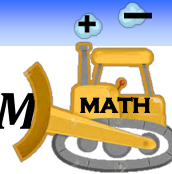




IN THE NEWS

Director Notes! *Putting the "M" in STEM*



Greeting Magnificent Mathematics Teachers,

Happy January! With more than a quarter of the school term behind us, I am confident that we are progressing towards our district's goal of giving our students a world class education. The Math In The News 2nd edition will focus on how we can incorporate integrated lessons and activities into math instruction by **Putting the "M" in STEM**. With the hundreds of varying career paths linked to STEM, there is one thing they all have in common – Mathematics! Math is the root of all things science. Given the future potential need for engineers and the national effort to integrate K-12 curriculum to address the 21st century needs of marketable and productive activity to serve our ever changing world; mathematics educators are tasked with equipping students with problem solving skills to address our future multifaceted societal needs. As we endeavor to reach the goals of integrated learning opportunities, we should work to preserve the integrity of mathematics and implement practices that assist learners in mastering the process and content skills required in the Mathematics Florida Standards (MAFS). To that end, Team Math would like to provide information and resources relating to teaching mathematics through STEM as well as promote and solicit district participation in the approaching, [DiscoverE's National Engineers Week and Girl Day](#) opportunities.

In the United States, the celebration of National Engineer's Week was started in 1951 by the [National Society of Professional Engineers](#). Engineers Week always falls during the week in February which encompasses former President George Washington's birthday, February 22. President Washington is considered the nation's first engineer, notably for his survey work. National Engineer's Week is observed by more than 70 engineering, education and cultural societies, and more than 50 corporations and government agencies. Its purpose is to call attention to the contributions to society that engineers make. It is also a time for engineers to emphasize the importance of learning math, science, and technical skills.

Team Math invites all educators to incorporate [Teach Engineering K-12](#) and/or [Engineers Week K-12 Activities](#) STEM activities into their instructional process. As a jumpstart to Engineering Week, Team Math has invited [Cody](#), our district's STEM Robot to provide information on **Putting the "M" in STEM**.

Happy solving until the next release!

Michelle R. White
Executive Director, Department of Mathematics



Michelle White, Executive Director and Cody, Miami-Dade County's STEM Robot have a brief [conversation](#) about **Putting the "M" in STEM**.



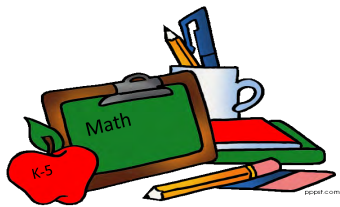
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Special point of interest

- Engineering Week is February 21-27, 2016.

Extra, Extra.....Elementary Mathematics Updates!



Let's update you on a couple of things to support a smooth transition into the second half of the year. The Growth Monitoring (GM) assessment administration window was Wednesday, December 9, 2015 through Tuesday, December 15, 2015. At the December **Elementary Mathematics Liaisons (EMLs)/Coaches iCAD C** session, EMLs/Coaches should have paid close attention to the i-Ready agenda segment which covered the utility of GM assessment results. It's all about making sure your students are on track by looking at their trajectory:

"The Growth Monitoring reports help you determine whether your students are on track to meet end-of-year (EOY) targets for growth and grade-level performance. You can then use the reports to monitor your students' trajectory towards EOY targets and decide whether you need to intervene in students' instruction (or adjust the current intervention plan)." (Curriculum Associates, LLC, 2015. *i-Ready Diagnostic & Instruction: User Guide*, p. 32)

The **Diagnostic 2** administration window started on January 5, 2016 and will end on January 29, 2016. During the **first two weeks of the window**, assess all students receiving intervention in Math as identified in the 2015-2016 *i-Ready Progress/Growth Monitoring Plan Administrators' Guide* found in Weekly Briefing 18023. Prioritizing those students will ensure that there is a minimum of 21 days of solid instruction before measuring growth between the Diagnostic and the Growth Monitoring measures. Once these students have completed the assessments, schools can proceed to assess all the remaining students within the grade levels.

