

# Math 3 Overview - Course 4153

Content Area: **Math**  
Course(s): **MATH-3**  
Time Period:  
Length: **Full Year**  
Status: **Published**

## **Cover Page**

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### **EAST BRUNSWICK PUBLIC SCHOOLS**

**East Brunswick New Jersey**

**Superintendent of Schools**

Dr. Victor P. Valeski

### **Mathematics**

**Math 3 - Course Number: 4153**

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## Course Overview

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### 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 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (this includes using properties of operations to calculate products of whole numbers as well as using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors); (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1) (this includes being able to use fractions to represent numbers equal to, less than, and greater than one as well as solving problems that involve comparing fractions by using visual fraction models and strategies); (3) developing understanding of the structure of rectangular arrays and of area (this allows students to connect area to multiplication by decomposing rectangles into rectangular arrays of squares and then use multiplication to determine the area of a rectangle); and (4) describing and analyzing two-dimensional shapes (this includes comparing and classifying shapes by their sides and angles, and then connecting these with definitions of shapes).

## Textbooks and other resources

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**Textbook:** Everyday Math 4 (Grade 3) by McGraw-Hill Education (2014).

- Student Math Journal, Vol. 1 (ISBN 9780021430871)

- Student Math Journal, Vol. 2 (ISBN 9780021430918)
- Student Home Links (ISBN 9780021379637)
- 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 | Quarter Report Card |
|------|---|------------------------|---------------------|
| 1    | Math Tools<br>Time/Elapsed Time<br>Multiplication   | 4 weeks                | 1                   |
| 2    | Number Stories<br>Arrays<br>Division  | 4 weeks                | 1                   |
| 3    | Operations<br>Addition & Subtraction Computation<br>Multiplication Strategies<br>Graphing                               | 5 weeks                | 2                   |
| 4    | Measurement<br>Geometry<br>Area & Perimeter<br>Line Plots   | 5 weeks                | 2                   |
| 5    | Representing Fractions<br>Equivalent Fractions<br>Multiplication Strategies   | 4 weeks                | 3                   |
| 6    | Fact Power<br>Parentheses Problems<br>Two-Step Number Stories   | 3 weeks                | 3                   |
| 7    | Fractions on Number Line<br>Comparing Fractions<br>Fraction Number Stories<br>Fractions of Collections<br>Liquid Volume | 3 weeks                | 4                   |
| 8    | Multiplication & Division<br>Measuring to ? inch<br>Factors<br>Solid Shapes   | 3 weeks                | 4                   |
| 9    | Multiplies of Ten<br>Intro to Multi-Digit Multiplication  | 2 weeks                | 4                   |

## **Standards**

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### **Grade Three Overview**

#### **Operations and Algebraic Thinking**

- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiple and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

#### **Number and Operations in Base Ten**

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

#### **Number and Operations-Fractions**

- Develop understanding of fractions as numbers.

#### **Measurement and Data**

- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
- Represent and interpret data.

#### **Geometry**

- Reason with shapes and their attributes.

### 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

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| MA.3.G.A.1   | Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. |
| MA.3.G.A.2   | Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.   |
| MA.3.MD.A.1  | Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.  |
| MA.3.MD.A.2  | Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.                                    |
| MA.3.MD.B.3  | Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.   |
| MA.3.MD.B.4  | Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.   |
| MA.3.MD.C.6  | Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).  |
| MA.3.MD.C.5a | A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.  |
| MA.3.MD.C.5b | A plane figure which can be covered without gaps or overlaps by $n$ unit squares is said to have an area of $n$ square units.  |

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| MA.3.MD.C.7a | Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.   |
| MA.3.MD.C.7b | Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.  |
| MA.3.MD.C.7c | Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.   |
| MA.3.MD.C.7d | Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.  |
| MA.3.MD.D.8  | Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.  |
| MA.3.NF.A.1  | Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by $a$ parts of size $1/b$ .  |
| MA.3.NF.A.2a | Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.   |
| MA.3.NF.A.2b | Represent a fraction $a/b$ on a number line diagram by marking off $a$ lengths $1/b$ from 0. Recognize that the resulting interval has size $a/b$ and that its endpoint locates the number $a/b$ on the number line.  |
| MA.3.NF.A.3a | Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.   |
| MA.3.NF.A.3b | Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$ , $4/6 = 2/3$ ). Explain why the fractions are equivalent, e.g., by using a visual fraction model.  |
| MA.3.NF.A.3c | Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.   |
| MA.3.NF.A.3d | Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model. |
| MA.3.OA.A.1  | Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each.   |
| MA.3.OA.A.2  | Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.  |
| MA.3.OA.A.3  | Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  |
| MA.3.OA.A.4  | Determine the unknown whole number in a multiplication or division equation relating three whole numbers.   |
| MA.3.OA.B.5  | Apply properties of operations as strategies to multiply and divide.  |
| MA.3.OA.B.6  | Understand division as an unknown-factor problem.   |
| MA.3.OA.C.7  | Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.                                      |

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| MA.3.OA.D.8  | Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. |
| MA.3.OA.D.9  | Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.   |
| MA.3.NBT.A.1 | Use place value understanding to round whole numbers to the nearest 10 or 100.  |
| MA.3.NBT.A.2 | Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.   |
| MA.3.NBT.A.3 | Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., $9 \times 80$ , $5 \times 60$ ) using strategies based on place value and properties of operations.   |

## Grading and Evaluation Guidelines

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### 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:**

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

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 3 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 terms of proficiency the East Brunswick grades are as follows:

- **+: Special Commendation**

- $\surd$ : **Steady Progress**
- -: **Needs Improvement**

In Grade 3 Mathematics the goal is that a minimum of 95% of the students will meet at least the minimum proficiency level set for the course. 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**

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### **Mathematics (AAAN)**

#### **Math 3**

#### **Course No. 4153**

#### **SCED**

#### **52033 Mathematics (Grade 3)**

Mathematics (grade 3) courses typically emphasize number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; and measurement. These courses often require students to improve their numerical fluency, adding multiplication and division to addition and subtraction operations, using whole numbers and parts (quarters, thirds, halves), and estimation. Specific course content depends upon state learning standards for grade 3.