

# Grade 3 Grade-Level Expanded Expectations

## NUMBER SENSE AND OPERATIONS IN BASE TEN: NBT

<b>3.NBT.A</b>	<b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b>	
3.NBT.A.1	Round whole numbers to the nearest 10 or 100.	The expectation of the student is to use place value understanding to round whole numbers to the nearest 10 or 100 in the context of estimation.
3.NBT.A.2	Read, write and identify whole numbers within 100,000 using base ten numerals, number names and expanded form.	The expectation of the student is to read, write and identify multi-digit whole numbers within 100,000 using base ten numerals, number names and expanded notation.
3.NBT.A.3	Demonstrate fluency with addition and subtraction within 1000.	The expectation of the student is to demonstrate fluency with addition and subtraction within 1000. Fluently add and subtract with numbers and results within 1000 using strategies and algorithms based on place value, properties of operations and/or the relationship between addition and subtraction. <i>(Fluency refers to accuracy and efficiency and does not equate to memorization.)</i>
3.NBT.A.4	Multiply whole numbers by multiples of 10 in the range 10-90.	The expectation of the student is to multiply one-digit whole numbers with multiples of 10 in the range 10-90 (e.g., $9 \times 80$ , $50 \times 6$ ) using strategies based on place value and properties of operations.

## NUMBER SENSE AND OPERATIONS IN FRACTIONS: NF

<b>3.NF.A</b>	<b>Develop understanding of fractions as numbers.</b>	
3.NF.A.1	Understand a unit fraction as the quantity formed by one part when a whole is partitioned into equal parts.	The expectation of the student is to understand a unit fraction as the quantity formed by one part when a whole is partitioned into equal parts. <i>(For example, <math>\frac{1}{4}</math> [1 fourth] represents 1 of the 4 equal parts or <math>\frac{1}{4}</math> of the whole.)</i>

3.NF.A.2	<p>Understand that when a whole is partitioned equally, a fraction can be used to represent a portion of the whole.</p> <ul style="list-style-type: none"> <li>a) Describe the numerator as representing the number of pieces being considered.</li> <li>b) Describe the denominator as the number of pieces that make the whole.</li> </ul>	<p>The expectation of the student is to understand that when a whole is partitioned equally, a fraction can be used to represent a portion of the whole.</p> <ul style="list-style-type: none"> <li>a. The numerator of the fraction represents the number of pieces being considered.</li> <li>b. The denominator is the number of pieces that make the whole. <i>(For example, <math>\frac{3}{4}</math> [3 fourths] represents 3 pieces that are each <math>\frac{1}{4}</math> of the whole.)</i></li> </ul>
3.NF.A.3	<p>Represent fractions on a number line.</p> <ul style="list-style-type: none"> <li>a) Understand the whole is the interval from 0 to 1.</li> <li>b) Understand the whole is partitioned into equal parts.</li> <li>c) Understand a fraction represents the endpoint of the length a given number of partitions from 0.</li> </ul>	<p>The expectation of the student is to understand a fraction as a number on the number line; represent fractions on a number line diagram. (Limit to fractions with denominators 2, 3, 4, 6 and 8.)</p> <ul style="list-style-type: none"> <li>a. Understand the whole is the interval from 0 to 1.</li> <li>b. Understand the whole is partitioned into equal parts.</li> <li>c. Understand a fraction represents the endpoint of the length a given number of partitions from 0. (For example, <math>\frac{3}{4}</math> is located at the end of the length that is 3 partitions from 0 when each partition is a fourth.)</li> </ul>
3.NF.A.4	<p>Demonstrate that two fractions are equivalent if they are the same size or the same point on a number line.</p>	<p>The expectation of the student is to demonstrate that two fractions are equivalent (equal) if they are the same size or the same point on a number line.</p>
3.NF.A.5	<p>Recognize and generate equivalent fractions using visual models, and justify why the fractions are equivalent.</p>	<p>The expectation of the student is to use visual models, recognize and generate simple equivalent fractions. <i>(e.g., <math>\frac{1}{2} = \frac{2}{4}</math>, <math>\frac{4}{6} = \frac{2}{3}</math>) Explain why the fractions are equivalent. Include fractions that are equal to 1. (e.g., <math>\frac{3}{3} = 1</math>) (Limit to fractions with denominators 2, 3, 4, 6 and 8.)</i></p>
3.NF.A.6	<p>Compare two fractions with the same numerator or denominator using the symbols <math>&gt;</math>, <math>=</math> or <math>&lt;</math>, and justify the solution.</p>	<p>The expectation of the student is to compare two fractions with the same numerator or same denominator by reasoning about their size. Record the results of the comparisons using <math>&lt;</math>, <math>&gt;</math> or <math>=</math> and justify the conclusions by using number lines, manipulative or drawings. (Limit to fractions with denominators 2, 3, 4, 6 and 8.)</p>
3.NF.A.7	<p>Explain why fraction comparisons are only valid when the two fractions refer to the same whole.</p>	<p>The expectation of the student is to explain that fraction comparisons are only valid when the two fractions refer to the same whole.</p>

