Math 5 Overview - Course 4155 Copied from: Math, Copied on: 08/31/22

Content Area: **Math**
Course(s): **MATH-5**
Time Period:
Length: **Full Year**
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Cover Page

EAST BRUNSWICK PUBLIC SCHOOLS

East Brunswick New Jersey

Superintendent of Schools

Dr. Victor P. Valeski

Mathematics

Math 5 - Course Number: 4155

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Course Overview

COURSE DESCRIPTION:

The overall mission of the mathematics curriculum is for students to communicate, make connections, reason and represent the world quantitatively in order to pose and solve problems. In Grade 5, instructional time should focus on three critical 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 - this includes using fraction models to represent the addition and subtraction of fractions with unlike denominators, developing fluency in calculating sums and differences of fractions and applying these ideas to explain why the procedures for multiplying and dividing fractions make sense); (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 (this includes making reasonable estimates of these results); and (3) developing understanding of volume (this includes recognizing volume as an attribute of three-dimensional space, selecting appropriate units, strategies, and tools for solving problems and measuring necessary attributes of shapes in order to solve real world and mathematical problems).

Textbooks and other resources

Textbook: Everyday Math 4 (Grade 5) by McGraw-Hill Education (2014).

- Student Math Journal, Vol. 1 (ISBN 978-0-02-143099-4)
- Student Math Journal, Vol. 2 (ISBN 978-0-02-143100-7)
- Student Home Links (ISBN 978-0-02-140794-1)
- Teacher's Resource Package, classroom resources and online resources accompanying text (connectED.mcgraw-hill.com)

Units

Course Scope and Sequence:

Unit	Focus Skills	Approximate Time Frame	
1	Area of Rectangles Area of Rectangles with Fractional Side Lengths Introduction to Volume with Various Algorithms	4 weeks	
2	Place Value Exponents & Powers of 10 U.S. Traditional Multiplication U.S. Customary Unit Conversions Partial Quotient Division with Interpreting the Remainder	5 weeks	
3	Connecting Fractions & Division Fractions on a Number Line Renaming Fractions & Mixed Numbers Introduction to Adding & Subtracting Fractions & Mixed Numbers Fraction of Problems	4 weeks	
4	Decimal Place Value Including Expanded Form Rounding, Comparing & Ordering Decimals Introduction to the Coordinate System Addition & Subtraction of Decimals	4 weeks	
5	Finding Common Denominators Addition & Subtraction of Fractions, Mixed Numbers & Whole Numbers Multiplication of Fractions, Mixed Numbers & Whole Numbers Equivalent Fraction Rule Dividing Fractions by Whole Numbers & Whole Numbers by Fractions	5 weeks	
6	Multiplying & Dividing Decimals by Powers of 10 Metric Measurement Conversions Line Plots with Fractions of Units Applying Volume Concepts & Measuring Volume by	4 weeks	

	Displacement Estimation & Computation of Decimal Products & Quotients		
7	Multiplication of Mixed Numbers Area of Rectangles with Fractional Side Lengths Fraction Division with Common Denominators Hierarchy of Triangles, Quadrilaterals, & Polygons using their Properties Organizing Fractional Data on Line Plots Rules, Tables & Graphs	5 weeks	

Standards

Grade Five Overview

Operations and Algebraic Thinking

• Write and interpret numerical expressions.

• Analyze patterns and relationships.

Number and Operations in Base Ten

• Understand the place value system.

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

Number and 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 and Data

• Convert like measurement units within a given measurement system.

• Represent and interpret data.

• Geometric measurement: 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.

Standards for Mathematical Practice:

MP1. Make sense of problems and persevere in solving them.

MP2. Reason abstractly and quantitatively.

MP3. Construct viable arguments and critique the reasoning of others.

MP4. Model with mathematics.

MP5. Use appropriate tools strategically.

MP6. Attend to precision.

MP7. Look for and make use of structure.

