Arkansas Mathematics Standards

Grade 7

Adopted 2023

Grade 7

Number Concepts & Computations

Rational Numbers

A. Model and compute with rational numbers. 7.NCC.A

1. Represent addition and subtraction of rational numbers in real-world contexts using a variety of forms. 7.NCC.1
2. Model and describe additive inverse in real-world situations to show opposite quantities combine to make 0. 7.NCC.2
3. Demonstrate in real-world contexts the distance between two rational numbers on the number line as the absolute value of their differences. 7.NCC.3
4. Convert a rational number in fraction form to decimal form and recognize that the decimal form of a rational number terminates in 0s or eventually repeats. 7.NCC.4
5. Interpret the products and quotients of rational numbers by describing real-world contexts. 7.NCC.5

Rational Number Operations

B. Apply all properties and operations to all rational numbers. 7.NCC.B

6. Apply properties of operations as strategies to fluently add, subtract, multiply, and divide rational numbers. 7.NCC.6
7. Use addition and subtraction with rational numbers in any form to solve multi-step problems in real-world and mathematical contexts. 7.NCC.7
8. Use multiplication and division with rational numbers in any form to solve multi-step problems in real-world and mathematical contexts. 7.NCC.8
9. Apply operations with rational numbers involving the order of operations, involving nested grouping symbols. 7.NCC.9

Proportional Relationships

Ratio & Rates

A. Analyze and use unit rates to solve problems. 7.PR.A

1. Determine the unit rate (constant of proportionality) from tables, graphs, equations, diagrams, or verbal descriptions of proportional relationships. 7.PR.1
2. Calculate unit rates in real-world contexts that include complex fractions. 7.PR.2
3. Solve multi-step ratio and percent problems in a real-world context, including percent error and percent increase and decrease. 7.PR.3

Constant of Proportionality

B. Analyze proportional relationships and solve multi-step ration and percent problems. 7.PR.B

4. Determine whether two quantities represent proportional relationships by using equivalent ratios in a table and by graphing on a coordinate plane. 7.PR.4
5. Compare two different proportional relationships represented in different forms. 7.PR.5
6. Create equations in the form of y = mx from tables, verbal descriptions, or graphs. 7.PR.6
7. Given a graph with a proportional relationship, explain the meaning of a point (x,y) on the graph, including the origin (0,0) and the unit rate (1,r). 7.PR.7

Algebra

Expressions

A. Apply properties of operations to create equivalent expressions. 7.ALG.A

1. Generate and justify equivalent expressions, using properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients within mathematical and real-world problems. 7.ALG.1

Equations & Inequalities

B. Apply previous knowledge of equations and inequalities to two-step problems. 7.ALG.B

2. Model and solve fluently two-step equations in real-world or mathematical problems. 7.ALG.2

3. Create, solve, and graph two-step inequalities in real-world and mathematical problems in the forms $px \pm q > r$, $px \pm q < r$, $px \pm q \geq r$, and $px \pm q \leq r$. 7.ALG.3

Relationships between Quantities

C. Use understanding of algebraic expressions and equations to represent relationships between two quantities. 7.ALG.C

4. Write an equation to express two quantities in terms of the dependent and independent variables. 7.ALG.4

5. Describe the relationship between the dependent and independent variables in an equation using tables and graphs, relating these to the equation. 7.ALG.5

Geometry & Measurement

Area, Volume, & Surface Area

A. Solve problems involving area, volume, and surface area. 7.GM.A

1. Describe the proportional relationship between the circumference and diameter of a circle. 7.GM.1
2. Use area and circumference formulas of a circle to solve real-world and mathematical problems. 7.GM.2
3. Apply the formulas for the volume and surface area of right rectangular prisms, rectangular pyramids, triangular prisms, and triangular pyramids to solve real-world and mathematical problems. 7.GM.3

Cross Sections

B. Describe cross sections of three-dimensional figures. 7.GM.B

4. Describe the two-dimensional figure that results from slicing a three-dimensional figure parallel and perpendicular to the base.
Three-dimensional figures include: right rectangular prisms, triangular prisms, and cylinders 7.GM.4

Triangles & Angles

C. Solve problems using various angle properties of lines. 7.GM.C

5. Solve multi-step problems involving supplementary, complementary, vertical, and adjacent angles to include solving for an unknown angle in a figure. 7.GM.5

Scale

D. Understand and use scale factor. 7.GM.D

6. Calculate the scale factor, compute the actual lengths from the scale in a drawing, and reproduce a scale drawing using another scale. 7.GM.6

Statistics & Probability

Numerical Data

A. Interpret and organize data. 7.SP.A

1. Interpret data displayed in a histogram and box plot to answer questions about the data. 7.SP.1
2. Recognize, create, and interpret categorical data in a circle graph. 7.SP.2
3. Graph two numerical data sets and compare their variability. Variability includes: range, interquartile range, or mean absolute deviation 7.SP.3
4. Select an appropriate measure(s) of center or variability and draw valid comparative inferences for two data sets. 7.SP.4

Sampling & Population

B. Understand sampling and use samples to make inferences. 7.SP.B

5. Distinguish between a random and non-random sample. 7.SP.5
6. Use a random sampling of a population to draw valid inferences and generalizations of populations. 7.SP.6

Probability

C. Understand theoretical and experimental probability for simple experiments. 7.SP.C

7. Determine the sample space of a simple experiment and use the sample space to determine the theoretical probability of a given set of outcomes. Simple experiments include: tossing a fair coin, spinning a fair spinner, rolling a fair dice, picking a random marble from a bag, and selecting a random card from a deck 7.SP.7
8. Recognize that probabilities in a simple experiment can be qualitative descriptors of likelihood: impossible (0), unlikely, neither likely nor unlikely, likely, or certain (1). 7.SP.8
9. Determine experimental probabilities in simple experiments and represent as fractions, decimals, and percents. 7.SP.9
10. Use theoretical probability of an event in a simple experiment to predict the number of times that an event will occur for a large number of experiments. 7.SP.10