

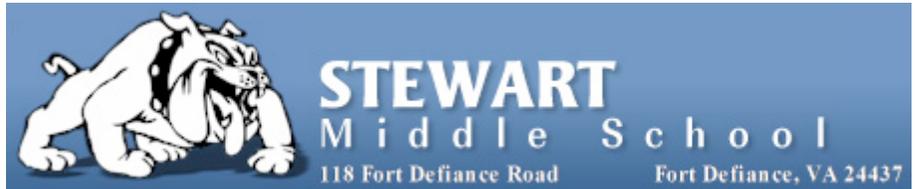
The V²CTM Reflection



THE VALLEY OF VIRGINIA COUNCIL OF TEACHERS OF MATHEMATICS
Volume 42 March 2012 Number 2

Spring Meeting March 27 at Stewart Middle School

No power outage this time! Many of you recall that our annual Fall V²CTM meeting scheduled for November 16 had to be canceled at the last minute due to a power outage at Stewart Middle School. Luckily,



we have been able to reschedule our program for the Spring meeting on Tuesday, March 27 at Stewart Middle. The meeting will feature Patrick Vennebush from the National Council of Teachers of Mathematics who will present a humorous presentation *Math Jokes for Mathy Folks*. To get to Stewart Middle from the north, take Interstate 81 to Exit 235 (Weyers Cave). Turn right (west) to get to US 11. Take US 11 South to Fort Defiance, approximately 4 miles. Turn right at the stoplight onto Fort Defiance Road. Stewart Middle School is on the left in 500 yards. From the south, take Exit 227 (Verona) from Interstate 81 then go west on Route 612 to US 11. Follow US 11 North 4 miles to Fort Defiance. Turn left onto Fort Defiance Road. Register on-line at <http://www.rockingham.k12.va.us/register>. Registrations need to be in before March 20. Conference registration costs are only \$5 and include a fully catered dinner provided by White Hill Catering. There will be numerous appealing door prizes! The program is below:

4:30 – 5:00 **Registration**

5:00 - 6:00 **Breakout sessions:**

Elementary Session: *Using the 100's Chart to Develop Number Sense in Elementary School Children* by Ann Wallace

Middle School Session: *Using Differentiation to Engage, Support and Challenge Every Learner* by Kristina Doubet

High School Session: *The VDOE's Enhanced Scope and Sequence: Engaging Lessons for your Classroom* by Tricia Cummings

6:00 – 6:45 **Dinner** catered by White Hill Catering: Lasagna (Beef, Marinara Sauce), Caesar Salad, Garlic Bread, Dessert, Sweetened and Unsweetened Tea and Water

6:45 - 7:00 **Business Meeting:** Kyle Schultz, V²CTM President

7:00 – 7:45 **General Session:** *Math Jokes for Mathy Folks* by Patrick Vennebush

Math Humorist Coming Back to Speak at Spring Meeting



Patrick Vennebush has graciously agreed to return to the Shenandoah Valley for our spring meeting. He is a former middle grades teacher who has provided professional development for mathematics educators at the local, state, and national levels. He served as the editor for the Media Clips column of the *Mathematics Teacher* and is now the NCTM Online Projects Manager in charge of Illuminations and other web projects. Patrick is also the author of the book [Math Jokes 4 Mathy Folks](#).

Patrick Vennebush loves puzzles, problems, and jokes. His book, *Math Jokes 4 Mathy Folks*, contains 400+ jokes for teachers, students, and other geeks. At the 2010 Annual Meeting of the National Council of Teachers of Mathematics, it sold more copies than any other title in the 80-year history of the conference. Vennebush attended Penn State, from which he received an Alumni Achievement Award (2007). He received a master's degree from

the University of Maryland. He now works as the Online Projects Manager at NCTM, where he develops resources for preK-12 math teachers.

Two JMU Profs, HHS Teacher to Provide Programs at Spring Meeting

Dr. Ann Wallace is a former elementary school teacher (5th grade) who teaches math methods to elementary education majors at JMU. She would like to bridge the gap between teaching abstract concepts to children before conceptual understanding has been developed.

Kristina Doubet is an assistant professor of Middle, Secondary, and Mathematics Education at James Madison University. With over 10 years of middle and high school teaching experience, she now prepares pre-service teachers for careers in the classroom while working with practicing teachers to imbed differentiation into their instructional practices.

