



Grade 3 Mathematics

Course Syllabus

Prince George's County Public Schools

Prerequisites: None

Course Description: 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; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

1. Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.
2. Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, $\frac{1}{2}$ of the paint in a small bucket could be less paint than $\frac{1}{3}$ of the paint in a larger bucket, but $\frac{1}{3}$ of a ribbon is longer than $\frac{1}{5}$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.
3. Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.
4. Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Standards for Mathematical Practice Parents' Guide

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. As your son or daughter works through homework exercises, you can help him or her develop skills with these Standards for Mathematical Practice by asking some of these questions:

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

- How would you describe the problem in your own words?
- How did you tackle similar problems?
- Would it help you to create a diagram? Make a table? Draw a picture?

2. Reason abstractly and quantitatively.

- Can you tell why that is true?
- How did you reach your conclusion?
- How does your answer connect to the question? Does it make sense?

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

- Can you convince me that your answer makes sense?
- Tell me what your answer means.
- If I told you I think the answer should be (offer a wrong answer), how would you explain to me why I'm wrong?

4. Model with mathematics.

- How would you model the situation with a diagram, picture, table, graph, equation or words?
- Can you use color, words, or diagrams to show the connections between these ideas?
- How do the different models connect or related to each other (i.e. table to graph, graph to equation)?

5. Use appropriate tools strategically.

- What tools will you need?
- What strategies will you use?
- Will a calculator help? Will paper and pencil help? Will using a number line, table, diagram or picture help?

6. Attend to precision.

- Can you guess and check?
- Can you represent the definition or rule?
- What units of measure are you using? (for measurement problems)

7. Look for and make use of structure.

- What relevant information in the problem shows you what relationship (i.e. change, group, compare, ratio, or proportion) exists between the elements or parts of the problem?
- How do you know that your rule or equation always works?
- Are you actively comparing, reflecting on, and discussing multiple solution methods?

8. Look for and express regularity in repeated reasoning.

- What pattern(s) do you notice? How would you describe the pattern(s)?
- What calculations, patterns, or principles are repeated?
- What mathematical principles will help you in solving the problem?

** Details for each practice may be found at:

http://mdk12.msde.maryland.gov/instruction/academies/resources/Mathematics/MathD1/Standards_for_Mathematical%20Practice.pdf

Fluency Definition: Skill in carrying out procedures flexibly, accurately, efficiently and appropriately.

Grade 3 Fluency Expectations:

- **Students will fluently multiply and divide within 100. By the end of grade 3, they will know all products of two one-digit numbers from memory.**
- **Students will 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.**

INSTRUCTOR INFORMATION:

NAME: Mr. Bibeault, Mrs. Kessler, Miss Morrison

E-MAIL ADDRESS:

ryan.bibeault@pgcps.org ; danielle.stark@pgcps.org ; staci.morrison@pgcps.org

PLANNING TIME: 2:45 - 3:25 by appointment

SCHOOL PHONE NUMBER: 301-390-0239

GRADING:

Elementary Mathematics (Grades 2 – 5)

Overview: The goal of grading and reporting is to provide the students with feedback that reflects their progress toward the mastery of the indicators and objectives found in the Mathematics Curriculum Framework Progress Guide.

Factors	Brief Description	Grade Percentage Per Quarter
Class Work	This includes work completed in the classroom setting. Class work can include, but is not limited to: <ul style="list-style-type: none"> ● Group Participation ● Notebooks/journals ● Written responses to Constructed Responses. (brief or extended), where applicable ● Active participation in whole/small group discussions, presentations and activities ● Active participation in math projects ● Completion of class assignments 	35%
Independent Assignments	This includes all work completed outside the classroom to be graded on its completion and student's preparation for class (materials, supplies, etc.). Assignments can include, but are not limited to: <ul style="list-style-type: none"> ● Cumulative review problems ● Solving word problems ● Winter/Spring Break Packets 	25%
Assessments	This category encompasses both the traditional (exams and quizzes) and alternative (presentations, projects, portfolios) methods of assessing student learning with the goal of mastery. <ul style="list-style-type: none"> ● Exams ● Tests ● Quizzes ● Portfolios ● Research/Unit Projects ● Oral presentations/Interview Suggested criteria for grading presentations, projects, portfolios: <ul style="list-style-type: none"> ● Concepts/objectives have been met. ● Completion of project. 	40%