## RELATIONSHIPS AND ALGEBRAIC THINKING: RA

<b>3.RA.A</b>	<b>Represent and solve problems involving multiplication and division.</b>	
3.RA.A.1	Interpret products of whole numbers.	The expectation of the student is to interpret products of whole numbers. <i>(e.g., interpret <math>5 \times 7</math> as the total number of objects in 5 groups of 7 objects each)</i>
3.RA.A.2	Interpret quotients of whole numbers.	The expectation of the student is to interpret quotients of whole numbers. [The student should work with situations resulting from both sharing (the number of groups is known) and measurement (the number in each group is known) processes.] <i>For example, <math>56 \div 8</math> can be interpreted as:</i> <ul style="list-style-type: none"> <li>a. <i>56 objects being divided into groups with 8 objects each (measurement) or</i></li> <li>b. <i>56 objects being divided into 8 equal groups (sharing)</i></li> </ul>
3.RA.A.3	Describe in words or drawings a problem that illustrates a multiplication or division situation.	The expectation of the student is to describe in words or drawings a problem that illustrates a multiplication or division situation. <i>For example:</i> <ul style="list-style-type: none"> <li>a. <i>"Janet had 3 boxes that each held 5 books" represents "<math>3 \times 5</math>".</i></li> <li>b. <i>"<math>2 \times 4</math>" could be contextualized as "James had 2 boxes with 4 toys in each."</i></li> <li>c. <i>"Brad has 30 cookies. He creates piles of 5 cookies" represents "<math>30 \div 5</math>".</i></li> </ul>
3.RA.A.4	Use multiplication and division within 100 to solve problems.	The expectation of the student is to use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and rectangular area. <i>(e.g., by using drawings and/or equations with a symbol for the unknown number to represent the problem)</i>
3.RA.A.5	Determine the unknown number in a multiplication or division equation relating three whole numbers.	The expectation of the student is to determine the unknown number in a multiplication or division equation relating three whole numbers. <i>For example, find the unknown number in each of these equations: <math>8 \times ? = 48</math>; <math>? \div 3 = 5</math>; <math>6 \times 6 = ?</math>; <math>? = 5 \times 7</math>; <math>? = 24 \div 4</math></i>
<b>3.RA.B</b>	<b>Understand properties of multiplication and the relationship between multiplication and division.</b>	