Tricia Cummings attended James Madison University and received a BS in Mathematics with a minor in Education. She has been teaching mathematics for 17 years; 5 years in Rockingham County, 2 years in Staunton City, and the last 10 years in Harrisonburg. Her aim is to make her classroom student centered, with students working together and discovering mathematical concepts through investigation and activity.

2011-2012 V²CTM Officers

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V²CTM Board Elections

At the Spring meeting the following slate of officers will be presented for election. Thanks to those who have agreed to accept the nomination:

President-Elect: Jenny Gibson
Treasurer: Judy Phillippi
Board (HS Rep): Jeannie Sterner
Board (MS Rep): Kara Velez
Board (ES Rep): Laurie Biser

V²CTM Sponsors Regional 24 Game Tournament



V²CTM is again sponsoring the Regional 24 Challenge Game Tournament. The tournament will be held on April 16 at 6:00 pm at Wilson Middle School in Augusta County. For more information, contact Wendy Chandler (wgchandler@augusta.k12.va.us).

How V²CTM Could Benefit from Your NCTM Membership

Affiliate Rebate Program

Beginning June 1, 2008, the Affiliate Rebate Program was revised to centralize the collection of NCTM dues payments and redirect the efforts of NCTM Affiliates towards promotion of the program, rather than administrative and financial management. NCTM now encourages Affiliates to promote the availability of the online application and renewal form for NCTM membership and to discontinue the collection of NCTM dues payments.

How It Works:

- Any individual who joins or renews membership online will be given the option to select an Affiliate to receive the rebate.
- Only one Affiliate may be selected on the form for the rebate. The list shows only those Affiliates in the individual's state, as well as multi-state and at-large Affiliates.
- Affiliates will not be required to verify an individual's membership status in the Affiliate for this program. Rebates will be provided to Affiliates from any individual who selects them on the online application or renewal.
- Rebate amounts:
 - \$3 for renewing full and e-members
 - \$5 for new full and e-members
- Existing business rules will apply to lapsed members who return to NCTM. Currently, an individual is considered new after one year of non-membership in NCTM.
- Multi-year rebates will be provided on multi-year memberships (i.e. a 3-year membership renewal will result in a \$9 Affiliate rebate).
- No rebates will be provided for Emeritus, Student, Institutional, or K-8 school memberships.
- Rebates will be submitted to Affiliates on an annual basis. NCTM will discontinue rebates for any dues collected directly by NCTM Affiliates.

So join NCTM and select us as your affiliate!

VCTM Coming Back in 2014

V²CTM will again be hosting the Virginia Council of Teachers of Mathematics annual meeting in 2014. The meeting will be at JMU. More details forthcoming!

Editorial—the New Math Assessments

Joe Hill, Newsletter Editor

Please read slowly the news release from the D.O.E. that follows this editorial. The release is likely intended to pre-empt a barrage of criticisms about the new math assessments our students will take this spring and which some students, particularly those high school students on a 4 x 4 schedule, took in December. Some of these criticisms will likely come from our own math education community since we've grown accustomed to seeing 90%+ pass rates on SOL tests. As noted in the press release, the pass rate for the new Algebra I test given in December was abysmal, 49%. We are all fearful that the pass rates for all spring tests, Grades 3 and up, will be similarly terrible and the blame game will start in earnest.

I'm reminded of an experience I had in middle school (actually we called it Junior High School in those days) that, fortunately, would not happen in today's world. A cousin of mine and I misbehaved one day in math class while a substitute taught us. I was sick and missed the next day of school when the regular teacher returned. But the word got home to me like a lightning bolt that night: she had paddled my cousin in front of the class and vowed to paddle me when I returned to class. Unlike my cousin, who was blindsided by the paddling, I had the awful experience of having to dread the event for nearly 24 hours before it happened. All kinds of thoughts went through my head. Should I wear two pairs of pants? Can I keep my parents from finding out? Why is she disciplining just us when the entire class behaved poorly? I vividly remember my final reaction that evening—I just cried. But I did prepare for the inevitable. I told my parents beforehand and planned my reaction. The next day, I “took it like a man” as I tried my best to not show my classmates how embarrassed I was nor how much it actually hurt. The punishment did the trick for changing my behavior and I guess I escaped with only a little psychological damage.

