PGCPS
Content

Grade 5 Mathematics

Course Syllabus

Prince George's County Public Schools

Prerequisites: None

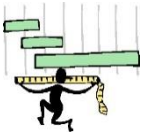
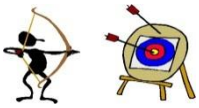
Course Description: In *Grade 5*, instructional time should focus on four critical areas: (1) Developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions), (2) Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing an understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations, and (3) Developing understanding of volume.

1. Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also see the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

2. Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

3. Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems

The eight Standards for Mathematical Practice will be embedded in all mathematics instruction preK-12 and outline how students should think, reason, communicate and model mathematically. The eight practices are stated below:

Standards for Mathematical Practice	Student Friendly Language
1. Make sense of problems and persevere in solving them. 	• I can try many times to understand and solve a math problem.
2. Reason abstractly and quantitatively. 	• I can think about the math problem in my head, first.
3. Construct viable arguments and critique the reasoning of others. 	• I can make a plan, called a strategy, to solve the problem and discuss other students' strategies too.
4. Model with mathematics. 	• I can use math symbols and numbers to solve the problem.
5. Use appropriate tools strategically. 	• I can use math tools, pictures, drawings, and objects to solve the problem.
6. Attend to precision. 	• I can check to see if my strategy and calculations are correct.
7. Look for and make use of structure. 	• I can use what I already know about math to solve the problem.
8. Look for and express regularity in repeated reasoning. 	• I can use a strategy that I used to solve another math problem.

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.

- What are you solving for in the problem?
- Can you think of a problem that you have solved before that is like this one?
- How will you go about solving it? What's your plan?
- Are you making progress toward solving it? Should you try a different plan?
- How can you check your answer? Can you check using a different method?

2. Reason abstractly and quantitatively.

- Can you write or recall an expression or equation to match the problem situation?
- What do the numbers or variables in the equation refer to?
- What's the connection among the numbers and the variables in the equation?

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

- Tell me what your answer means.
- How do you know that your answer is correct?
- 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.

- Do you know a formula or relationship that fits this problem situation?
- What's the connection among the numbers in the problem?
- Is your answer reasonable? How do you know?
- What does the number(s) in your solution refer to?

5. Use appropriate tools strategically.

- What tools could you use to solve this problem? How can each one help you?
- Which tool is more useful for this problem? Explain your choice.
- Why is this tool (the one selected) better to use than (another tool mentioned)?
- Before you solve the problem, can you estimate the answer?

6. Attend to precision.

- What do the symbols that you used mean?
- What units of measure are you using? (for measurement problems)
- Explain to me (a term from the lesson).

7. Look for and make use of structure.

- What do you notice about the answers to the exercises you've just completed?
- What do different parts of the expression or equation you are using tell you about possible correct answers?

8. Look for and express regularity in repeated reasoning.

- What shortcut can you think of that will always work for these kinds of problems?
- What pattern(s) do you see? Can you make a rule or generalization?

** Details for each practice may be found at:
http://mdk12.msde.maryland.gov/instruction/academies/resources/Mathematics/MathD1/Standards_for_Mathematical%20_Practice.pdf

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

Grade 5 Fluency Expectation:
Students will fluently multiply multi-digit whole numbers using the standard algorithm.

INSTRUCTOR INFORMATION:

NAME:
E-MAIL ADDRESS:
PLANNING TIME:
SCHOOL PHONE NUMBER:

CLASS INFORMATION:

COURSE NUMBER:
CLASS MEETS:
ROOM:
TEXT:

End of the Year Assessments:

GRADING POLICY:

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: • 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%**
Homework	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: • Problem of the Week • Friday Night Homework • Winter/Spring Break Packets	**15%**
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. • Exams • Tests • Quizzes • Portfolios • Research/Unit Projects • Oral presentations/Interview Suggested criteria for grading presentations, projects, portfolios: • Concepts/objectives have been met. • Completion of project.	**50%**

Grade 5: Curriculum Cluster Map

■ Major Cluster ◻ Supporting Cluster ○ Additional Cluster

Quarter 1	Quarter 2	Quarter 3	Quarter 4
Unit 1	**Unit 3**	**Unit 5**	**Unit 7**
■ Understand the place value system. • 5.NBT.A.1- 4 ■ Perform operations (addition and subtraction) with multi-digit whole numbers and decimals to hundredths. • 5.NBT.B.7 **(Focus: Addition and Subtraction)** ■ Understand concepts of volume and relate to addition. • 5.MD.C.3 – 5 **(Focus: Addition)**	■ Use equivalent fractions as a strategy to add and subtract fractions. • 5.NF.A.1 - 2 ■ Perform operations (*addition* and *subtraction*) with multi-digit whole numbers and decimals to hundredths. • 5.NBT.B.7 **(Focus: Addition and Subtraction)** ◻ Represent and interpret data • 5.MD.B.2	■ Understand the place value system. • 5.NBT.A.1, 2, and 4 ■ Perform operations with multi-digit whole numbers and with decimals to hundredths. • 5.NBT.B.7 ○ Write and interpret numerical expressions. • 5.OA.A.1-2 ○ Analyze patterns and relationships. • 5.OA.B.3 ○ Graph points on the coordinate plane to solve real-world and mathematical problems. • 5.G.B.1-2	■ Understand concepts of volume and relate to multiplication and addition. • 5.MD.C.3 – 5 a-c ■ Perform operations (addition, subtraction, and multiplication and division) with multi-digit whole numbers and decimals to hundredths. • 5.NBT.B.5-7 ■ Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. • 5.NF.B.4b ◻ Convert like measurement units within a given measurement system. • 5.MD.A.1 ○ Classify two-dimensional figures into categories based on their properties. • 5.G.B.3-4
Unit 2	**Unit 4**	**Unit 6**	**Unit 8**
■ Understand the place value system. • 5.NBT.A.3 - 4 ■ Perform operations (multiplication and division) with multi-digit whole numbers and decimals to hundredths. • 5.NBT.B.5 – 7 **(Focus: Multiplication and Division)** ■ Understand concepts of volume and relate to multiplication and addition. • 5.MD.C.3 – 5 ◻ Convert like measurement units within a given measurement system. • 5.MD.A.1	■ Apply and extend previous understandings of multiplication and division to multiply and divide fractions. • 5.NF.B.3 -7 a-c ■ Perform operations with multi-digit whole numbers and with decimals to hundredths. • 5.NBT.B.5 – 7 **(Focus: Multiplication and Division)**	■ Perform operations (addition, subtraction, multiplication, and division) with multi-digit whole numbers and decimals to hundredths. • 5.NBT.B.5 - 7 ■ Use equivalent fractions as a strategy to add and subtract fractions. • 5.NF.A.1-2 ■ Apply and extend previous understandings of multiplication and division to multiply and divide fractions. • 5.NF.B.3 – 7 a-c	■ Use equivalent fractions as a strategy to add and subtract fractions. • 5.NF.A.1-2 ■ Apply and extend previous understandings of multiplication and division to multiply and divide fractions. • 5.NF.B.4b, 6, 7 a-c (Transition to Grade 6)

Fluency Expectations - Fluently multiply multi-digit whole numbers using the standard algorithm.