To continue with the focus on deep planning, considerations should also be given to the instructional segments of iCAD C: Mathematics Progressions, Interactive White Board Lessons, and best practices for grade 3 to 5 on the topic of fractions (Hands-On Fractions). Mathematics Progressions need to be reviewed, specifically the pre-requisite skills, to best address student deficiencies. Use this [Mathematics Progressions](#) hyperlink to access each grade's pre-requisites that needed to have been mastered in order to be successful in the attainment of the current grade-level standard. The Mathematics Progressions, the Interactive White Board Lessons and Hands-on Fractions provide insights on how to increase student interest in learning and understanding of mathematics concepts.

Further deep planning Teacher PD sessions are upcoming for grades K-2 and grades 3-5, **Ensuring Effective Implementation of MAFS**. We encourage those who have not participated in a previous Teacher PD sessions to attend and learn firsthand how to effectively plan for the rigor and complexity that is required by MAFS, while addressing student deficiencies based on results in the "checks for understanding" segments of your lessons, topic assessments, and Mid-Year -Assessment (MYA).

As per MYA, the administration window closed on December 18, 2015. January 2016 becomes a very critical month to address secondary standards. All elementary teachers teaching mathematics need to be ready for analyzing their class data and to make the appropriate grade-level instructional decisions. The January iCAD (i.e., 1/12/16- South; 1/13/16- Central; and 1/14/16- North) and Administrative Scaled Leadership sessions will focus on data-driven decision making. Stay on track by continuing to follow the District Mathematics Pacing Guide and administering Topic Assessments via Thinkgate. New Bell Ringers will be shared at the January iCADS and FSA Practice at the 2/16/16 District PD.



Engineering Week

February 21-27, 2016

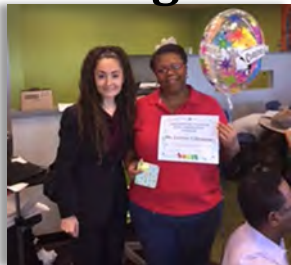
Mark your calendars, Engineering Week begins February 21st and it gives educators an opportunity to showcase how mathematics puts the "M" in STEM as well as showing students career fields they are not familiar with. The theme for 2016 Engineering Week is *Engineers Make a World of Difference*. The links below are some of the resources found on the internet that can be used to help educators plan activities at their schools:

Engineer idea starters: <http://www.discover.org/our-programs/engineers-week/idea-starters>.

A collaboration website to connect engineering experts to preK-12 teachers: <http://teachers.egfi-k12.org/nae-connects-educators-with-experts/>

EGirl Essay Contest: <http://www.engineergirl.org/10209.aspx>

Taking it to the Next Level in Middle Grades Mathematics!



Announcing... The Department of Mathematics is excited to congratulate Mrs. Lorraine Labrousse as the winner of our *Grades 6-8 Mathematics Teacher Collaboration* Edmodo drawing. She shared a fantastic real world application activity connecting students' mathematical understanding to financial literacy and the practical applications of understanding income, taxes, and managing life expenses such as buying a first car, furnishing an apartment, and shopping for supplies. Many teachers have thanked her for her contribution on our Middle Grades Math Teacher Collaboration site and the Department of Mathematics would like to extend our appreciation for her camaraderie!

A reminder that starting this 2015-2016 school year, online Teacher Collaboration Sites have been created for Middle Grades Math Teachers to share exemplary resources, ideas, and best practices across Miami-Dade! As shared in the October newsletter, we have available Edmodo collaboration sites for teachers, by grade level, to provide a platform for sharing great math problems, performance tasks, rubrics, lessons, power points, online instructional videos, links to math websites, and best practices. The following collaboration sites are available to join in Edmodo: *Grade 6 Math Teachers Collaboration Site: For Teachers By Teachers*, *Grade 7 Math Teachers Collaboration Site: For Teachers By Teachers*, and *Grade 8 Math Teachers Collaboration Site: For Teachers By Teachers*.