I'm not saying that the upcoming SOL tests are punishment, but I am saying that we should take the time, as D.O.E. has done, to prepare for the inevitable. We need to prepare ourselves as well as our administrators, students, parents, and the public. Make sure your students get ample opportunities to try multi-step, tough questions. Don't let them get blindsided.

Here are some positives I think could come from having SOL pass rates that are much lower than we're used to having:

- Many of our school divisions have not been willing to hire math specialists, unlike the multitudes of reading specialists they employ, because we “haven't needed them.” Having a low pass rate will give each of us a chance to put the plug in for K-12 math specialists in every Valley division.
- We should not have to apologize for asking our students to tackle higher-level thinking questions. I believe we are wasting everyone's time when, on a test, all we do is ask students to parrot back something they've rehearsed and rehearsed.
- Having difficult tests is something our sixth and seventh grade teachers have had to deal with since SOL testing began in those grade levels. At least they will have some company in their misery and the test scores will be more consistent from one grade level to another.

Like my Junior High School experience, we all may end up with some tears when the results come back. But I do hope that there will be no embarrassment; we should not feel like we're not doing our best. You were likely proud last year when the results came back, and now you've had even one more year of improvement in your teaching. I want the blame to fall on the test makers, not on you. Remind your students that sports teams improve little when they play “patsy” opposition. Remind parents that, statewide, their sons and daughters did not “become stupid” over the past year. And remind yourself that you were a good teacher this year just like you were in the past.

News Release from D.O.E. about 2009 Math Assessments

2011-2012 Mathematics Standards of Learning Testing: Start of a New Trend Line in Student Achievement

The revised mathematics Standards of Learning (SOL) approved by the Board of Education in 2009 are a critical component of the commonwealth's effort to promote college-and-career readiness. The updated mathematics standards are fully aligned with the national Common Core State Standards and meet national and international benchmarks for content and rigor established by organizations such as the College Board. The mathematics tests most students will take this year are based exclusively on the 2009 Mathematics SOL and the more detailed 2009 Mathematics SOL Curriculum Framework, and assess the new content and increased rigor of the 2009 standards — including content that was previously taught and tested at different grade levels.

The new assessments also include new, technology-enhanced items that require students to demonstrate critical-thinking and problem-solving skills — as well as mathematics content knowledge. These innovative questions and problems make up between 10-15 percent of the items on the new tests. On the spring 2012 assessments in grades 3-5, the technology-enhanced items are field-test items that will not impact students' scores.

Fall 2011 SOL Test Administration Results

While the new mathematics SOL tests in grades 3-8 will debut later this spring, middle and high school students on four-by-four block schedules have already experienced the increased rigor of the new Algebra I, Geometry and Algebra II tests.

The performance of the approximately 24,000 students who took these end-of-course assessments during the Fall 2011 SOL Non-Writing Test Administration (November 21, 2011-February 24, 2012) suggests that — as has happened previously when more rigorous standards and tests have been introduced — schools and school divisions may see a temporary drop in pass rates as local curriculum and instructional strategies are adjusted to meet higher expectations for learning and achievement.

The following table displays the pass rates of first-time test takers on the three mathematics end-of-course tests during the three most recent fall administrations.

Test	Fall 2011	Fall 2010	Fall 2009
Algebra I	49.2%	84.1%	82.1%
Geometry	63.0%	78.5%	81.0%
Algebra II	53.7%	84.5%	85.3%

Keep in mind that these pass rates represent the achievement of first-time test takers only and that students tested during fall administrations are not necessarily representative of the 277,000-287,000 students statewide who take end-of-course mathematics tests during the course of an entire year. Nevertheless, the fall 2011 results support the Board of Education's expectation that the new assessments will mark the beginning of a new trend line in mathematics achievement. As Superintendent of Public Instruction Patricia I. Wright has pointed out, lower mathematics pass rates in 2011-2012 indicate that Virginia is expecting more of students — not that students are learning less.

How will the new Mathematics SOL and tests impact students?

