

Grade 5 Parent Guide – Mathematics

In the 2012-2013 school year, the Newton Public Schools continues the transition to the 2011 *Massachusetts Mathematics Curriculum Frameworks, incorporating the Common Core State Standards*. The focus of the new frameworks requires that we change the content of our curriculum by decreasing the number of topics to be taught each year, and by deliberately building concepts step-by-step from grade to grade.

We have another year to complete the transition to the new frameworks, and we are changing mathematical content and our mathematical practices simultaneously. During the transition, we will continue to use *Everyday Mathematics* as our core text, eliminating topics that are no longer content expectations in fifth grade, adding materials that deepen the instruction on topics defined as critical areas for fifth grade, and adding materials that address topics not included in fifth grade *Everyday Math*.

In addition to providing new content, our new materials will define a management structure to help teachers engage all children in the mathematics they are learning: in reasoning, thinking, communicating their mathematical thinking and critiquing the reasoning of others - all mathematical practices identified in the Common Core State Standards.

Mathematical practices students will use in fifth grade include:

- Making sense of problems and persevering in solving them.
- Reasoning abstractly and quantitatively.
- Constructing viable arguments and critiquing the reasoning of others.
- Modeling with mathematics.
- Using appropriate tools strategically.
- Attending to precision.
- Looking for and making use of structure.
- Looking for and expressing regularity in repeated reasoning.

The complete text of the new frameworks can be downloaded from the Massachusetts Department of Elementary and Secondary Education website:
www.doe.mass.edu/frameworks/current.html.
Grade 5 standards begin on page 48.

Mathematics Content Standards - Grade 5

Operations and Algebraic Thinking

- 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.
- Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Number and Operations in Base Ten

- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ 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, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- Read, write, and compare decimals to thousandths.
- Use place value understanding to round decimals to any place.
- 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, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Number and Operations—Fractions

- Add and subtract fractions with unlike denominators (including mixed numbers).
- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.
- Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$).
- Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
- Use positive and negative integers to describe quantities such as temperature above/below zero, elevation above/below sea level, or credit/debit.

Measurement and Data

- Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step, real-world problems.
- Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$).
- 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 improvised units.
- Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.

Geometry

- 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 0 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.
- 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.