



REFLECTIONS BEFLECTIONS?

VOL. LV No. 1

FALL 2010

Celebrating Georgia



Mathematics Conference 2010

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Manuscripts should be double-spaced, with 1-inch margins on all sides, typed in 12-point font and follow the APA 5th Edition style guide. Manuscripts should be submitted in MS Word. If you have a picture or graphic in the text, please include the original picture(s) in a separate file.

Manuscript Submission: Manuscripts should be submitted to reflections@georgiasouthern.edu. Receipt of manuscripts will be acknowledged. Manuscripts are accepted for consideration with the understanding that they have not been published previously and are not being considered simultaneously for publication elsewhere. Additional inquiries should be sent to Gregory Chamblee, Editor, Georgia Southern University, Department of Teaching and Learning, PO Box 8134, Statesboro, GA 30460-8134; Phone: 912.478.5701; Fax: 912.478.0026; reflections@georgiasouthern.edu.

Manuscript Publication: When a manuscript is accepted for publication, the editor/journal reviewers may make suggestions or revisions in consultation with the principal author. However, because of publication deadlines the editor reserves the right to make minor revisions without seeking prior approval from the author. Release statements for all copyrighted materials must be received prior to publication. Upon publication, two complimentary copies of the issue are sent to the principal author.



REFLECTIONS

REFLECTIONS

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PLU Credit Update

Have you completed your PLU credit that you began at the Georgia Mathematics Conference in October? If you attended at least 10 hours of sessions at the October 2010 conference at Rock Eagle. The PLU Course Completion Form was due December 31, 2010. Here is a review of Steps 7-9 for PLU credit.

STEP 7: Return to your school or workplace and begin to implement some of the strategies or ideas that you learned at the conference. You must do both of the following:

1. Schedule a “sharing” session to share strategies and ideas that you learned at the conference. This session should be appropriate to your responsibilities in your workplace.
2. Schedule a “classroom observation” or “model teaching session” that demonstrates strategies or ideas learned at the conference. Someone authorized to make this observation should conduct this observation and he/she must verify its quality. This person must sign the PLU Course Completion form.

STEP 8: Following the completion of the sharing session and the classroom observation, the participant is responsible for returning the signed completion form (signed by the system-designated person i.e., Principal, Supervisor, etc.) to the Georgia Council of Teachers of Mathematics (GCTM).

The PLU Course Completion Form was due December 31, 2010.

STEP 9: Completed verification of your PLU credit will be returned to you. It is your responsibility to send this PLU credit form to your accrediting agency when needed.

GCTM will match and verify that all activities and artifacts (prior approval form, training and completion forms) are received and in order. GCTM will return a certified course completion form to the participant. It is the participant’s responsibility to submit the final documentation to the certifying agency.

For additional information contact Tom Ottinger (ottinger@ellijay.com).

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Membership Matters



Georgia Council of Teachers of Mathematics has been a growing and influential organization for half a century and is poised to continue working to improve mathematics education for Georgia's students and teachers. Membership stands at about 2700 members.

If you are a new member of GCTM we hope you make your membership an annual commitment for your entire career. It will be one of the most important ones you make as a teacher!

For your information, and as a reminder to our renewing members, please note the following membership items:

- Your membership dues were included in your conference registration, unless you were a speaker or board member. Those members need to renew at the website.
- We are finally getting our online membership stabilized. You can help by always checking for a current record of your membership before you add a new record. Some members have entered 4 records with 3 or more addresses.
- If you receive duplicates of mailings from GCTM, please go to the membership website and edit your record(s), or inform membership at secddc@aol.com and it will be corrected for you.
- If you move, please notify us of your new address. Bulk mailings are not always forwarded.
- We urge you to encourage your colleagues to renew their membership or to become a new member of GCTM. Each year we have many members who are not able to attend the conference and then become lapsed members. Make sure to set up your membership so you can receive emails from GCTM.

Please contact me any time by email or phone if I can assist you with membership issues. Make it a great year!

For additional information contact Susan Craig (secddc@aol.com).

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GCTM NEWS



2010 GCTM Awards

Gladys M. Thomason Award

Susan Craig
Davidson Fine Arts School
Richmond County



John Neff Award



Gregory Chamblee
Georgia Southern University

Dwight Love Award

Chuck Garner
Rockdale Magnet School for
Science and Technology
Rockdale County



2010 GCTM Awards

Excellence in Teaching Elementary Mathematics

No Award Winner This Year!

Excellence in Teaching Middle School Mathematics



Nickey Ice
Eastside Christian School
Marietta, GA

Excellence in Teaching Secondary Mathematics

No Award Winner This Year!

Teacher of Promise Award

Laura Lonergan
Roswell High School
Fulton County



Mini-Grant

No Award Winner This Year!



Celebrating Georgia Mathematics

Celebrating Our Annual Conference

The Georgia Mathematics Conference was a great success. Conference sessions were full of enthusiastic participants. Keynote speakers challenged conference participants to further their dedication to implementing a hands-on curriculum in their classrooms. Technology sessions were abundant. Hands-on strategies to teach content were numerous. Entertainment options were available each evening of the conference. All left reinvigorated to teach the Georgia Performance Standards to their students. The 51st Annual Conference will be one to remember and not only for the weather but for all the fun and collegiality. We all look forward to seeing everyone at Conference 2011.