As anticipated, results from the fall 2011 Algebra I, Geometry and Algebra II tests show that students found the new assessments challenging. The 2009 Mathematics Standards of Learning and corresponding assessments are designed to ensure that Virginia public school students are truly college-and-career ready when they graduate from high school. Students today require more rigorous mathematical knowledge and skills to pursue higher education and to compete successfully in a technologically sophisticated work force.

Virginia teachers, school administrators and content specialists participated in the development of the new SOL mathematics tests by serving on committees that reviewed items and test forms to ensure that they measure student knowledge accurately and fairly.

Technology-enhanced items on the new grade 6-8 and end-of-course mathematics tests were field tested during 2010-2011 and are designed to mirror students' classroom experiences. For example, "drag and drop" items require students to sort, order, classify, or label to provide an answer. The "drag and drop" functionality also gives students the ability to create graphs from a given data set.

“Hot spot” items require students to identify all possible correct answers from a given set or list, plot points on a grid, or highlight a specific feature in a diagram or figure. “Fill-in-the-blank” items require students to complete open-ended problems and type answers into the blanks. These items provide students with the flexibility of applying multiple strategies to solve problems prior to deciding on an answer.

The end-of-course cut scores for proficiency and advanced proficiency (“advanced/college path” on the Algebra II SOL test) adopted by the Board of Education in January 2012 are within the ranges recommended by committees of teachers and other mathematics educators.

Students are allowed multiple retakes of end-of-course tests they need to pass in order to earn a diploma. VDOE has extended the expedited retake window until March 2, 2012, for students who did not demonstrate proficiency during the fall 2011 administration. Seniors who were unsuccessful during the fall administration will have several additional opportunities before the end of the school year to retake tests needed to earn verified credits for graduation. Performance-by-question data from the fall 2011 tests will help teachers and instructional leaders prepare students for these opportunities.

Will the new Mathematics SOL tests impact school and division accountability ratings?

Previous actions by the Board of Education to increase the rigor of the Standards of Learning program through the years have had a short-term impact on pass rates and the accountability ratings of schools and divisions. For example, the shift in 2006 from cumulative assessments in reading and mathematics in grades 3, 5 and 8 to annual testing in grades 3-8 increased the rigor of the SOL program, especially in middle school mathematics, by testing deeper into the content at each grade level. Pass rates and accreditation ratings subsequently recovered as school divisions — with technical support from the Virginia Department of Education (VDOE) — increased the quality and depth of instruction.

The introduction in 2010-2011 of SOL history tests with more rigorous item types also resulted in lower pass rates in many schools. History pass rates are expected to rebound as teachers prepare students to apply their content knowledge in ways not previously assessed.

As it has in the past, three-year averaging — as allowed under Virginia’s accountability program — will mitigate the impact of the new mathematics tests on federal adequate yearly progress (AYP) ratings under No Child Left Behind (NCLB) and state accreditation ratings for the 2012-2013 school year.

Virginia’s accountability system also recognizes successful remediation programs that help students achieve minimum proficiency standards in mathematics (and reading). If a student fails a test required for graduation and successfully retests during the same school year, the result of the first test is not included in the school’s accreditation and AYP calculations. A school also is credited for state accreditation purposes for successful remediation when a student passes a mathematics test after failing the assessment for the previous grade level. The Code of Virginia allows the Board of Education to adopt special provisions related to the use of any SOL test or tests in the calculation of accreditation ratings for any period during which the standards or assessments in the content area are being revised and phased in. But the Board of Education must approve and provide notice to local school boards of any special provisions before the statewide administration of the tests.

Federal education law allows states to reset annual AYP objectives when new tests are introduced. Because of the significant changes made to the mathematics standards, the corresponding SOL tests introduced during 2011-2012 qualify as new assessments requiring new cut scores for proficiency and advanced proficiency. Resetting AYP objectives would require federal approval but this option is available to the state board in the event Virginia’s NCLB waiver application is not approved.

How has VDOE helped schools implement the new Mathematics SOL?

Since 2009, VDOE has provided guidance and support related to curriculum, instruction and assessments to assist teachers and administrators prepare for and implement the new standards and tests.

- The 2009 Mathematics SOL and 2009 Mathematics SOL Curriculum Framework were posted on the VDOE website immediately following approval by the Board of Education. Draft versions of the documents were posted prior to board approval.

