operations and explain how they are related**
 | **S** | **E** | **\*** | **\*** |
| * **Recognize division as related operations and explain how they are related**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Use multiplication to solve division problems**
 | **I** | **R** | **S** | **E** | **\*** |
| **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. | * **Know from memory all products of two one-digit numbers**
 | **S** | **E** | **\*** | **\*** |
| * **Fluently multiply within 100**
 | **S** | **E** | **\*** | **\*** |
| * **Fluently divide within 100**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Analyze a multiplication problem in order to choose an appropriate strategy to fluently multiply within 100**
 | **S** | **E** | **\*** | **\*** |
| * **Analyze a division problem in order to choose an appropriate strategy to fluently divide within 100**
 | **I** | **R** | **S** | **E** | **\*** |
| **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. | * **Know the order of operations**
 | **I** | **R** | **S** | **E** | **\*** |
| * **Know strategies for estimating and mental computation**
 | **S** | **E** | **\*** | **\*** |
| * **Construct an equation with a letter standing for the unknown quantity**
 | **I** | **R** | **R** | **S** | **E** |
| * **Solve two-step word problems using the four operations**
 | **I** | **R** | **S** | **E** |
| * **Justify answers to problems using various estimation strategies**
 | **S** | **E** | **\*** | **\*** |
| **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.* | * **Identify arithmetic patterns**
 | **S** | **E** | **\*** | **\*** |
| * **Explain rules for a pattern using properties of operations**
 | **S** | **E** | **\*** | **\*** |
| * **Explain relationships between the numbers in a pattern**
 | **S** | **E** | **\*** | **\*** |
| **Number and Operations in Base Ten (NBT)** |
| **3.NBT.1**  Use place value understanding to round whole numbers to the nearest 10 or 100 | * **Define round or rounding in relation to place value**
 | **S** | **E** | **\*** | **\*** |
| * **Round a whole number to the nearest 10**
 | **S** | **E** | **\*** | **\*** |
| * **Round a whole number to the nearest 100**
 | **S** | **E** | **\*** | **\*** |
| **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. | * **Know strategies and algorithms for adding and subtracting within 1000**
 | **S** | **E** | **\*** | **\*** |
| * **Fluently add and subtract within 1000**
 | **S** | **E** | **\*** | **\*** |
| **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. | * **Know strategies to multiply one-digit whole numbers by multiples of 10 (up to 90)**
 | **S** | **E** | **\*** | **\*** |
| * **Apply knowledge of place value to multiply one-digit whole numbers by multiples of 10 in the range of 10-90**
 | **S** | **E** | **\*** | **\*** |
| Number and Operations – Fractions (NF) |
| **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 a fraction such as 2/3 and explain that the quantity formed is 2 equal parts of the whole partitioned into 3 equal parts (1/3 and 1/3 of the whole 3/3)**
 |  | **I** | **R** | **S** | **E** |
| * **Recognize a unit fraction such as 1/4 as the quantity formed when the whole is partitioned into 4 equal parts**
 |  | **I** | **R** | **S** | **E** |
| * **Express a fraction as the number of unit fractions; Use accumulated unit fractions to represent numbers equal to, less than, and greater than one (1/3 and 1/3 is 2/3; 1/3, 1/3, 1/3, and 1/3 is 4/3)**
 |  | **I** | **R** | **S** | **E** |
| **3.NF.2** Understand a fraction as a number on the number line; represent fractions on a number line diagram. |
| **3.NF.2a** 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 on 0 locates the number 1/*b* on the number line. | * **Define the interval from 0 to 1 on a number line as the whole**
 |  | **I** | **R** | **S** | **E** |
| * **Divide a whole on a number line into equal parts; Recognize that the equal parts between 0 and 1 have a fraction are presentation**
 |  | **I** | **R** | **S** | **E** |
| * **Explain that the end of each equal part is represented by a fraction (1/ the number of equal parts)**
 |  | **I** | **R** | **S** | **E** |
| * **Represent each equal part on a number line with a fraction**
 |  | **I** | **R** | **S** | **E** |
| **3.NF.2b**  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. | * **Explain that the endpoint of each equal part represents the total number of equal parts**
 |  | **I** | **R** | **S** | **E** |
| * **Represent each equal part on a number line with a fraction**
 |  | **I** | **R** | **S** | **E** |
| **3.NF.3** Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. |
| **3.NF.3a** Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.  | * **Describe equivalent fractions**
 |  | **I** | **R** | **S** | **E** |
| * **Recognize simple equivalent fractions**
 |  | **I** | **R** | **S** | **E** |
