

Middletown Township Public Schools

Elementary Mathematics Guidelines for Parents 2018-2019

"Knowing mathematics means being able to use it in purposeful ways. To learn mathematics, students must be engaged in exploring, conjecturing, and thinking rather than only in rote learning of rules and procedures. Mathematics learning is not a spectator sport. When students construct personal knowledge derived from meaningful experiences, they are much more likely to retain and use what they have learned. This fact underlies teachers' new role in providing experiences that help students make sense of mathematics, to view and use it as a tool for reasoning and problem solving."

Curriculum and Evaluation Standards for School Mathematics: Executive Summary, p. 5
National Council of Teachers of Mathematics

The adopted state standards emphasize in-depth understanding of fewer topics in each grade that are not intended to be re-taught in later grades. The most effective way for students to remember and retain what they have learned is by helping them to gain a deeper understanding of the concepts they are learning through exploration (investigation), discovery, and application as much as possible. Students are not likely to remember what they have simply committed to short-term memory and truly do not understand.

1. THE ADOPTED PROGRAMS:

In all grades K-5 *GO Math!* ©2015 is the adopted program and therefore the primary tool for teaching elementary mathematics. Also, in some grades, the *Investigations in Number, Data, and Space* program is used as indicated in the adopted curricula. Grade 5 may also use parts of the *Connected Mathematics* program. In addition, grades K-2 supplement the adopted programs with at least four of the K-2 Formative Tasks created by the State assessment vendor and grades 3-5 supplement the adopted programs with at least four thematic problem-based task activities.

The district has also adopted the *DreamBox* program, an on-line resource that provides a motivating tool for intervention and enrichment. This program is intended to be used by students both in school and at home.

NOTE: The programs above are tools with which we teach the curriculum and not the curriculum itself. Therefore, they are not intended to be used page by page as written but rather to guide teachers in teaching the content required in the standards adopted by the state of New Jersey. The teacher is the most important component of mathematics instruction. The Elementary Mathematics Specialists work with the teachers to help teachers differentiate instruction appropriately in teaching what we consider to be the "Ideal Math Lesson".

2. ASSESSMENT:

DAILY ASSESSMENT AND IMPLEMENTATION OF "MATHEMATICAL PRACTICES":

Keeping in mind that while the acquisition of basic knowledge and skills will always be important, the need for assessment based on authentic tasks that require students to show what they can do is evermore important. In order to effectively provide a more complete picture of learning and a firm basis for improving students' educational experiences, we measure student progress in the achievement of standards of learning as well as their abilities to apply their knowledge, skills, and understanding in authentic contexts on a daily basis in class. Students are assessed using both open-ended questions graded with rubrics as well as short-answer questions that reflect the NCTM and NJ Student Learning Standards as well as the types of questions asked on the state assessments.

Therefore: - Assessment is daily, ongoing, and embedded in every lesson.

- The "Eight Mathematical Practices" contained in the NJ Student Learning Standards and in our district curricula, are practiced by students regularly as they learn the required content in all grades.
- The "Show What You Know" diagnostic assessment questions in each chapter and the "Quick Check" questions in each lesson of the *GO Math!* Program are also used routinely.

a. Formative Assessments: Students are assessed, progress monitored, and appropriate interventions implemented. Data obtained is discussed at the parent conference during the last week of November.

- o In grades K to 2, a test of "Number Sense" is administered twice each year (pre and post) to all students as well as to all students in grades K-5 who receive, or are recommended for, services.
- o A diagnostic skills assessment is administered in grades K to 5 at the beginning of the school year to assess what the student has learned and retained from the previous year (as well as to help determine the level of incoming kindergarteners).

b. District-Wide Assessments:

In addition to the chapter assessments in the adopted program, **standardized assessments are administered at the end of each trimester** (aligned to the district curricula and the state standards) to all students grades K-5.

- Each trimester assessment includes a cover page that: explains the standards assessed and indicates which of those standards the student may need further assistance in accomplishing.

c. Other Assessments Resources from the *adopted* programs which may be used at the discretion of the individual teacher include: the "Beginning of the Year" test, the "Middle of the Year" test, the "End of the Year" test, the "Mid-Chapter Assessments", the "Critical Performance Tasks", and the "Personal Math Trainer" resource.

