Arkansas Mathematics Standards

Grade 5

Adopted 2023

Grade 5

Number & Place Value

Place Value

A. Understand the base ten place value system. 5.NPV.A

1. Recognize that, in a multi-digit number, a digit in a given place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. 5.NPV.1
2. Explain patterns in the number of zeros and/or the decimal point when multiplying or dividing a number by a power of 10, using whole-number exponents to denote powers of 10. 5.NPV.2
3. Read and write decimals to thousandths, using base-ten numerals, word form, and a variety of expanded forms. 5.NPV.3
4. Apply place value understanding to round decimals to any place up to the thousandths. 5.NPV.4

Comparison

B. Use place value understanding to compare numbers. 5.NPV.B

5. Compare two decimals to thousandths based on the value of the digits in each place, using symbols (<, =, >) to record the results of comparisons. 5.NPV.5

Fraction Foundations

C. Build a conceptual understanding of fractions. 5.NPV.C

6. Use visual models to explain the product of multiplying a whole number by a fraction greater than and less than one. 5.NPV.6

Computation & Algebraic Reasoning

Operations & Properties

A. Perform operations using place value understanding and properties of operations. 5.CAR.A

1. Use computational fluency to multiply multi-digit whole numbers by using strategies and algorithms, including the standard algorithm, with mastery by the end of fifth grade. 5.CAR.1
2. Calculate whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors using strategies based on place value, properties of operations, divisibility rules, and the relationship between multiplication and division. 5.CAR.2
3. Add and subtract decimals to the hundredths using concrete models or drawings and strategies based on place value, properties of operations, or the relationship between addition and subtraction. 5.CAR.3
4. Multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, or the relationship between multiplication and division. 5.CAR.4
5. Add and subtract fractions with like and unlike denominators by using equivalent fractions [a/b = (n·a)/(n·b)] to create common denominators; include real-world problems.
Fractions include: mixed numbers 5.CAR.5
6. Interpret and solve fractions as division problems, (a/b = a÷b), where a and b are natural numbers. 5.CAR.6
7. Use visual models and equations to multiply whole numbers by fractions and fractions by fractions, including mixed numbers and fractions greater than one. 5.CAR.7
8. Apply previous understanding of division to divide unit fractions by whole numbers and whole numbers by unit fractions. 5.CAR.8

Problem Solving

B. Solve real-world problems. 5.CAR.B

9. Solve and create real-world problems involving multiplication of fractions and mixed numbers. 5.CAR.9
10. Solve real-world problems involving the division of natural numbers leading to answers in the form of fractions or mixed numbers using visual models and equations. 5.CAR.10
11. Solve real-world problems involving the division of unit fractions by whole numbers and whole numbers by unit fractions, using visual fraction models and equations. 5.CAR.11

Algebraic Concepts

C. Develop and apply an understanding of foundational algebraic concepts. 5.CAR.C

12. Evaluate numerical expressions with parentheses or brackets and exponents with the base of ten, using the Order of Operations. 5.CAR.12
13. Write simple expressions that record calculations with numbers, interpreting numerical expressions without evaluating them. 5.CAR.13
14. Generate two numerical patterns given two rules, identifying the relationship between the corresponding terms by graphing the terms in the first quadrant of the coordinate grid. 5.CAR.14

Geometry & Measurement

Shapes

A. Expand knowledge of shapes by analyzing sides and angles. 5.GM.A

1. Classify two-dimensional figures in a hierarchy based on properties with the focus on quadrilaterals and triangles when teaching hierarchies. Shapes to include: quadrilaterals (trapezoid, parallelogram, rectangle, square, rhombus, kite) and triangles (right, acute, obtuse, scalene, isosceles, equilateral) 5.GM.1

Area & Volume

B. Solve the area of rectangles and volume of rectangular prisms. 5.GM.B

2. Find the area of a rectangle with fractional and/or mixed number side lengths by using models and multiplying the fractional side lengths showing that both strategies produce the same area. 5.GM.2
3. Measure volumes by counting unit cubes using cubic cm (cm^3), cubic in (in^3), cubic ft (ft^3), and improvised units (u^3). 5.GM.3
4. Solve real-world and mathematical problems involving the volume of rectangular prisms with whole number side lengths by applying the formulas ($V = l \cdot w \cdot h$ or $V = B \cdot h$) and the properties of operations. 5.GM.4
5. Solve real-world problems by calculating volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts. 5.GM.5

Conversions

C. Apply measurement knowledge to solve real-world problems. 5.GM.C

6. Convert among different-sized standard measurement units within the same system, including both the metric and customary systems, and solve multi-step, real-world problems using conversions. 5.GM.6

Coordinate Plane System

D. Develop an understanding of the coordinate system. 5.GM.D

7. Graph points with whole number coordinates on a coordinate plane in the first quadrant, explaining how the coordinates relate to the horizontal and vertical axes to describe the location of points in the plane. 5.GM.7
8. Represent real-world and mathematical problems by graphing points in the first quadrant on a coordinate plane, interpreting coordinate values of points in the context of the situation. 5.GM.8

Data Analysis

Charts, Graphs, & Tables

A. Organize and analyze data. 5.DA.A

1. Collect and interpret data from observations, surveys, and experiments; represent data using frequency tables, scaled bar graphs, and scaled line graphs. 5.DA.1

2. Use a line plot to display a data set of measurements in fractions of a unit solving problems involving all four operations with fractions (excluding division of a fraction by fraction) using data presented in line plots. 5.DA.2