Announcing.... Topic Assessments for grades 6-8 mathematics now include Multi-Select, Open Response, Equation Editor, Matching, and/or Table item types. Additionally, provided with the tests in G2D, there is a student answer sheet for only the Multi-Select, Open Response, Matching, Equation Editor, and Table items on the test. If a school chooses to copy only class sets of the tests, the single page answer sheet may be provided to each student to record their answers for the Multi-Select, Open Response, Matching, Equation Editor, and Table items on the test. Students should still be using the G2D answer sheets for the multiple choice items and in order to generate data reports.

Multi-Select, Open Response, Matching, Equation Editor, and/or Table item types will begin with the following Topic Assessments:

- Grade 6 Regular: Topic 5
- Grade 6 Advanced: Topic 5
- Grade 7 Regular: Topic 5
- Grade 7 Advanced: Topic 6
- Grade 8 Regular: Topic 5

Released by FDOE..... FSA Lessons Learned! Please see the following hyperlink to access the grades 6-8 FSA Lessons Learned power point: [FSA Lessons Learned-Middle Grades Math](#)

Links to Grade Level Math Progressions with [Topic Standards Overview](#) are now available.



The Department of Mathematics is grateful for the thoughtful donation of SuperMath T-shirts from Eight is Enough donated by owner Kenny Eugene. The donated t-shirts will be given to our Math Superheroes spotlighted across the district. Thank you Eight is Enough for being our superhero.

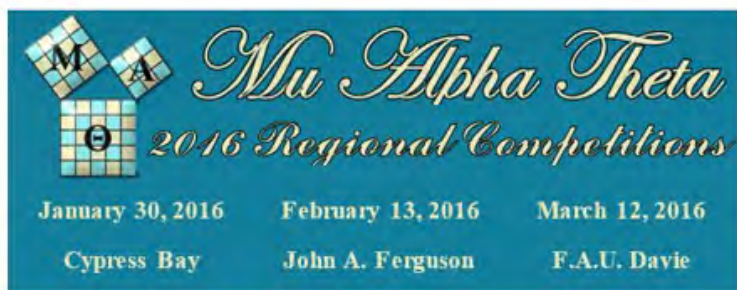


Eight is Enough
305-970-6649
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Michelle White, Department of Mathematics Executive Director accepts shirts donated by Eight is Enough Owner Kenny Eugene.

2 Things You Need to Know About High School Math Updates!



Updated links to High School Math Progressions with [Topic-At-A-Glance](#) are now available. (To access on any M-DCPS computer, click on your email address when prompted.)

Terra Environmental Research Institute – Getting Rid of the Box

Mottos are rallying cries schools use to unite and inspire their stakeholders. The goal of most mottos is to open their minds and think outside the box. However, Terra Environmental Research Institute's motto broke the mold. "People ask you to think outside the box, at Terra we ask you what box?" stated Ms. Carrie Montano, Principal at Terra Environmental Research Institute. This limitless way of thinking is a philosophy that is cultivated and nurtured by the administrators, staff, teachers, and peers. It is easy to assume that with a student body like Terra, their track record of success is solely credited to the types of students they attract. However, Ms. Carrie Montano, Principal, reflected on this misconception and stated that "even though our students are results-oriented and motivated they still need guidance and focus. The math department brings out the best in them and that enables them to do well in the rest of their classes."

A sentiment that Ms. Rosa Carrasco's modest demeanor confirmed. As Terra's Mathematics Department Chair she deferred all questions to her department, and stated, "I want you to see for yourself how great they are." Her excitement and pride about her peers was founded. A math lesson in Ms. Sandra Pantoja's class demonstrated how delicious math could be when she used linguine to demonstrate the Pythagorean Theorem. She stated, "I don't give them the formulas, but rather we derive it together." Another component that Terra encourages and Ms. Carrasco fosters is collaboration. Dr. Marcus Anglin, a mathematics teacher at Terra said, "We think as one to bring everything together. All of our talents are combined to make a cohesive product that was created by filling in each other's gaps"



Mr. Edward Garland shows off his magic skills to Ms. Rosa Carrasco, Terra's Mathematics Department Chair.



