Newburyport Public Schools

The Port Where Tradition and Innovation Converge

Newburyport Math Curriculum Framework Guide

Grade 5 Focus Areas

In grade 5, the focus of student learning is on four areas:

1. developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions);
2. extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations;
3. developing understanding of measurement systems and determining volumes to solve problems;
4. solving problems using the coordinate plane

Mathematical Practice Standards

These 8 practice standards describe ways in which students do or approach math. The are the foundation for mathematical thinking and help to develop a more advanced understanding. These standards are the habits & strategies mathematically proficient students have and can be applied in everyday life.

1. Makes sense of problems and persevere in solving them.
2. Reasons abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Grade 5 Overview

Operations & Algebraic Thinking

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number & Operations in Base Ten

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number & Operations-Fractions

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement & Data

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

Operations & Algebraic Thinking

Write and interpret numerical expressions.

- Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Analyze patterns and relationships.

- Generate two numerical patterns using two given rules.

Number & Operations in Base Ten

Understand the place value system.

- Recognize that in a multi-digit number, including decimals, a digit in any 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.
- Explain patterns in the number of zeros of the product when multiplying a number by powers of 10.
- Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- Fluently multiply multi-digit whole numbers using the standard algorithm.
- Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
- Add, subtract, multiply, and divide decimals to hundredths.

Number & Operations-Fractions

Use equivalent fractions as a strategy to add and subtract fractions.

- Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions.
- Solve word problems involving addition and subtraction of fractions referring to the same whole (the whole can be a set of objects), including cases of unlike denominators.

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- Interpret a fraction as division of the numerator by the denominator (a /b = a b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.
- Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- Interpret multiplication as scaling (resizing).
- Solve real-world problems involving multiplication of fractions and mixed numbers.
- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

Measurement & Data

Convert like measurement units within a given measurement system.

- Convert among different-sized standard measurement units within a given measurement system and use these conversions in solving multi-step, real-world problems.

Represent and interpret data.

- Make a line plot to display a data set of measurements in fractions of a unit. Solve problems involving information presented in line plot.

Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.

- Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and non-standard units.
- Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.

Geometry

Graph points on the coordinate plane to solve real-world and mathematical problems.

- Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the zero on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates.
- Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

- Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
- Classify two-dimensional figures in a hierarchy based on properties.