

The North Dakota Standards and Benchmarks

Content Standards – DRAFT

Mathematics Grade 4 – Content Only

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North Dakota Department of Public Instruction

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Standard 1: Number and Operation

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

BENCHMARK EXPECTATION

Grade 4

NUMBERS, NUMBER RELATIONSHIPS, AND NUMBER SYSTEMS

- 4.1.1. Identify place value from hundred thousands through the hundredths place
- 4.1.2. Order and compare using symbols; i.e., $>$, $<$, $=$, whole numbers (0 to 100,000) and decimals to hundredths
- 4.1.3. Read and write numerals to 100,000
- 4.1.4. Round whole numbers to the nearest tens, hundreds, thousands, ten thousands, and hundred thousands
- 4.1.5. Represent numbers up to hundred thousands in standard and expanded forms
- 4.1.6. Write tenths and hundredths as decimals and fractions
- 4.1.7. Compare equivalent decimals and fractions, e.g., $5/10 = .5$
- 4.1.8. Use appropriate terms when communicating about computations; i.e., numerator and denominator
- 4.1.9. Explain the meaning of remainders in real-world situations
- 4.1.10. Determine what information is relevant for solving a problem
- 4.1.11. Use a variety of strategies to solve problems; e.g., guess and check, work backwards, draw pictures, use objects

OPERATIONS AND THEIR PROPERTIES

- 4.1.12. Add and subtract whole numbers between 0 and 100,000
- 4.1.13. Multiply multi-digit numbers by two-digit numbers
- 4.1.14. Divide multi-digit numbers by a single-digit number

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

BENCHMARK EXPECTATION

4.1.15. Add and subtract fractions and mixed numbers with like denominators

4.1.16. Add and subtract decimals

4.1.17. Use the distributive property to simplify and perform computations

COMPUTATIONAL FLUENCY AND ESTIMATION

4.1.18. Determine when a rounded solution is appropriate

4.1.19. Estimate computations of whole numbers, fractions, and decimals

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 EXPECTATION

Grade 4

TWO- AND THREE-DIMENSIONAL SHAPES, GEOMETRIC PROPERTIES AND RELATIONSHIPS

- 4.2.1. Analyze the attributes of two- and three-dimensional shapes (i.e., circle, squares, trapezoid, rhombus) and use vocabulary to describe the attributes
- 4.2.2. Identify, describe, and model (e.g., using straws or other materials) parallel, perpendicular, and intersecting lines and line segments

COORDINATE GEOMETRY

No new expectations at this level (See grade 3)

TRANSFORMATION AND SYMMETRY

- 4.2.3. Recognize the changes in position and orientation of two-dimensional figures after transformations; i.e., flips (reflections), turns (rotations), and slides (translations)
- 4.2.4. Use motion geometry to show that shapes are congruent or similar

VISUALIZATION, SPATIAL REASONING, AND GEOMETRIC MODELING

No new expectations at this level

Standard 3: Data Analysis, Statistics, and Probability

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

BENCHMARK EXPECTATION

Grade 4

DATA COLLECTION, DISPLAY, AND INTERPRETATION

- 4.3.1. Determine a sample group to survey
- 4.3.2. Collect and record data
- 4.3.3. Organize and display data in line graphs and circle graphs
- 4.3.4. Read, interpret, and generate questions from data displayed in graphs; i.e., line graphs and circle graphs
- 4.3.5. Use computers and spreadsheets to organize and display data
- 4.3.6. Use number lines and coordinate graphs to represent data

PROBABILITY

- 4.3.7. Conduct simple probability experiments

STATISTICAL METHODS

- 4.3.8. Determine or calculate the mode, mean/average, and range for a data set

PREDICTIONS, DATA ANALYSIS AND INFERENCES

- 4.3.9. Make predictions and draw conclusions from simple probability experiments

Standard 4: Measurement

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

BENCHMARK EXPECTATION

Grade 4

MEASURABLE ATTRIBUTES, MEASUREMENT SYSTEMS AND UNITS

- 4.4.1. State specific relationships between units within the same measuring system; e.g., feet to yards, minutes to hours, milliliters to liters
- 4.4.2. Estimate and measure length to the nearest quarter inch
- 4.4.3. Analyze relationships between perimeter and area
- 4.4.4. Make change up to \$20
- 4.4.5. Apply the concept of elapsed time; i.e., schedules, and calendars

MEASUREMENT TOOLS, TECHNIQUES, AND FORMULAS

- 4.4.6. Select appropriate units for measuring perimeter, area, and volume

Standard 5: Algebra, Functions, and Patterns

Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems

BENCHMARK EXPECTATION

Grade 4

PATTERNS, RELATIONS, AND FUNCTIONS

4.5.1. Determine the missing elements of complex repeating patterns

NUMERIC AND ALGEBRAIC REPRESENTATIONS

4.5.2. Explain that variables represent unknowns

MATHEMATICAL MODELING

4.5.3. Solve problems with variables

4.5.4. Use parentheses in solving simple equations

RATES OF CHANGE

No new expectations at this level