

North Dakota Mathematics Content and Achievement Standards

Grade 3

April 2005

North Dakota Department of Public Instruction

Dr. Wayne G. Sanstead, State Superintendent

600 E Boulevard Avenue, Dept. 201

Bismarck, North Dakota 58505-0440

www.dpi.state.nd.us



Standard 1: Number and Operation

Standard 1: Students understand and use basic and advanced concepts of number and number systems..				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grade 3				
NUMBERS, NUMBER RELATIONSHIPS, AND NUMBER SYSTEMS				
3.1.1. Count and order numbers up to 10,000	Students count, order, read, write, and represent numbers up to 10,000 with ease and with no errors.	Students count, order, read, write, and represent numbers up to 10,000 with minimal difficulty and with no significant errors.	Students count, order, read, write, and represent numbers up to 10,000 with difficulty or with a few significant errors.	Students count, order, read, write, and represent numbers up to 10,000 with great difficulty or with many significant errors.
3.1.2. Read and write numerals to 10,000				
3.1.3. Represent numbers up to 10,000 in standard, expanded, and word form				
3.1.4. Identify the odd and even whole numbers from 0 to 10,000	Students identify odd and even numbers to 10,000 with no errors.	Students identify odd and even numbers to 10,000 with no significant errors.	Students identify odd and even numbers to 10,000 with a few significant errors.	Students identify odd and even numbers to 10,000 with many significant errors.
3.1.5. Identify place values from ten-thousands through the hundredths place	Students identify place values from ten-thousands through hundredths with no errors.	Students identify place values from ten-thousands through hundredths with no significant errors.	Students identify place values from ten-thousands through hundredths with a few significant errors.	Students identify place values from ten-thousands through hundredths with many significant errors.
3.1.6. Use symbols to compare whole numbers from 0 to 10,000; i.e., >, <, =	Students use symbols to compare numbers to 10,000 with no errors.	Students use symbols to compare numbers to 10,000 with no significant errors.	Students use symbols to compare numbers to 10,000 with a few significant errors.	Students use symbols to compare numbers to 10,000 with many significant errors.
3.1.7. Use mathematical terms when communicating about computations; i.e., factor, product, divisor, dividend, quotient	Students use mathematical terms to communicate about computations with no errors.	Students use mathematical terms to communicate about computations with no significant errors.	Students use mathematical terms to communicate about computations with few significant errors.	Students use mathematical terms to communicate about computations with many significant errors.
3.1.8. Round numbers to tens, hundreds, and thousands	Students round numbers to tens, hundreds, and thousands with no errors.	Students round numbers to tens, hundreds, and thousands with no significant errors.	Students round numbers to tens, hundreds, and thousands with a few significant errors.	Students round numbers to tens, hundreds, and thousands with many significant errors.

Standard 1: Students understand and use basic and advanced concepts of number and number systems..

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
3.1.9. Represent fractions and mixed numbers using words, numerals, and physical models	Students represent fractions and mixed numbers using words, numerals, and physical models with no errors.	Students represent fractions and mixed numbers using words, numerals, and physical models with no significant errors.	Students represent fractions and mixed numbers using words, numerals, and physical models with a few significant errors.	Students represent fractions and mixed numbers using words, numerals, and physical models with many significant errors.
3.1.10. Model, represent, and explain the concept of multiplication; i.e., repeated addition, rectangular arrays, and skip counting	Students model, represent, and explain multiplication and division with no errors.	Students model, represent, and explain multiplication and division with no significant errors.	Students model, represent, and explain multiplication and division with a few significant errors.	Students model, represent, and explain multiplication and division with many significant errors.
3.1.11. Model, represent, and explain the concept of division; i.e., repeated subtraction, rectangular arrays, and equal sharing				
3.1.12. Use a variety of methods and tools for problem solving; e.g., computing, including mental math, paper and pencil, calculator, manipulatives	Students use an extensive variety of methods and tools for problem solving.	Students use a variety of methods and tools for problem solving.	Students use some different methods and tools for problem solving.	Students use a limited number of methods and tools for problem solving.
OPERATIONS AND THEIR PROPERTIES				
3.1.13. Add and subtract whole numbers between 0 and 10,000	Students add and subtract whole numbers to 10,000 with no errors.	Students add and subtract whole numbers to 10,000 with no significant errors.	Students add and subtract whole numbers to 10,000 with a few significant errors.	Students add and subtract whole numbers to 10,000 with many significant errors.
3.1.14. Model and use the commutative and associative properties of addition and multiplication	Students model and use the commutative and associative properties of addition and multiplication with no errors.	Students model and use the commutative and associative properties of addition and multiplication with no significant errors.	Students model and use the commutative and associative properties of addition and multiplication with a few significant errors.	Students model and use the commutative and associative properties of addition and multiplication with many significant errors.
3.1.15. Apply the multiplication property of zero and one	Students apply the multiplication properties of zero and one with no errors.	Students apply the multiplication properties of zero and one with no significant errors.	Students apply the multiplication properties of zero and one with a few significant errors.	Students apply the multiplication properties of zero and one with many significant errors.
3.1.16. Multiply two- and three-digit numbers by a single-digit number	Students multiply two- and three-digit numbers by a single-digit number with no errors.	Students multiply two- and three-digit numbers by a single-digit number with no significant errors.	Students multiply two- and three-digit numbers by a single-digit number with a few significant errors.	Students multiply two- and three-digit numbers by a single-digit number with many significant errors.