Mr. Edward Garland takes his magic act on the road for his Algebra students.

One might wonder if Terra is using magic to create this type of dynamic amongst the students and staff; if they went into Mr. Edward J. Garland's class they would be right. Mr. Garland has blown up the proverbial box by introducing magic to relate math concepts to his students. As a pure mathematics major it was easy for Mr. Garland to make the connection that a lot of magic tricks can be explained using Algebra. "It's great how much math has to do with magic." exclaimed Valeria Saco, a ninth grade student at Terra, after Mr. Garland explained the math behind the magic to his class of enthralled ninth graders. Mr. Garland had a similar epiphany earlier in his career when he saw a professor doing a couple of tricks during a lecture. This experience started Mr. Garland on the path to make the connection between mathematic concepts and magic to break up the monotony in class. He stated, "during a two-hour block we have a need to perform. There is a bit of show business involved." Whether it is using past experiences of horse trotting to examine circumference or using a slight of the hand to connect real-life situations and magic tricks to mathematics he finds joy in making math fun for his students. So, we echo Mr. Garland's statement, "it is okay to be original." This originality is the reason Terra Environmental Research Institute was selected as this issues school to shine the spotlight on.

Writing-to-Learn & Problem Solving: *Symbols, Meanings, Writing*

To continue our focus on literacy strategies that will enhance the teaching and learning of mathematics, this newsletter issue will focus on the writing-to-learn strategy of ***Symbols, Meanings, Writing***. ***Symbols, Meanings, Writing*** provides the student the opportunity to write the reason for each step used when solving a mathematics problem. The teacher would then be able to see the reasoning and thinking that occurred from one step to the next, providing support where and when needed (Thompson, et. al.: 2008, *Mathematical Literacy: Helping Students Make Meaning in the Middle Grades*).

Advantages:

- Student's thinking becomes visible.
- Students can compare their thinking to peers or teacher.
- Allows teachers to learn what understandings or misconceptions a student may have about a problem.

How to use it:

1. Fold a piece of paper vertically.
2. In the left column, write the "symbolic notation for the steps taken" ($4 \times \square = 12$).
3. In the right column, write the "reasoning and thinking" that justified the transitions between the steps (eg., Four groups of how many candies will equal to a total of 12 candies.)
4. The right column includes more than a simple reason; it involves the student talking to himself about why certain actions are taken.

The first time using this strategy, give each student constructive feedback and the chance to redo it. You may not want to do this for every assignment, but doing it for one early in the school year "sets the bar" and encourages them to do quality work (Coffman, S. 2010. *Teaching Strategies That Help Students Learn How to Learn*).

For other ways to infuse *writing in math* activities you may also want to visit [Math Wire](#). Be patient, for the end results are truly worth it!



"A writing-to-learn strategy is one that teachers employ throughout and/or at the end of a lesson to engage students and develop big ideas and concepts." - Writing Across the Curriculum, Michigan Department of Education

FIU's CodeFest Miami 2015 – a Great Way to Kick off Computer Science Education Week!

The 3rd Annual CodeFest Miami, a festival for students in elementary and middle school to celebrate "coding," was held at Florida International University (FIU) on Saturday, December 5, 2015 at 1:00 p.m. The CodeFest started with a brief tutorial on Scratch (a program with which students can program their own interactive stories, games, and animations), followed by an interesting problem given to the kids. No prior coding knowledge or experience is required.