- The Mathematics Standards of Learning Crosswalk Between the 2009 and 2001 Standards document detailing additions, deletions and changes included in the new SOL was posted on the VDOE website in February 2010.
- Since 2009, VDOE has conducted 10 Mathematics SOL Institutes that provided targeted professional development for school division representatives to support the implementation of the 2009 Mathematics SOL. Professional development resources from each institute were posted online to facilitate ongoing professional development in school divisions.
- Revised mathematics test blueprints were posted on the VDOE website in September 2010 to accommodate curriculum development and instructional planning. School divisions were advised in May 2009 that they should begin teaching the new mathematics standards in 2010-2011 as field-test items on spring 2011 tests would include new content from the 2009 SOL.
- Sixteen instructional videos were developed and made available online in 2011 to help teachers present content from the 2009 SOL identified as instructionally challenging. In addition, previously available videos were updated to correlate to appropriate grade levels, based on the 2009 SOL.
- Sample lesson plans were developed and posted on the VDOE website to help teachers align instruction with the new mathematics standards by providing examples of how the knowledge and skills found in the 2009 SOL and Curriculum Framework can be presented to students in the classroom. The sample lesson plans are accessible using a keyword search, or by selecting specific SOL objectives organized by grade level and reporting category. VDOE continues to add new lesson plans to this collection.
- Technical assistance documents were developed and posted on the VDOE website in 2010 to help teachers present content related to statistics in the new standards for Algebra I and Algebra II and to supplement previously adopted mathematics textbooks.
- Online practice test items were developed and made available on the VDOE website in March 2011 to provide examples of the new content and increased rigor represented by the 2009 Mathematics SOL and illustrate the new technology-enhanced items for grades 6-8, Algebra I, Geometry and Algebra II. Additional online practice tools are in development. Practice items are accompanied by guides for teachers to use in reviewing practice items with students. Additional online practice items, including examples of technology-enhanced items for grades 3-5, will be posted on the VODE website in the next few weeks.
- Ancillary Test Materials were developed and posted on the VDOE website in August 2011 for use in preparing students for the new mathematics tests. These include formula sheets for grades 6-8, Algebra I, Geometry, and Algebra II, as well as the table of Standard Normal Probabilities (z-table) for use on the Algebra II test for items requiring students to analyze properties of normal distributions and apply those properties to determine probabilities associated with areas under the standard normal curve.

How can teachers, principals and other educators successfully implement the new mathematics standards and prepare students for the new tests?

VDOE mathematics specialists emphasize the following as critical steps and strategies for success in implementing the new mathematics standards.

- The content of the written, taught and assessed curricula must be aligned with the 2009 Mathematics SOL Curriculum Framework. The written curriculum must be taught in every classroom.
- Classroom assessments should be updated to reflect the written curriculum and the increased rigor of the revised standards.
- Sustained professional development focused on instruction and assessment of the 2009 Mathematics SOL should be provided to teachers. Professional development should emphasize vertical articulation and pedagogy associated with developing understanding of content identified locally as areas of limited teacher expertise. School divisions should collaborate to develop and share professional development.
- Instructional strategies, lesson plans and assessments should be developed in communities of mathematics teachers. School divisions should facilitate collaboration among teachers within and among school divisions to develop and share instruction and assessment resources.

- Teachers should facilitate students' mathematical understanding through problem solving, communication and reasoning. Teachers should ask students to communicate their mathematical thinking as they solve problems. Students should be required to analyze, interpret, and develop processes for solving mathematical tasks based on their prior knowledge and experiences. When students “get stuck” on a problem, they should be prompted with a question that will assist them in analyzing their own thinking rather than with a suggestion that leads them directly to an answer.
- Teachers should provide instruction that engages students through relevant context, connects algorithmic procedures to mathematical concepts and incorporates appropriate technology.
- Teachers should use formative assessments to inform and improve their instruction. Analysis of student understanding and thinking through questioning and/or written responses may shed light on student misconceptions.
- School administrators should provide observational feedback to teachers that promotes mathematical communication, rigorous and relevant instruction and mathematical tasks, and the use of formative assessments to guide instructional decisions.

Other Math News from the Virginia D.O.E.