Standard 1: Students understand and use basic and advanced concepts of number and number systems..

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
3.1.17. Divide two- and three-digit numbers by single-digit number without remainders	Students divide two- and three-digit numbers by a single-digit number, without remainders, with no errors.	Students divide two- and three-digit numbers by a single-digit number, without remainders, with no significant errors.	Students divide two- and three-digit numbers by a single-digit number, without remainders, with a few significant errors.	Students divide two- and three-digit numbers by a single-digit number, without remainders, with many significant errors.
3.1.18. Demonstrate the inverse relationships between multiplication and division	Students demonstrate the inverse relationship between multiplication and division with no errors.	Students demonstrate the inverse relationship between multiplication and division with no significant errors.	Students demonstrate the inverse relationship between multiplication and division with a few significant errors.	Students demonstrate the inverse relationship between multiplication and division with many significant errors.
3.1.19. Add and subtract simple fractions with like denominators; e.g., $1/4 + 2/4 = 3/4$	Students add and subtract simple fractions with like denominators with no errors.	Students add and subtract simple fractions with like denominators with no significant errors.	Students add and subtract simple fractions with like denominators with a few significant errors.	Students add and subtract simple fractions with like denominators with many significant errors.
COMPUTATIONAL FLUENCY AND ESTIMATION				
3.1.20. Recall multiplication and division facts (0-10)	Students recall multiplication and division facts from 0 to 10 with ease.	Students recall multiplication and division facts from 0 to 10 with minimal difficulty.	Students recall multiplication and division facts from 0 to 10 with some difficulty.	Students recall multiplication and division facts from 0 to 10 with great difficulty.
3.1.21. Estimate whole number products and quotients	Students estimate whole number products and quotients with no errors.	Students estimate whole number products and quotients with no significant errors.	Students estimate whole number products and quotients with a few significant errors.	Students estimate whole number products and quotients with many significant errors.
3.1.22. Use estimation to determine if solutions are reasonable	Students use estimation to determine if solutions are reasonable with no errors.	Students use estimation to determine if solutions are reasonable with no significant errors.	Students use estimation to determine if solutions are reasonable with a few significant errors.	Students use estimation to determine if solutions are reasonable with many significant errors.

Standard 2: Geometry and Spatial Sense

Standard 2: Student understands and applies geometric concepts and spatial relationships to represent and solve problems in mathematical and nonmathematical situations.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grade 3				
TWO- AND THREE-DIMENSIONAL SHAPES, GEOMETRIC PROPERTIES AND RELATIONSHIPS				
3.2.1. Compare physical attributes of two-dimensional shapes; i.e., square, triangle, rectangle, and parallelogram	Students compare the physical attributes of two dimensional shapes with no errors.	Students compare the physical attributes of two dimensional shapes with no significant errors.	Students compare the physical attributes of two dimensional shapes with a few significant errors.	Students compare physical attributes of two dimensional shapes with many significant errors.
3.2.2. Describe the characteristics of a cylinder, pyramid, cube, sphere, and cone	Students describe in great detail the characteristics of various three-dimensional shapes.	Students describe in adequate detail the characteristics of various three-dimensional shapes.	Students describe in some detail the characteristics of various three-dimensional shapes.	Students describe in minimal detail the characteristics of various three-dimensional shapes.
3.2.3. Identify points, endpoints, lines, line segments, rays, and angles and use symbols to represent them	Students identify points, endpoints, lines, line segments, rays, angles, and right angles and use symbols to represent them with no errors.	Students identify points, endpoints, lines, line segments, rays, angles, and right angles and use symbols to represent them with no significant errors.	Students identify points, endpoints, lines, line segments, rays, angles, and right angles and use symbols to represent them with a few significant errors.	Students identify points, endpoints, lines, line segments, rays, angles, and right angles and use symbols to represent them with many significant errors.
3.2.4. Identify right angles				
COORDINATE GEOMETRY				
3.2.5. Use ordered pairs to identify the locations of points in a grid; e.g., A-10 on a map	Students use ordered pairs to identify the locations of points in a grid with no errors.	Students use ordered pairs to identify the locations of points in a grid with no significant errors.	Students use ordered pairs to identify the locations of points in a grid with some significant errors.	Students use ordered pairs to identify the locations of points in a grid with many significant errors.
TRANSFORMATION AND SYMMETRY				
3.2.6. Identify and create shapes that have lines of symmetry	Students identify and create shapes that have lines of symmetry with no errors.	Students identify and create shapes that have lines of symmetry with no significant errors.	Students identify and create shapes that have lines of symmetry with a few significant errors.	Students identify and create shapes that have lines of symmetry with many significant errors.