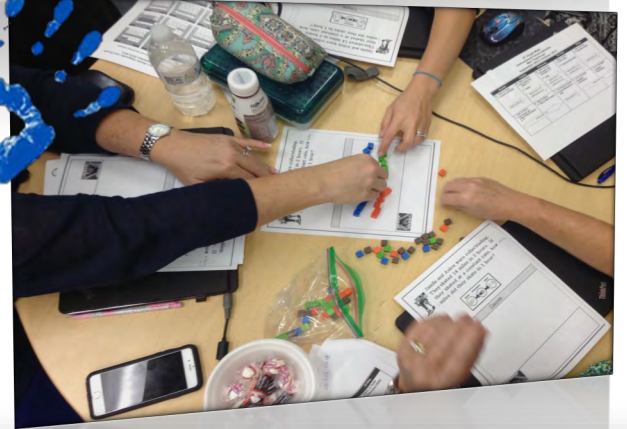
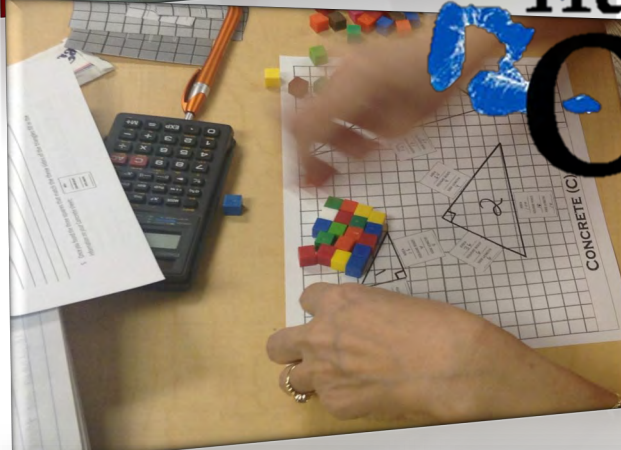
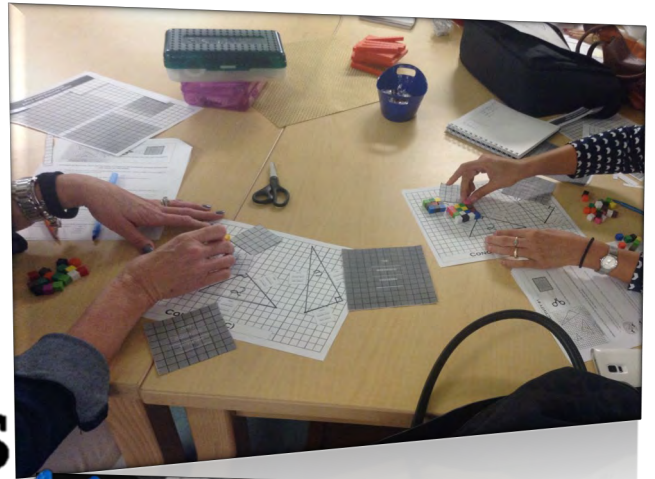
Students were asked to form teams of three, and come up with a creative solution to solve the transportation challenges we face in Miami. Teams had to illustrate the solution with a program in Scratch. FIU students examined group entries, and identified the qualifying finalists. At 3:30 p.m., those qualifying teams were asked to present their findings to the rest of the group and guest judges. Prizes were awarded to finalist for first, second, and third place, courtesy of Ultimate Software Solutions and other companies.

Congrats to all students in participating at such an inspiring event for future engineers!



Coral Park Elementary students Riley Brutto, Kaylee Leidel, and Manuel Gonzalez debriefing with FIU judge about their aircraft plans.

Team Math's Favorite Professional Development Moments



hands
on



TEAM MATH

Attend one of our upcoming Professional Developments to find out the secret identities of Team Math!

A calendar of upcoming professional development can be found at:

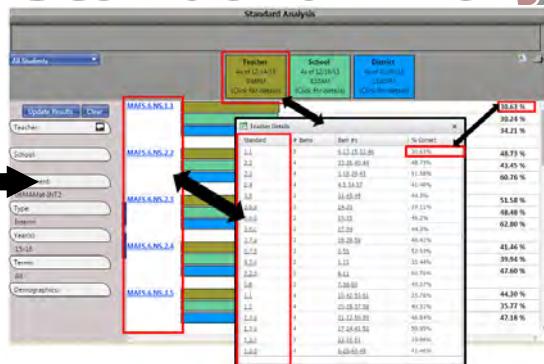
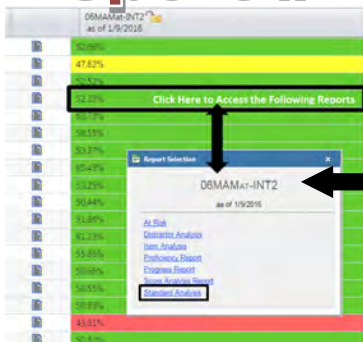
<http://math.dadeschools.net/>



