

North Dakota Mathematics Content Standards

Grade 7 Prioritized Standards

Northeast Education Services Cooperative (NESC) - 2017



How to Read This Document

Example: 7.RP.1

"7.RP.1" references the grade level followed by the domain and then the standard. This coding is taken directly from the North Dakota Department of Public Instruction's standards document.

Prioritized Standards

Ratios and Proportional Relationships

Analyze proportional relationships and use them to solve real world and mathematical problems:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	✓	✓	✓	✓	✓	5
7.RP.2	Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. d. Explain what a point (x, y) on the graph of a	✓	✓	✓	✓	✓	5

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	proportional relationship means in terms of the situation, with special attention to the points (0,0) and (1, r) where r is the unit rate.						
7.RP.3	Use proportional relationships to solve multi-step ratio and percent problems.	✓	✓	✓	✓	✓	5

The Number System

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. Understand $pp + qq$ as the number located a distance $ qq $ from pp on a number line, in the direction indicated by the sign of qq . Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real world contexts. c. Understand subtraction of rational numbers as adding the additive inverse, $pp - qq = pp + (-qq)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real world contexts. d. Apply properties of operations as strategies to fluently add and subtract rational numbers.	✓	✓	✓	✓	✓	5
7.NS.2	Apply and extend previous understandings of multiplication, division, and fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the	✓	✓	✓	✓	✓	5

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	<p>rules for multiplying rational numbers. Interpret products of rational numbers by describing real world contexts.</p> <p>b. Understand that integers can be divided provided the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = -p/q = p/-q$. Interpret quotients of rational numbers by describing real world contexts.</p> <p>c. Apply properties of operations as strategies to fluently multiply and divide rational numbers.</p> <p>d. Convert a rational number to a decimal using long division. Know that the decimal form of a rational number terminates or eventually repeats.</p>						
7.NS.3	Solve real world and mathematical problems involving the four operations with rational numbers.	✓	✓	✓	✓	✓	5

Expressions and Equations

Use properties of operations to generate equivalent expressions:

No standards were prioritized within this cluster.

Solve real-life and mathematical problems using numerical and algebraic expressions and equations:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.EE.3	Solve multi-step real-life and mathematical problems posed with rational numbers in any form (positive and negative, fractions, decimals, and integers), using tools strategically. Apply properties of operations to calculate with numbers in any form. Convert between forms as appropriate. Assess the reasonableness of answers using mental computation and estimation strategies.	✓	✓	✓	✓	✓	5
7.EE.4	Use variables to represent quantities in a real world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the	✓	✓	✓	✓	✓	5

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form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare the algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.						
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Geometry

Draw, construct, and describe geometrical figures and describe the relationships between them:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	✓	✓	✓	✓	✓	5

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems. Informally derive the relationship between the circumference and area of a circle.	✓	✓	✓	✓	✓	5
7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle in a figure.	✓	✓	✓	✓	✓	5
7.G.6	Solve real world and mathematical problems involving area of two-dimensional figures composed of polygons and/or circles, including composite figures. Use nets to solve real world and mathematical problems involving surface area of	✓	✓	✓	✓	✓	5

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	prisms and cylinders, including composite solids. Solve real world and mathematical problems involving volumes of right prisms, including composite solids.						
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Statistics and Probability

Use random sampling to draw inferences about a population:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.		✓	✓	✓	✓	4

Draw informal comparative inferences about two populations:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	✓	✓	✓	✓	✓	5

Investigate chance processes and develop, use, and evaluate probability models:

Code	Standard	Endurance	Leverage	Readiness	Assessment	Teacher Judgement	Total Score
7.SP.5	Understand that the probability of a chance event is a number from 0 through 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	✓	✓	✓	✓	✓	5
7.SP.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency.	✓	✓	✓	✓	✓	5

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	Predict the approximate relative frequency given the probability.						
7.SP.7	<p>Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies. If there is a discrepancy, explain possible sources.</p> <p>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</p> <p>b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</p>	✓	✓	✓	✓	✓	5
7.SP.8	<p>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (such as “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c. Design and use a simulation to generate frequencies for compound events.</p>	✓	✓	✓	✓	✓	5

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