Standard 2: Student understands and applies geometric concepts and spatial relationships to represent and solve problems in mathematical and nonmathematical situations.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
<p>3.2.7. Identify two-dimensional shapes that are congruent or similar</p> <p>VISUALIZATION, SPATIAL REASONING, AND GEOMETRIC MODELING</p> <p><i>No benchmark expectations at this level</i></p>	<p>Students identify two-dimensional shapes that are congruent or similar with no errors.</p>	<p>Students identify two-dimensional shapes that are congruent or similar with no significant errors.</p>	<p>Students identify two-dimensional shapes that are congruent or similar with a few significant errors.</p>	<p>Students identify two-dimensional shapes that are congruent or similar with many significant errors.</p>

Standard 3: Data Analysis, Statistics, and Probability

Standard 3: Students use data collection and analysis techniques, statistical methods, and probability to solve problems.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grade 3				
DATA COLLECTION, DISPLAY, AND INTERPRETATION				
3.3.1. Identify different parts of a graph; i.e., label, scale, and data	Students identify the various parts of a graph with no errors.	Students identify the various parts of a graph with no significant errors.	Students identify parts of a graph with a few significant errors.	Students identify parts of a graph with many significant errors.
3.3.2. Display and interpret graphs with symbols or pictures that represent more than one object or event	Students display and interpret graphs, with symbols or pictures representing more than one object or event, with no errors.	Students display and interpret graphs, with symbols or pictures representing more than one object or event, with no significant errors.	Students display and interpret graphs, with symbols or pictures representing more than one object or event, with a few significant errors.	Students display and interpret graphs, with symbols or pictures representing more than one object or event, with many significant errors.
3.3.3. Solve problems based on data displayed on a graph	Students solve problems based on data displayed on a graph with no errors.	Students solve problems based on data displayed on a graph with no significant errors.	Students solve problems based on data displayed on a graph with a few significant errors.	Students solve problems based on data displayed on a graph with many significant errors.
3.3.4. Recognize the elements in the union and intersection of sets represented by Venn diagrams	Students recognize the elements in the union and intersection of sets represented by Venn diagrams with no errors.	Students recognize the elements in the union and intersection of sets represented by Venn diagrams with no significant errors.	Students recognize the elements in the union and intersection of sets represented by Venn diagrams with a few significant errors.	Students recognize the elements in the union and intersection of sets represented by Venn diagrams with many significant errors.
PROBABILITY				
3.3.5. Use a simple probability experiment to collect data, display the data in a graph, and interpret the likelihood of the outcome	Students use a simple probability experiment to collect data, display the data in a graph, and interpret the likelihood of the outcome with no errors.	Students use a simple probability experiment to collect data, display the data in a graph, and interpret the likelihood of the outcome with no significant errors.	Students use a simple probability experiment to collect data, display the data in a graph, and interpret the likelihood of the outcome with a few significant errors.	Students use a simple probability experiment to collect data, display the data in a graph, and interpret the likelihood of the outcome with many significant errors.

Standard 3: Students use data collection and analysis techniques, statistical methods, and probability to solve problems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
<p>STATISTICAL METHODS</p> <p><i>No benchmark expectations at this level</i></p> <p>PREDICTIONS, DATA ANALYSIS, AND INFERENCES</p> <p>3.3.6. Determine which outcomes are most likely to occur in certain situations; e.g., spinning red is most likely to occur when the spinner is divided among red, blue, green, red</p>	<p>Students determine which outcomes are most likely to occur in certain situations with no errors.</p>	<p>Students determine which outcomes are most likely to occur in certain situations with no significant errors.</p>	<p>Students determine which outcomes are most likely to occur in certain situations with a few significant errors.</p>	<p>Students determine which outcomes are most likely to occur in certain situations with many significant errors.</p>