Grade 3 Mathematics Curriculum

Sequence

Quarter 1 (45 days)		
Unit 0 - The First 5 Days and Week of School		
Unit	Big Idea	Standard
Unit 1 Mastering Basic Numbers and Calculations (14 days)	The base-10 numeration system organizes numbers according to their values. Patterns derived from the base-10 system and properties of operations can be used to flexibly compute.	3.OA.D.9 3.NBT.A.1 3.NBT.A.2
Unit 2 Time (10 days)	Time is a linear measurement that can be expressed using different units that are related to each other. The duration of an event is called elapsed time and can be measured in different sized intervals.	3.MD.A.1
Unit 3 Exploring Multiplication (12 days)	Real-world problems involving equal groups, arrays, and measurement quantities can be solved using multiplication.	3.OA.A.1 3.OA.A.3 3.OA.B.5
Quarter 2 (45 days)		
Unit 4 2-D Figures (10 days)	Two-dimensional shapes can be described, classified, and analyzed according to attributes such as number and length of sides as well as number of angles.	3.MD.D.8 3.G.A.1
Unit 5 Expanding Multiplication (15 days)	Relationships between numbers in multiplication can be described using arithmetic patterns and interpreted and expressed in multiple ways by applying properties of operations and mathematical strategies.	3.OA.A.1 3.OA.A.3 3.OA.B.5 3.OA.D.9
Unit 6 Extending Multiplication (10 days)	The properties of operations and place value understanding can be used to multiply two-digit numbers.	3.OA.B.5 3.OA.C.7 3.OA.D.9 3.NBT.A.3
Quarter 3 (45 days)		
Unit	Big Idea	Standard
Unit 7 Division (14 days)	Groups of objects or measurements can be divided by partitioning them into equal shares (partitive) and by grouping them into groups of a known size (quotative). Multiplication and division are inverse operations that can be used to solve problems involving equal groups, arrays, and area measurements	3.OA.A.2 3.OA.A.3 3.OA.A.4 3.OA.B.6 3.OA.C.7
Unit 8 Fractions (12 days)	Fractions are numbers that describe the division of a whole (region, set, segment) into equal parts. Unit fractions are the building blocks of all fractions.	3.NF.A.1 3.NF.A.2 3.NF.A.3 3.G.A.2

Unit 9 Area Measurement (14 days)	Area and perimeter are attributes of plane figures (two-dimensional objects). Area is measured in square units, while perimeter is measured in linear units.	3.MD.B.5 3.MD.C.6 3.MD.C.7 3.MD.D.8
Quarter 4 (45 days)		
Unit 10 Data and Graphs (10 days)	Data can be collected and represented through picture graphs, bar graphs, and line plots for the purpose of analyzing information in the world.	3.MD.B.3 3.MD.B.4
Unit 11 Volume and Weight (11 days)	Volume and mass are attributes of objects that can be estimated and measured using appropriate standard units.	3.MD.A.2
Unit 12 Word Problems with Unknowns (12 days)	Real-world problems involving joining equal groups, separating equal groups, comparison, or a mixture of these problem types can be solved using a combination of operations and can be represented using equations with letters for unknown quantities. Visual models can be used to interpret and represent these problems.	3.OA.D.8

Grade 3 Fluency Expectations:

- **3.OA.C.7** - *Fluently multiply and divide within 100. By the end of grade 3, they know all products of two one digit numbers from memory.*
- **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 subtraction.*

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