Stop Random Acts of Data: 3 Reports That Assist Educators in Digging Deeper to Make Focused Instructional Decisions

Finding the right reports to analyze to assist in determining students' instructional needs can be challenging. In order to effectively determine students' needs, educators must look beyond superficial data and dig deeper. Given the numerous options available in the Gateway to Data (G2D) platform, selecting the most essential reports can be a daunting task. This article will highlight three (3) G2D reports that will assist instructors in making informed decisions regarding their students' instructional needs.

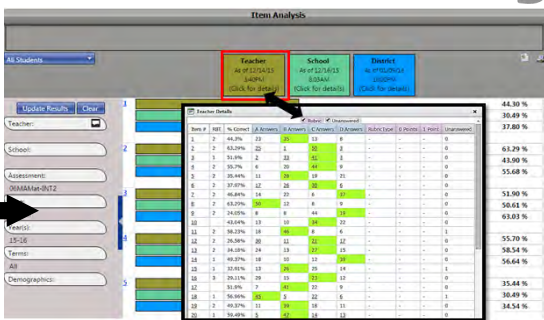
Report #1: Standard Analysis



The Standard Analysis Report breaks the selected test down by standard including: the amount of questions for each standard, the question numbers for the standard and the percent correct by standard.

This report will allow educators to determine which standards were the lowest performing standards on the assessment; however, this type of analysis is superficial when the analysis of data stops at this report.

Report #2: Item Analysis

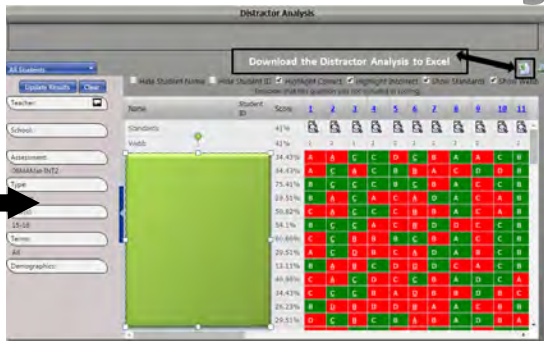
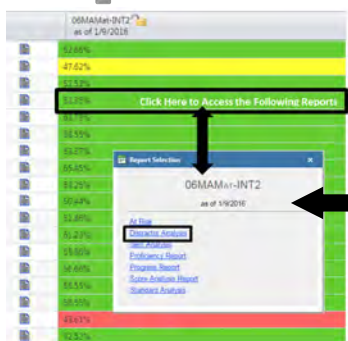


The Item Analysis breaks down the test by questions including: the percent correct by question and the amount of students who selected each answer choice.


This report can be used to give more insight into student's thinking by analyzing item responses to determine concept misconceptions or gaps in instruction.


This report can also be used with the Standard Analysis Report to dig deeper by looking at the questions by standard to get a comprehensive picture of students' needs.

Report #3: Distractor Analysis



The Distractor Analysis pinpoints each student's response by question. This report can be used to create targeted groups once educators have analyzed the data from the Standard and Item analysis reports

Click on  to see the standard description.

Click on  to see the question and answer.

Standard, Item, and Distractor Analysis reports can be viewed in the G2D platform; however, exporting or copying the reports into Excel will allow educators to organize the data quickly by using the filter tool. For new Excel users, the following Microsoft Office article can be used to assist educators with the filter feature in Excel: <https://support.office.com/en-us/article/Filter-data-in-an-Excel-table-7d8e9739-2898-4bfe-9d0f-c6204e6e5c8a>

Click on the pictures below to
download the posters for
Engineering Week.



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