Standard 4: Measurement

Standard 4: Students use concepts and tools of measurement to describe and quantify the world..				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grade 3				
MEASURABLE ATTRIBUTES, MEASUREMENT SYSTEMS AND UNITS				
3.4.1. Tell time to the nearest minute using digital and analog clocks	Students tell time to the nearest minute with ease and no errors.	Students tell time to the nearest minute with minimal difficulty and no significant errors.	Students tell time to the nearest minute with difficulty or with a few significant errors.	Students tell time to the nearest minute with great difficulty or with many significant errors.
3.4.2. Determine elapsed time by the hour	Students determine elapsed time with no errors.	Students determine elapsed time with no significant errors.	Students determine elapsed time with a few significant errors.	Students determine elapsed time with many significant errors.
3.4.3. Count mixed coins and bills; i.e., \$1, \$5, \$10, \$20	Students count coins and bills with no errors.	Students count coins and bills with no significant errors.	Students count coins and bills with a few significant errors.	Students count coins and bills with many significant errors.
3.4.4. Read and measure temperature with a thermometer using Fahrenheit and Celsius scales	Students read and measure temperature with no errors.	Students read and measure temperature with no significant errors.	Students read and measure temperature with a few significant errors.	Students read and measure temperature with many significant errors.
3.4.5. Estimate and measure to the nearest half inch or centimeter	Students estimate and measure to the nearest half inch or centimeter with no errors.	Students estimate and measure to the nearest half inch or centimeter with no significant errors.	Students estimate and/or measure to the nearest half inch or centimeter with a few significant errors.	Students estimate and/or measure to the nearest half inch or centimeter with many significant errors.
3.4.6. State specific relationships between units within the same measuring system; e.g., hours in a day, inches in a foot, cups in a pint	Students state specific relationships between units within a measuring system with no errors.	Students state specific relationships between units within a measuring system with no significant errors.	Students state specific relationships between units within a measuring system with a few significant errors.	Students state specific relationships between units within a measuring system with many significant errors.
3.4.7. Estimate and measure perimeter, area, and volume using links, tiles, grid paper, geoboards, and dot paper	Students estimate and measure perimeter, area, and volume, using a variety of strategies, with no errors.	Students estimate and measure perimeter, area, and volume, using a variety of strategies, with no errors.	Students estimate and measure perimeter, area, and volume, using a variety of strategies, with a few significant errors.	Students estimate and measure perimeter, area, and volume, using a variety of strategies, with many significant errors.

Standard 4: Students use concepts and tools of measurement to describe and quantify the world..

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
MEASUREMENT TOOLS, TECHNIQUES, AND FORMULAS 3.4.8. Select a variety of tools for measuring length, weight, and capacity	Students use an extensive variety of tools for measuring length, weight, and capacity.	Students use many different tools for measuring length, weight, and capacity.	Students use some different tools for measuring length, weight, and capacity.	Students use very few different tools for measuring length, weight, and capacity.

Standard 5: Algebra, Functions and Patterns

Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grade 3				
PATTERNS, RELATIONS, AND FUNCTIONS				
3.5.1. Use patterns to solve problems	Students use patterns to solve problems with no errors.	Students use patterns to solve problems with no significant errors.	Students use patterns to solve problems with a few significant errors.	Students use patterns to solve problems with many significant errors.
3.5.2. Create patterns using multiplication	Students create patterns using multiplication with no errors.	Students create patterns using multiplication with no significant errors.	Students create patterns using multiplication with a few significant errors.	Students create patterns using multiplication with many significant errors.
3.5.3. Determine the missing elements of a pattern of multiples	Students determine the missing elements of a pattern of multiples with no errors.	Students determine the missing elements of a pattern of multiples with no significant errors.	Students determine the missing elements of a pattern of multiples with a few significant errors.	Students determine the missing elements of a pattern of multiples with many significant errors.
NUMERIC AND ALGEBRAIC REPRESENTATIONS				
3.5.4. Solve addition, subtraction, multiplication, and division equations with unknown numbers; e.g., $8 \times \square = 56$	Students solve addition, subtraction, multiplication, and division equations with unknown numbers with no errors.	Students solve addition, subtraction, multiplication, and division equations with unknown numbers with no significant errors.	Students solve addition, subtraction, multiplication, and division equations with unknown numbers with a few significant errors.	Students solve addition, subtraction, multiplication, and division equations with unknown numbers with many significant errors.
MATHEMATICAL MODELING				
3.5.5. Use symbols to write number sentences; i.e., +, -, >, <, =, x, and ÷	Students use symbols to write number sentences with no errors.	Students use symbols to write number sentences with no significant errors.	Students use symbols to write number sentences with a few significant errors.	Students use symbols to write number sentences with many significant errors.
RATES OF CHANGE				
<i>No benchmark expectations at this level</i>				