| * **Compare fractions by reasoning about their size to determine equivalence**
 |  | **I** | **R** | **S** | **E** |
| * **Use number lines, size, visual fraction models, etc. to find equivalent fractions**
 |  | **I** | **R** | **S** | **E** |
| **3.NF.3b**  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. | * **Recognize whole numbers written in fractional parts on a number line**
 |  | **I** | **R** | **S** | **E** |
| * **Recognize the difference between a whole number and a fraction**
 |  | **I** | **R** | **S** | **E** |
| * **Explain how a fraction is equivalent to a whole number**
 |  | **I** | **R** | **S** | **E** |
| **3.NF.3c** 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*. | * **Express whole numbers as fractions**
 |  | **I** | **R** | **S** | **E** |
| * **Recognize fractions that are equivalent to whole numbers**
 |  | **I** | **R** | **S** | **E** |
| **3.NF.3d** 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. | * **Recognize whether or not different fractions refer to the same whole**
 |  | **I** | **R** | **S** | **E** |
| * **Determine if comparisons of fractions can be made (if they refer to the same whole)**
 |  | **I** | **R** | **S** | **E** |
| * **Compare two fractions with the same numerator by reasoning about their size**
 |  | **I** | **R** | **S** | **E** |
| * **Compare two fractions with the same denominator by reasoning about their size**
 |  | **I** | **R** | **S** | **E** |
| * **Record the results of comparisons using symbols >, =, or <**
 |  | **I** | **R** | **S** | **E** |
| * **Justify conclusions about the equivalence of fractions**
 |  | **I** | **R** | **S** | **E** |
| * **Explain what the numerator in a fraction represents and its location**
 |  | **I** | **R** | **S** | **E** |
| * **Explain what the denominator in a fraction represents and its location**
 |  | **I** | **R** | **S** | **E** |
| Measurement and Data (MD) |
| **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. | * **Recognize minute marks on an analog clock face and minute position on a digital clock face**
 |  |  | **S** | **E** |
| * **Know how to write time to the minute**
 |  |  | **S** | **E** |
| * **Compare an analog clock face with a number line diagram.**
 |  | **I** | **R** | **S** | **E** |
| * **Use a number line diagram to add and subtract time intervals in minutes**
 |  |  | **I** | **R** | **S** | **E** |
| * **Solve word problems involving addition and subtraction of time intervals in minutes**
 |  |  | **I** | **R** | **S** | **E** |
| * **Tell time to the minute**
 |  |  | **S** | **E** |
| **3.MD.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. | * **Explain how to measure liquid volume in liters**
 |  |  | **I** | **R** | **S** | **E** |
| * **Explain how to measure mass in grams and kilograms**
 |  |  | **I** | **R** | **S** | **E** |
| * **Know various strategies to represent a word problem involving liquid volume or mass**
 |  |  | **I** | **R** | **S** | **E** |
| * **Add, subtract, multiply, and divide units of liters, grams, and kilograms**
 |  | **I** | **R** | **S** | **E** |
| * **Solve one-step word problems involving masses given in the same units**
 |  |  | **I** | **R** | **S** | **E** |
| * **Solve one-step word problems involving liquid volume given in the same units**
 |  |  | **I** | **R** | **S** | **E** |
| * **Measure liquid volumes using standard units of liters**
 |  |  | **I** | **R** | **S** | **E** |
| * **Measure mass of objects using standard units of grams (g) and kilograms (kg)**
 |  |  | **I** | **R** | **S** | **E** |
| **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*. | * **Explain the scale of a graph with a scale greater than one**
 |  |  | **R** | **S** | **E** |
| * **Identify the scale of a graph with a scale greater than one**
 |  |  | **I** | **R** | **S** | **E** |
| * **Analyze a graph with a scale greater than one**
 |  |  | **I** | **R** | **S** | **E** |
| * **Choose a proper scale for a bar graph or picture graph**
 |  |  | **I** | **R** | **S** | **E** |
| * **Interpret a bar/picture graph to solve one- or two-step problems asking “how many more” and “how many less”**
 |  |  | **R** | **S** | **E** |
| * **Create a scaled picture graph to show data**
 |  |  | **R** | **S** | **E** |
| * **Create a scaled bar graph to show data**
 |  |  | **R** | **S** | **E** |
| **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. | * **Define horizontal axis**
 |  |  | **I** | **R** | **S** | **E** |
| * **Identify each plot on the line as data or a number of objects**
 |  |  | **R** | **S** | **E** |
| * **Analyze data from a line plot**
 |  |  | **R** | **S** | **E** |
| * **Determine appropriate unit of measurement**
 |  |  | **R** | **S** | **E** |
| * **Determine appropriate scale for line plot**
 |  |  | **R** | **S** | **E** |
| * **Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch**
 |  | **R** | **S** | **E** |
| * **Create a line plot where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters**