Mathematics Enhanced Scope and Sequence Sample Lesson Plans – for Grades K-8 and High School

[Note: Tricia Cummings' session at the March 27 meeting will be about this valuable resource.] The ESS Sample Lesson Plans for Grades K-5; 6-8; Algebra I; Geometry; Algebra, Functions, and Data Analysis; and Algebra II are now available. All sample lesson plans are based on the 2009 Mathematics Standards of Learning (SOL) and can now be accessed on the VDOE Web site. Note that the database of sample lesson plans is searchable by keyword or by selecting individual SOL. Files are provided in .pdf (PDF) format by default, but if you access files by selecting individual SOL in the table of SOL, you can also access the .doc (MS WORD) version of each file.

NEW! Instructional Videos for Teachers

The [Instructional Videos for Teachers](#) Website provides another support for the implementation of the 2009 *Mathematics Standards of Learning* (SOL). 16 new videos were developed based on challenge areas identified during the 2010 Mathematics SOL Institutes. 25 videos that were originally housed on the “Middle School Online Strategies” page are also included and have been correlated to the appropriate grade levels, based on the 2009 *Mathematics SOL*. These video resources could be used for professional development on the new SOL for individual teachers, groups of teachers during learning community discussions, or for larger groups. Also note that at the very bottom of the page there is a link to some additional videos created by the Tidewater Team for Mathematics Education at William and Mary through Mathematics and Science Partnership Grant funding. The site is: (<http://www.doe.virginia.gov/instruction/mathematics/resources/videos/index.shtml>)

Two-Week Summer Program for High School Girls - Engineering

Virginia Tech is hosting a two-week summer program to help high school girls explore the many options available to them in the field of Engineering. C-Tech2 is designed for young women completing the 10th and 11th grades. Participants in the two-week program will gain hands-on experience with faculty and students in a variety of Engineering disciplines. The application deadline for this program is Monday, April 16, 2012. <http://www.eng.vt.edu/ctech2> Susan Arnold Christian, ctech2@vt.edu, 540-231-3973

Supports for Implementation of the 2009 Mathematics Standards of Learning

The following link contains many resources from the Virginia Department of Education to support the teaching of the 2009 Math SOL: http://www.doe.virginia.gov/administrators/superintendents_memos/2012/032-12.shtml

Upcoming Events

[Shoot for the Stars! VCTM Annual Conference - 2012](#)

March 9-10, 2012 • Hotel Roanoke, Roanoke, Virginia

Registration information is available at <http://www.vctm.org>

NCTM 2012 Annual Meeting & Exposition

Philadelphia, PA • April 25 - 28, 2012

Information available at <http://www.nctm.org>

Regional V²CTM 24 Challenge Tournament

April 16 – 6:00 pm – Wilson Middle School, Fishersville, VA

Opportunity for Girls in Grades 7-10:

Expanding Your Horizons at JMU

Saturday, March 24, 2012, 9:30 am - 3:00 pm

Expanding Your Horizons (EYH) is a free one-day conference aimed at girls in grades 7-10. The girls each participate in exciting, hands-on workshops organized by JMU mathematics and statistics faculty and attend a keynote speech by a prominent woman scientist. The goals of the conference are to stimulate the participants' interest in math and science through these hands-on activities, to provide them with female scientist role models, and to foster awareness of opportunities in math and science-related careers.

Parents and teachers are invited to accompany their students to all of the activities.

All participants will receive a free breakfast and lunch, and students receive a free t-shirt for participating.

Registration for the 2012 conference is now open. Space is limited, and spots are filling quickly. Please register early. Registration will end no later than Monday, March 19th and may end earlier if the conference reaches capacity.

More information about the conference, including registration can be found at

<http://www.jmu.edu/mathstat/eyh/>

V²CTM Spring 2012 Meeting Registration

There is no paper registration for the spring conference. To register, you must access the online registration at <http://www.rockingham.k12.va.us/register>. You may pay your \$5 conference fees at the door on March 27. Please complete your registration no later than March 20 so we will have an accurate dinner count.

**See you at Stewart Middle School on
Tuesday, March 27!**

V²CTM Reflection
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**PLEASE SHARE THIS NEWSLETTER WITH ALL MATHEMATICS TEACHERS,
GRADES K-12**