Pequannock Township School District
Curriculum Syllabus

Course Name and level / Grade level and Subject: <u>Mathematics Grade 5</u>

Course Description:

       In this fifth grade mathematics course, students will gain a deep understanding in mathematics using the New Jersey Student Learning Standards. They will understand the relationships between fraction and division expressions while they convert fractions to decimals. They will understand place value concepts from the millions to the thousandths and apply this to order of operations and decimal operations. Students will multiply multi-digit numbers and see the relationship that these numbers have in multi-digit division. A strong focus will be on the addition, subtraction, multiplication and division of fractions. Students will leave this course with a deep understanding of the relationship between numbers and symbols, equality and inequality, properties of triangles and quadrilaterals, as well as the formula for volume. Students will also be able to plot and manipulate points on a grid and line plot**.** In addition, students will be exposed to algebra concepts such as equalities and inequalities, variables, expressions, and ratios.

Course Proficiencies:

The following is a list of proficiencies that describe what students are expected to know and be able to do as a result of successfully completing this course. The following proficiencies are the basis of the assessment of student achievement. The learner will demonstrate mastery of:

<u>*Operations & Algebraic Thinking*</u>

1. Write and interpret numerical expressions.
   5.OA.A.1, 5.OA.A.2
2. Analyze patterns and relationships.
   5.OA.B.3

<u>**Number & Operations in Base Ten**</u>

3. Understand the place value system.
   5.NBT.A.1, 5.NBT.A.2, 5.NBT.A.3, 5.NBT.A.4
4. Perform operations with multi-digit whole numbers and with decimals to the hundredths.
   5.NBT.A.5, 5.NBT.A.6, 5.NBT.A.7

<u>**Number & Operations -- Fractions**</u>

5. Use equivalent fractions as a strategy to add and subtract fractions.
   5.NF.A.1, 5.NF.A.2

6. Apply and extend previous understandings of multiplication and division to multiply and divide fractions. *5.NF.B.3, 5.NF.B.4a-b, 5.NF.B.5a-b, 4.NF.B.6, 4.NF.B.7a-d*

Measurement & Data
7. Convert like measurement units with a given measurement system. *5.MD.A.1*
8. Represent and interpret data. *5.MD.B.2*
9. In geometric measurement, to understand the concept of volume and relate volume to multiplication and to addition. *5.MD.C.3a-b, 5.MD.C.4, 5.MD.C.5a-c*

Geometry
10. Graph points on the coordinate plane to solve real-world and mathematical problems. *5.G.A.1, 5.G.A.2*
11. Classify two-dimensional figures into categories based on their properties. *5.G.B.3, 5.G.B.4*

Standards for Mathematical Practice
1. Make sense of problems and persevere in solving them. *SMP1*
2. Reason abstractly and quantitatively. *SMP2*
3. Construct viable arguments and critique the reasoning of others. *SMP3*
4. Model with mathematics. *SMP4*
5. Use appropriate tools strategically. *SMP5*
6. Attend to precision. *SMP6*
7. Look for and make use of structure. *SMP7*
8. Look for and express regularity in repeated reasoning. *SMP8*

Scope and Sequence

Unit 1: Place Value (Trimester 1)

Students extend their understanding of the base-ten system and whole number operations. This includes understanding of whole numbers to 10,000,000 and decimals to the thousandths place. Students' understanding of place value will be demonstrated through rounding and estimating and writing whole numbers and decimals in standard, expanded, and word form. Students will use rules and strategies to multiply and divide multi-digit numbers and use the order of operations to evaluate numerical expressions.

Unit 2: Fractions (Trimesters 1 and 2)

In this unit students will extend their understanding of fractions. This includes adding and subtracting like and unlike fractions and mixed numbers and rewriting fractions with like denominators. Students will demonstrate their ability to multiply and divide fractions and mixed numbers by fractions or whole numbers. In addition, students will have to apply estimation strategies to estimate sums, differences, products, and quotients. Students will use their prior knowledge of fractions to solve real world problems based on fractional operations.

Unit 3: Decimals (Trimester 2)

Students will continue to apply their knowledge of place value of decimals into the thousandths place. In this unit students will extend their knowledge of decimals in recognizing the relationship between fractions and decimals. Students will use patterns to add, subtract, divide and multiply decimals by whole numbers and extend their knowledge of multiplying whole numbers to multiplying decimals by whole number values.

Unit 4: Geometry (Trimester 3)

In the following lessons, students will extend their knowledge to geometry and apply fraction and place value skills to geometry ideas. In chapters 11, students will be creating line plots with fractional amounts and using the line plot to solve for information presented. Students will also extend their graphing knowledge by plotting points on coordinate grids with an x- and y-axis. Chapters 13 will expose students to properties of 3- and 4-sided figures. Students will classify triangles and quadrilaterals based on their sides and angles. Students will also be able to apply basic algorithms of geometry to solve for unknown angle measurements. Lastly,

Chapter 15 will have students apply multiplication and geometry skills in finding the volume of solid figures. Students will use unit cubes as well as drawings of solids to identify the volume of figures. Students will also be able to compare volumes and apply formulas to identify the volume of figures.

Unit 5 (If time permits)

In this unit, students will learn to write both numerical and algebraic expressions and equations that correspond to given situations. They will learn to simplify expressions and use expressions, inequalities, and equations to solve problems. Students will learn that variables express numbers, and that expressions in different forms can be equivalent. Students will also learn to compare two numbers by using division and express this comparison as a ratio. They will compare the concepts of equivalent ratios, part-whole, part-part, and whole-part comparisons. Students will apply these skills in the context of real world problems.

Assessments

Evaluation of student achievement in this course will be based on the following:

a. Observational data collected by teachers as students are learning
b. Formative assessments given by teachers to gauge progress toward each standard
c. Math standards-based report card rubrics
d. Districtwide Trimester math assessments

Curriculum Resources

Instructional Resources:
Math in Focus: Grades Four and Five
Number Talks: Whole Number Computation, Grades K-5
Math in Practice: Teaching Fifth-Grade Math
Math in Practice: A Guide for Teachers

Additional Technology Resources:
NC Lessons for Learning: http://tools4ncteachers.com/fifth-grade/
Georgia Lessons for Grade 5: https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx
Illustrative Mathematics: www.illustrativemathematics.org

Home and School Connection

The following are suggestions and/or resources that will help parents support their children:
- Educational games:
  - https://www.abcya.com/grades/5/numbers
  - http://www.sheppardsoftware.com/math.htm
- Tutorials:
  - Kahn Academy (how-to videos and practice problems): https://www.khanacademy.org/math/cc-fifth-grade-math
  - Learnzillion (how-to videos, search by topic): https://learnzillion.com/resources/99913-math-instructional-videos/
  - Thinking Blocks (bar model assistance): https://www.mathplayground.com/thinkingblocks.html
- Other parent resources:
  - YouCubed parent resources: https://www.youcubed.org/resource/parent-resources/
  - Table Talk Math parent resources: https://www.tabletalkmath.com/resources.html