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3. SCORING OPEN-ENDED QUESTIONS:

Question-specific rubrics are used to score open-ended questions on standardized assessments. Some may be based on a 3-point scale and some may be based on a 4-point scale depending on the item.

In order to help establish a uniform approach to assessing responses to open-ended questions in general, the generic math rubric below is useful in determining how many of 4 points a student has earned for his/her response to other open-ended questions asked:

- 4 - Exemplary Response: (exceptional)
Completes the item with a clear explanation.
Examines and satisfies all essential conditions of the problem.
Appropriately applies mathematics to the situation.
- 3 - Competent Response:
Fairly complete response with reasonably clear explanations.
Examines & satisfies most essential conditions of the prob.
Appropriately applies mathematics to the situation.
- 2 - Minimal Response:
Gives response, but explanations may be unclear / lack detail.

- Examines & satisfies some essential conditions of the prob.
Some attempt to apply mathematics to the situation.
- 1 - Inadequate Response:
Response is incomplete & explanation is insufficient or not clear.
Fails to address essential conditions of the problem.
Fails to apply mathematics to the situation.
- 0 - No Attempt:
Provides irrelevant or no response or response is illegible.
Copies part of the problem but does not attempt a solution.

Students are given the opportunity to use rubrics to assess and discuss anonymous responses to open-ended questions on a regular basis throughout the year in class. In doing so, they become better at answering such questions themselves.

4. GENERAL EXPECTATIONS:

- a. It is expected that an average of one hour per day be devoted to instruction in mathematics at the kindergarten level and an average of seventy-five minutes per day in grades one through five.
- b. Students are permitted to use manipulative materials if they choose in response to open-ended items when appropriate. (Calculators & multiplication charts are not considered manipulatives and are only permitted when specified.)
- c. When assessments are reviewed with students, the expectation is that they will be given the opportunity to discuss their responses with each other, especially for questions that were scored using a rubric— e.g., “Was there a pattern to your answers?”, etc.
- d. Teachers assess each child’s progress in accomplishing the objectives and indicators set for in the adopted state standards for the particular grade level.

5. SCHOOL/HOME CONNECTION:

- a. Components of the *GO Math!* program that will assist parents in working with their children include the **“School-Home” letters and online resources**. Early in the school year, information on how to access the on-line resources for the *GO Math!* program as well as the *DreamBox* intervention and enrichment program will be provided by your child’s teacher. The *GO Math!* program uses the Houghton Mifflin Harcourt’s “THINK CENTRAL” website. The *DreamBox* intervention and enrichment program offers an online parent access account option so parents can review their child’s academic progress.
- b. In using the *Investigations* program, children may be asked to “play **games**” with someone at home. In addition to reinforcing the skills and concepts covered in class, these games will help parents to better understand the program.
- c. At **“Back to School Night”**, the *GO Math!* “Student Resources” guide book will be distributed to parents for use at home.
- d. Students are encouraged to work on their *DreamBox* program lessons at home as well as in school. While parents are encouraged to ask their child questions to guide them, they are cautioned not to just give their child answers that may result in them being placed at a level that is beyond their capability.
- e. Short **video segments** featuring students demonstrating math strategies and problem solving techniques with which parents may not be familiar have been created and more will be created as appropriate. These segments can be found on the district website as they become available (under the tab “Parents”, then “Resources”, then “Resources for Parents”, then “Math Videos by Students”).

A WORD ABOUT FLUENCY The word “fluent” is used throughout the state adopted standards. What is “fluent”? According to the NCTM: “Computational fluency refers to having efficient and accurate methods for computing. Students exhibit computational fluency when they demonstrate flexibility in computational methods they choose, understand and can explain these methods, and produce accurate answers efficiently. The computational methods that a student uses should be based on mathematical ideas that the student understands well, including the structure of the base-ten number system, properties of multiplication and division, and number relationships.” Fluency is developed over an extended amount of time. It does not mean simply that students should instantly know an answer because they have memorized it. While traditional flash cards or timed tests have not been proven as effective instructional strategies for developing true fluency, daily routines are a powerful tool for helping students to develop computational fluency when the expectation is that students will use number relationships and structures to add, subtract, multiply, and divide.