3.RA.B.6	Apply properties of operations as strategies to multiply and divide.	<p>The expectation of the student is to apply appropriate properties of operations as strategies to multiply and divide. (The student <b>should not</b> be expected to use the formal names for the properties. Assessment of this standard may occur throughout the year through teacher observation.)</p> <p><i>For example:</i></p> <ul style="list-style-type: none"> <li>a. <i>If <math>6 \times 4 = 24</math>, then <math>4 \times 6 = 24</math> (Commutative property).</i></li> <li>b. <i><math>3 \times 5 \times 2</math> can be found by <math>3 \times 5 = 15</math> and <math>15 \times 2 = 30</math> or by <math>5 \times 2 = 10</math> and <math>10 \times 3 = 30</math> (Associative property).</i></li> <li>c. <i><math>7 \times 8</math> can be organized mentally as 5 groups of 8 and 2 more groups of 8, so 5 groups of 8 = 40 and 2 groups of 8 = 16 meaning 7 groups of 8 = <math>40 + 16 = 56</math> (Distributive property).</i></li> <li>d. <i><math>8 \times 6</math> can be thought of as 2 sets of 4 groups of 6, meaning <math>8 \times 6 = 4 \times 6 + 4 \times 6</math>. (Distributive property).</i></li> </ul>
<b>3.RA.C</b>	<b>Multiply and divide within 100.</b>	
3.RA.C.7	Multiply and divide with numbers and results within 100 using strategies such as the relationship between multiplication and division or properties of operations. Know all products of two one-digit numbers.	The expectation of the student is to multiply and divide with numbers and results within 100 using strategies such as the relationship between multiplication and division or properties of operations. Know all products of two one-digit numbers.
3.RA.C.8	Demonstrate fluency with products within 100.	The expectation of the student is to demonstrate fluency with products within 100. Know all products of two one-digit numbers. While automaticity for basic facts is desired, quick use of mental strategies may suffice. ( <i>Fluency refers to accuracy and efficiency and does not equate to memorization.</i> )
<b>3.RA.D</b>	<b>Use the four operations to solve word problems.</b>	
3.RA.D.9	Write and solve two-step problems involving variables using any of the four operations.	The expectation of the student is to write and solve two-step word problems using any of the four operations. Represent these problems using equations with a letter standing for the unknown quantity.
3.RA.D.10	Interpret the reasonableness of answers using mental computation and estimation strategies including rounding.	The expectation of the student is to interpret the reasonableness of answers using mental computation and estimation strategies including rounding.

<b>3.RA.E</b>	<b>Identify and explain arithmetic patterns.</b>	
3.RA.E.11	Identify arithmetic patterns and explain the patterns using properties of operations.	The expectation of the student is to identify arithmetic patterns (including patterns in the addition or multiplication table) and explain the patterns using properties of operations. <i>For example, observe that 4 times a number is always even, explain why 4 times a number can be decomposed into two equal addends.</i>

## GEOMETRY AND MEASUREMENT: GM

<b>3.GM.A</b>	<b>Reason with shapes and their attributes.</b>	
3.GM.A.1	Understand that shapes in different categories may share attributes and that the shared attributes can define a larger category.	The expectation of the student is to understand that shapes in different categories ( <i>e.g.</i> , rhombuses, rectangles and others) may share attributes ( <i>e.g.</i> , <i>having four sides</i> ) and that the shared attributes can define a larger category ( <i>e.g.</i> , <i>quadrilaterals</i> ).
3.GM.A.2	Distinguish rhombuses and rectangles as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to these subcategories.	The expectation of the student is to distinguish rhombuses and rectangles (including squares) as examples of quadrilaterals, and draw examples of quadrilaterals, including those that do not belong to any of these subcategories.
3.GM.A.3	Partition shapes into parts with equal areas, and express the area of each part as a unit fraction of the whole.	The expectation of the student is to partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. ( <i>e.g.</i> , <i>Partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</i> )
<b>3.GM.B</b>	<b>Solve problems involving the measurement of time, liquid volumes and weights of objects.</b>	
3.GM.B.4	Tell and write time to the nearest minute.	The expectation of the student is to tell and write time to the nearest minute.
3.GM.B.5	Estimate time intervals in minutes.	The expectation of the student is to estimate time intervals in minutes. ( <i>e.g.</i> , <i>will it take more than 5 minutes or less than 5 minutes to read 5 chapters of a book</i> )