 |  |  | **R** | **S** | **E** |
| **3.MD.5** Recognize area as an attribute of plane figures and understand concepts of area measurement. |
| **3.MD.5a** 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. | * **Define unit square**
 |  |  | **I** | **R** | **S** | **E** |
| * **Define area**
 |  |  | **I** | **R** | **S** | **E** |
| **3.MD.5b** 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. | * **Relate the number (n) of unit squares to the area of a plane figure**
 |  |  | **I** | **R** | **S** | **E** |
| **3.MD.6**  Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units). | * **Measure areas by counting unit squares**
 |  |  | **I** | **R** | **S** | **E** |
| * **Use unit squares of cm, m, in, ft, and other sizes of unit squares to measure area**
 |  |  | **R** | **S** | **E** |
| **3.MD.7** Relate area to the operations of multiplication and addition. |
| **3.MD.7a** 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. | * **Find the area of a rectangle by tiling it in unit squares**
 |  |  | **I** | **R** | **S** | **E** |
| * **Find the side lengths of a rectangle in units**
 |  |  | **I** | **R** | **S** | **E** |
| * **Compare the area found by tiling a rectangle to the area found by multiplying the side lengths**
 |  | **I** | **R** | **S** | **E** |
| **3.MD.7b** 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. | * **Multiply side lengths to find areas of rectangles**
 |  |  | **I** | **R** | **S** | **E** |
| * **Solve real world and mathematical area problems by multiplying side lengths of rectangles**
 |  |  | **I** | **R** | **S** | **E** |
| * **Use rectangular arrays to represent whole-number products in multiplication problems**
 |  | **I** | **R** | **S** | **E** |
| **3.MD.7c**  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* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning. | * **Multiply using an area model (array)**
 |  | **I** | **R** | **S** | **E** |
| * **Relate area of a rectangle to multiplication and addition by modeling the distributive property**
 |  |  | **R** | **S** | **E** |
| **3.MD.7d** Recognize area as an 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. | * **Recognize that areas of each rectangle in a rectilinear (straight line) figure can be added together to find the area of the figure**
 |  |  | **I** | **R** | **S** | **E** |
| * **Find areas of rectangles**
 |  |  | **I** | **R** | **S** | **E** |
| * **Add areas of rectangles**
 |  |  | **I** | **R** | **S** | **E** |
| * **Use the technique of decomposing rectilinear figures to find the area of each rectangle to solve real world problems**
 |  |  | **I** | **R** | **S** | **E** |
| * **Decompose rectilinear figures into non-overlapping rectangles**
 |  |  | **I** | **R** | **S** | **E** |
| **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. | * **Define a polygon**
 |  |  | **I** | **R** | **S** | **E** |
| * **Define perimeter**
 |  |  | **I** | **R** | **S** | **E** |
| * **Find the perimeter when given the length of sides**
 |  | **I** | **R** | **S** | **E** |
| * **Find the perimeter when there is an unknown side length**
 |  |  | **I** | **R** | **S** | **E** |
| * **Exhibit (design, create, draw, model, etc.) rectangles with the same perimeter and different areas**
 |  | **I** | **R** | **S** | **E** |
| * **Exhibit rectangles with the same area and different perimeters**
 |  |  | **I** | **R** | **S** | **E** |
| Geometry (G) |
| **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. | * **Identify and define rhombuses, rectangles, and squares as examples of quadrilaterals based on their attributes**
 |  |  | **R** | **S** | **E** |
| * **Describe, analyze, and compare properties of two-dimensional shapes**
 |  |  | **I** | **R** | **S** |
| * **Compare and classify shapes by attributes, sides, and angles**
 |  |  | **S** | **E** |
| * **Group shapes with shared attributes to define a larger category (e.g., quadrilaterals)**
 |  |  | **I** | **R** | **S** | **E** |
| * **Draw examples of quadrilaterals that do and do not belong to any of the subcategories.**
 |  |  | **I** | **R** | **S** | **E** |
| **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*. | * **Know that shapes can be partitioned into equal areas**
 |  |  | **S** | **E** |
| * **Describe the area of each part as a fractional part of the whole**
 |  |  | **I** | **R** | **S** | **E** |
| * **Relate fractions to geometry by expressing the area of part of a shape as a unit fraction of the whole**
 |  |  | **I** | **R** | **S** | **E** |
| * **Given a shape, students partition it into equal parts, recognizing that these parts all have the same area**
 |  |  | **I** | **R** | **S** | **E** |
| * **Identify the fractional name of each part**
 |  | **S** | **E** | **\*** |
| * **Partition a shape into parts with equal areas in several different ways**
 |  | **I** | **R** | **S** | **E** |