MP8. Look for and express regularity in repeated reasoning

MA.5.OA.A.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
MA.5.OA.A.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
MA.5.OA.B.3	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.
MA.5.NBT.A.1	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 1/10 of what it represents in the place to its left.
MA.5.NBT.A.2	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.
MA.5.NBT.A.3a	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

MA.5.NBT.A.3b	Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
MA.5.NBT.A.4	Use place value understanding to round decimals to any place.
MA.5.NBT.B.5	Fluently multiply multi-digit whole numbers using the standard algorithm.
MA.5.NBT.B.6	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.
MA.5.NBT.B.7	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.
MA.5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
MA.5.NF.A.2	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. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
MA.5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
MA.5.NF.B.4a	Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.
MA.5.NF.B.4b	Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
MA.5.NF.B.5a	Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
MA.5.NF.B.5b	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
MA.5.NF.B.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
MA.5.NF.B.7a	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.
MA.5.NF.B.7b	Interpret division of a whole number by a unit fraction, and compute such quotients.
MA.5.NF.B.7c	Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.
MA.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
MA.5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.

MA.5.MD.C.3a	A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.
MA.5.MD.C.3b	A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
MA.5.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.
MA.5.MD.C.5a	Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
MA.5.MD.C.5b	Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.
MA.5.MD.C.5c	Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
MA.5.G.A.1	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. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
MA.5.G.A.2	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.
MA.5.G.B.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
MA.5.G.B.4	Classify two-dimensional figures in a hierarchy based on properties.

Grading and Evaluation Guidelines

Grading Guidelines:

Students are regularly assessed for learning at developmentally appropriate levels throughout the school year. Items used for assessment may include: teacher observation, explanations of problems, ability to use manipulatives to model mathematical thinking, fact fluency assessments, extended constructed responses and unit tests. Common summative assessments for each unit of study are used to measure attainment of grade level goals.

In terms of proficiency level, the East Brunswick grades equate to the following for aligned grade-level standards:

- **+: Special Commendation**
- **√: Steady Progress**

- **-: Needs Improvement**

In terms of proficiency level, the East Brunswick grades equate to the following as an overall assessment of marking period progress:

A	**Excellent**	**Advanced Proficient**
B	**Good**	**Above Average Proficient**
C	**Fair**	**Proficient**
D	**Poor**	**Minimally Proficient**
F	**Failing**	**Partially Proficient**

Assessments of student progress are reported to parents as follows:

- Parent conferences are held twice a year
- Standards-based report cards are sent home four times a year
- Students in Grade 4 are evaluated through a variety of indicators. Specific mathematics skills are outlined and assessed both informally in verbal and written form and through the use of end of unit district oral and unit assessments.
- Unit Portfolio assessments, delineated for each unit, will include such measures as:
    - Written and Performance Measures of proficiency objectives (NJSLO)
    - Records of oral participation in classroom discussions related to unit objectives
    - Records of achievement of lesson objectives (i.e. activity pages, relevant homework)

Course Evaluation:

In Grade 5 Mathematics the goal is that a minimum of 95% of the students will meet at least the minimum proficiency level set for the course (an overall course grade of D or better). The department will analyze the achievement of students on Unit Assessments, the mid-year assessment, the end of year test, and Final Course Grades. For final course grades the achievement of sub-groups identified by the state will be used to determine if modifications to the curriculum and instructional methods are needed.

Course evaluation requires the answering of the following questions:

1. Are course content, instruction and assessments aligned with the required NJ Student Learning Standards?
2. Is instruction sufficient for students to achieve the Standards?
3. Do all students achieve the set proficiencies/benchmarks set for the course?

Other Details

Mathematics (AAAN)

Math 5

Course No. 4155

SCED

52035 Mathematics (grade 5)
Mathematics (grade 5) courses typically emphasize number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; and measurement. Course content may include activities that help students increase operational fluency, make connections between abstract symbols and concrete events or concepts, or present their mathematical reasoning. Specific course content depends upon state learning standards for grade 5.