Pequannock Township School District Curriculum Syllabus

Essentials of Math, Grades 6-8

Course Description:

The Math Essentials course is designed around the essential NJ Student Learning Standards that are significant at every level of mathematics. Students work to become proficient at basic computational skills, as well as problem solving. Students learn study skills for mathematics classes, such as note taking for math and how to study for mathematics assessments, to become better independent learners of mathematics in the classroom. Critical thinking and reasoning are strongly emphasized.

Course Standards:

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

Grade 5 NJSLS (if needed to support students' foundational skills)
Grade 6 NJSLS
Grade 7 NJSLS
Grade 8 NJSLS

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

> **Grade 6 (Year-long, according to student needs)**
>
> Students cement their mastery of facts and place value. Students perform operations with fractions, decimals, and whole numbers fluently. Students evaluate numerical expressions,

including expressions with exponents. Students will use mathematical language and use math vocabulary in their explanations. Students use the commutative and distributive properties to understand equivalent expressions. Students build their foundation of ratio and rates concepts. They thoroughly examine the concept of area and apply it in problem solving. The students will build their mathematical practices, including perseverance in problem solving and reason abstractly and quantitatively. As learners of mathematics, students initiate the problem solving process independently and determine when an answer is unreasonable. Students self-assess their areas of weaknesses and seek appropriate resources for assistance.

Grade 7 (Year-long, according to student needs)

Students apply integer rules and gain a mastery of operations with rational numbers. Students perform operations with fractions, decimals, and whole numbers fluently. Students utilize math vocabulary in their explanations and reasoning. Students will use properties of operations to simplify and evaluate multi-step expressions and equations. Students solve problems with ratios, rates, and proportions. They will also solve area, surface area, and volume problems. Angle relationships and equations are used to find missing angle measures. The students will build their mathematical practices, including perseverance in problem solving and reason abstractly and quantitatively. As learners of mathematics, students initiate the problem solving process independently and determine when an answer is unreasonable. Students self-assess their areas of weaknesses and seek appropriate resources for assistance.

Grade 8 (Year-long, according to student needs)

Students apply properties of integer exponents to evaluate numerical expressions. Students utilize math vocabulary in their explanations and reasoning. Students will use properties of operations to simplify expressions and equations, including determining if multiple or no solutions are possible. They will solve multi-step equations. Students explore proportional relationships and identify the rate of change as slope. Students find the volume of three dimensional objects that contain circles. The students will build their mathematical practices, including perseverance in problem solving and reason abstractly and quantitatively. As learners of mathematics, students initiate the problem solving process independently and determine when an answer is unreasonable. Students self-assess their areas of weaknesses and seek appropriate resources for assistance.

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

Curriculum Resources

Instructional Resources:
enVision Math Grade 6 Common Core

Additional Technology Resources:
Illustrative Mathematics: www.illustrativemathematics.org
Open-Up Resources: https://im.openupresources.org/6/teachers/index.html
NC Lessons for Learning: http://tools4ncteachers.com/sixth-grade/
Georgia Lessons for Grade 6: https://www.georgiastandards.org/Georgia-Standards/Pages/Math-6-8.aspx

Home and School Connection

The following are suggestions and/or resources that will help parents support their students:

- Tutorials
    - https://www.khanacademy.org/
- Learn Zillion
    - https://learnzillion.com/resources/75114-math/
- IXL Math https://www.ixl.com/math/grade-6
- EnVision Math series
    - www.pearsonrealize.com
        - Educational games
        - Online tutorials for each lesson (Virtual Nerd videos)