North Dakota Mathematics Standards

Grade 6

Adopted 2023

Sixth Grade

Math Attributes

Problem-Solving

P. Learners can analyze information and formulate a flexible, systematic plan to problem-solve authentic situations and reflect on the reasonableness of the solution, making revisions when necessary. 6.MA.P

Connections

C. Learners can create connections within and across concepts and provide examples of how they relate to other learning and ideas using supporting evidence. 6.MA.C

Reasoning and Proof

R. Learners can reason logically, citing evidence to evaluate and explain what they see, think, and conclude through exploration and justification. 6.MA.R

Number and Operations

Number Systems

1. Explain and show the relationship between non-zero rational numbers and their opposites using horizontal and vertical number lines, including authentic problems. Use rational numbers to represent quantities in authentic contexts and explain the meaning of 0 in certain situations. 6.NO.NS.1
2. Write, interpret, and explain statements of order for rational numbers on a number line and in authentic contexts. 6.NO.NS.2

Operations

1. Divide multi-digit whole numbers up to four-digit dividends and two-digit divisors using strategies or procedures. 6.NO.O.1
2. Add and subtract fractions and decimals up to the hundredths place, including authentic problems. 6.NO.O.2
3. Apply multiplication and division of fractions and decimals to solve and interpret problems using visual models, including authentic problems. 6.NO.O.3
4. Determine the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. 6.NO.O.4

Algebraic Reasoning

Ratios and Proportional Relationships

1. Describe the concept of a ratio relationship between two quantities using ratio language and visual models. 6.AR.RP.1
2. Describe and calculate a unit rate when given a ratio relationship between two quantities using rate language and visual models. 6.AR.RP.2
3. Make and use tables of equivalent ratios, tape diagrams, double number line diagrams, and equations to solve problems involving ratios, rates, and unit rates, including authentic problems. 6.AR.RP.3
4. Calculate a percent of a quantity as a rate per 100. Solve problems using ratio reasoning involving finding the whole when given a part and the percent. 6.AR.RP.4
5. Convert measurement units within and between measurement systems using ratio reasoning given conversion factors. 6.AR.RP.5

Expressions and Equations

1. Read, write, and evaluate numerical expressions including expressions with whole number exponents and grouping symbols. 6.AR.EE.1
2. Read and evaluate algebraic expressions, including expressions with whole number exponents and grouping symbols. Write algebraic expressions to represent simple and authentic situations. 6.AR.EE.2
3. Identify when two expressions are equivalent. Apply the properties of operations to generate equivalent expressions. 6.AR.EE.3
4. Describe the concept of a solution of an equation and an inequality. Determine whether a given number is a solution to an equation or an inequality. 6.AR.EE.4
5. Write and solve equations of the form x + p = q and px = q for cases in which p and q are non-negative whole numbers or decimals, including authentic problems. 6.AR.EE.5
6. Write a statement of inequality of the form x > c or the form x < c to represent a constraint or condition. Recognize that inequalities of the form x > c or the form x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. 6.AR.EE.6

Geometry and Measurement

Area and Volume

1. Derive the relationship of the areas of triangles using the area of rectangles. Calculate the areas of triangles and quadrilaterals by composing and/or decomposing them into rectangles and triangles, including authentic problems. 6.GM.AV.1
2. Describe the concept of volume of a right rectangular prism. Apply given formulas to calculate the volume of right rectangular prisms, including fractional edge lengths, including authentic problems. 6.GM.AV.2

Geometric Figures

1. Identify and position ordered pairs of rational numbers in all four quadrants of a coordinate plane. 6.GM.GF.1
2. Draw polygons in the coordinate plane given coordinates for the vertices. Determine the length of a side joining points with the same first or second coordinate, including authentic problems. 6.GM.GF.2
3. Represent three-dimensional figures using nets made up of rectangles and triangles (right prisms and pyramids whose bases are triangles and rectangles). Calculate the surface area of prisms with rectangular and triangular bases using nets, including authentic problems. 6.GM.GF.3

Data, Probability, and Statistics (DPS)

Data Analysis

1. Write a statistical question that can be answered using measures of center or variability of a data set. 6.DPS.D.1
2. Calculate measures of center (median and mean) and variability (range and mean absolute deviation) to answer a statistical question. Identify mode(s) if they exist. 6.DPS.D.2
3. Identify outliers by observation and describe their effect on measures of center and variability. Justify which measures would be appropriate to answer a statistical question. 6.DPS.D.3
4. Display numerical data in plots on a number line, including dot plots and histograms. Describe any overall patterns in data, such as gaps, clusters, and skews. 6.DPS.D.4