3.GM.B.6	Solve problems involving addition and subtraction of minutes.	The expectation of the student is to solve one-step word problems involving addition and subtraction of minutes using number lines, clock faces or other strategies. <i>(e.g., James left home at 1:20 and rode his bike for 30 minutes. What time did he stop riding? It took Gerry 25 minutes to walk to school. If he arrived at 8:40, what time did he leave home?)</i>
3.GM.B.7	Measure or estimate length, liquid volume and weight of objects.	The expectation of the student is to choose the appropriate tools and units (metric and customary); estimate and measure the length <i>(no smaller than the nearest centimeter or ¼ inch)</i> , liquid volume and weight of given objects.
3.GM.B.8	Use the four operations to solve problems involving lengths, liquid volumes or weights given in the same units.	The expectation of the student is to use the four operations to solve problems involving lengths <i>(no smaller than the nearest centimeter or ¼ inch)</i> , liquid volumes or weights given in the same units.
<b>3.GM.C</b>	<b>Understand concepts of area.</b>	
3.GM.C.9	Calculate area by using unit squares to cover a plane figure with no gaps or overlaps.	The expectation of the student is to Calculate area by using unit squares to cover a plane figure with no gaps or overlaps.
3.GM.C.10	Label area measurements with squared units.	The expectation of the student is to use square units to label area measurements. <i>(e.g., square cm. or sq. cm or cm<sup>2</sup>)</i>
3.GM.C.11	Demonstrate that tiling a rectangle to find the area and multiplying the side lengths result in the same value.	The expectation of the student is to demonstrate that tiling a rectangle to find the area and multiplying the side lengths result in the same value.
3.GM.C.12	Multiply whole-number side lengths to solve problems involving the area of rectangles.	The expectation of the student is to multiply side lengths to find areas of rectangles with whole-number side lengths and solve problems involving the area of rectangles.
3.GM.C.13	Find rectangular arrangements that can be formed for a given area.	The expectation of the student is to find rectangular arrangements that can be formed for a given area. <i>(e.g., an area of 12 sq. cm can be shown as a 3 x 4 rectangle, a 2 x 6 rectangle or a 1 x 12 rectangle)</i>
3.GM.C.14	Decompose a rectangle into smaller rectangles to find the area of the original rectangle.	The expectation of the student is to decompose a rectangle into two smaller rectangles, find the area of each smaller rectangle, and combine the areas to find the area of the original rectangle (Note: This is an application of the distributive property.) <i>(e.g., a 16 x 5 rectangle could be divided into a 10 x 5 rectangle and a 6 x 5 rectangle) The area of the original rectangle can be found by adding 50 + 30.</i>
<b>3.GM.D</b>	<b>Understand concepts of perimeter.</b>	

3.GM.D.15	Solve problems involving perimeters of polygons.	The expectation of the student is to solve problems involving perimeters of polygons including finding the perimeter when given side lengths and finding missing side lengths when given the perimeter.
3.GM.D.16	Understand that rectangles can have equal perimeters but different areas, or rectangles can have equal areas but different perimeters.	The expectation of the student is to understand that rectangles can have equal perimeters but different areas. Understand that rectangles can have equal areas but different perimeters.

## DATA AND STATISTICS: DS

<b>3.DS.A</b>	<b>Represent and analyze data.</b>	
3.DS.A.1	Create frequency tables, scaled picture graphs and bar graphs to represent a data set with several categories.	The expectation of the student is to create frequency tables, picture graphs and/or bar graphs to represent a given data set with several categories. Include picture graphs in which the symbol used represents more than 1 and bar graphs with the scale marked in intervals greater than 1.
3.DS.A.2	Solve one- and two-step problems using information presented in bar and/or picture graphs.	The expectation of the student is to solve one- and two-step problems using information presented in bar and/or picture graphs. ( <i>e.g., “how many more” or “how many less”</i> )
3.DS.A.3	Create a line plot to represent data.	The expectation of the student is given a scale marked in appropriate units (whole numbers, halves and quarters), create a line plot to represent data generated by multiple measures of the same object. ( <i>e.g., all students measured the length of the same table</i> ) or by measuring several related objects ( <i>e.g., each student measured his/her own pencil</i> )
3.DS.A.4	Use data shown in a line plot to answer questions.	The expectation of the student is to use the data shown in a line plot to generate a set of observations about the data and to answer questions about the data. ( <i>e.g., What do you notice about the data we collected? Why didn't we all get the same length when we measured our desks? What's the difference in length between the shortest and longest pencil (if data is reported to nearest whole number)? How many students have a pencil longer than 10 cm? What pencil length is most common?</i> ) (Formal terms such as 'mode', 'range' or 'maximum' are not required at this grade level.)