Conference 2010



GCTM NEWS



Learn More About Your Organization

www.gctm.org

- * Grants and Award Information
- * Membership Renewal
- * Mathematics Competitions
- * Previous *Reflections* Issues
- * Other



**Finalists for the 2010
Presidential Award for Excellence in Math
Teaching are:**

Catherine Douthard

Cleveland Elementary School
Fayetteville, Georgia

Linda Fountain

Rollins Elementary School
Augusta, Georgia

Now on sale at gctm.org!
**The Georgia State Mathematics
Tournament Book**
Only \$25.00

This book includes all GCTM State Math Tournaments from the years 2005 through 2010. All the written tests, individual ciphering, and pair ciphering, with full solutions are available in this book. The book can be used for motivated students on their own, or as a resource for teachers to use with Math Teams. Each problem is included in a topic index so students may practice certain topics, or for teachers to use certain problems as to challenge students in the classroom.

More volumes in this series, beginning with a volume including the years 1998 through 2004, are forthcoming.

To purchase, go to http://www.gctm.org/tournament_book.

Solve and Seek: MathCaching in the Classroom (Part I)

by Jeffrey Hall
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What is MathCaching?

MathCaching is based on the concept of Geocaching, an increasingly popular leisure activity around the world. Using a Global Positioning System (GPS)–enabled device, Geocachers search for hidden “treasures” using GPS coordinates and encrypted hints provided on-line. Some Geocaches require miles-long hikes through state parks, while others involve searching through streets in urban locales. Although some Geocaches require mathematical knowledge and skills in order to find them (an excellent topic for a future Teaching Tip), MathCaching is a different form of Geocaching that can be easily implemented in a modern classroom environment.

MathCaching involves a series of websites that require Mathcachers to solve problems correctly in order to find the next webpage on the path to the on-line “treasure.” For example, users typically start on a webpage with a few mathematics problems that must be solved. The answers to the problems will then form the URL address required to get to the next webpage of the MathCache. For example, the problems at <https://sites.google.com/site/discretemathcache/home> give the answer of 0.0020875, so the next stage would be located at <https://sites.google.com/site/discretemathcache//0020875>. If users type in the correct URL, the next webpage will appear with a new set of mathematics problems, ultimately leading to the “treasure.” If the URL is wrong, users will see a “Page Not Found” error message and must return to the previous page to verify their solutions. Since MathCaches are not capable of providing error analyses, there is potential for frustration if users cannot determine

a correct URL. Therefore, instructor supervision is recommended, especially at the beginning of each MathCache. Depending on the MathCache, the process may involve accessing 10 or more successive webpages, so multiple class periods or homework may be required for completion. The “treasure” is typically a webpage offering congratulations or a printable certificate that proves the user completed the cache. Teachers may want to offer bonus points for successful completion and proof by students.

MathCaching was created by mathematics teachers Frederick and Donna Roberts at MathBits.com. They provide an excellent suite of MathCaching modules covering a wide range of subjects, from “Basic Math” and “PreAlgebra” all the way up to “Trigonometry” and “PreCalculus.” There is even a module covering the use of TI-84+ Graphing Calculators. The modules can be accessed via MathBits.com and are highly recommended!

Creating a Math-Cache

With the proliferation of free and simple Web 2.0 tools, it is possible for teachers and even students to create their own MathCaching websites. For example, Google Sites (<http://sites.google.com>) offers free website-hosting and development tools that can enable quick and easy MathCache creation. An example of a MathCache created using Google Sites can be found at <http://sites.google.com/site/discretemathcache/>

Since website-building has become free and relatively simple to do, students can be assigned to create their own MathCaches. This process is an excellent way for students to learn website-building skills while practicing mathematics. One suggestion would be to divide a classroom and

task small groups with creating a MathCache for each chapter of a textbook; taken together, the MathCaches would provide a wonderful review in preparation for a final examination. An example of a student-created MathCache, made by students at Polson (Montana) High School, can be found at <http://tinyurl.com/polsonmathcache>.

Standards-Based

While MathCaching can certainly be enjoyable and worthwhile on its own merits, various standards justify integrating technology into mathematics instruction. The National Council for Teachers of Mathematics (NCTM) *Principles and Standards for School Mathematics* (PSSM) (2000) Technology Principle states “technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students’ learning” (p. 24). The Georgia Performance Standards for mathematics include a technology component: “MM1P1. Students will

solve problems (using appropriate technology)” (Georgia Department of Education, 2006, p. 5). Incorporating MathCaching into mathematics lessons, especially if students are required to build their own MathCaches, is an excellent way to meet these standards. Happy hunting!

References

Georgia Department of Education. (2006). *Mathematics Georgia Performance Standards*. Retrieved March 7, 2011, from <https://www.georgiastandards.org/standards/Georgia%20Performance%20Standards/Math-I-Stds.pdf>

National Council for Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.

GCTM Mission Statement

The mission of the Georgia Council of Teachers of Mathematics is to

- promote a high quality mathematics education for all students, encourage an active interest in mathematics and in mathematics education,
- promote ongoing professional development for mathematics education, and
- promote and reward excellence in the teaching of mathematics in the state of Georgia.

The objectives of the Georgia Council of Teachers of Mathematics are to encourage an active interest in mathematics and to act as an advocate for the improvement of mathematics education at all levels.

The Georgia Council of Teachers of Mathematics supports and encourages donations to the [Georgia Mathematics Education Trust](#).

[Editor's Note: These activities were published in REFLECTIONS, Volume XXX, Number 1, pp. 5 – 8.]

MENTCOMP

“Math is not a spectator sport”, as every mathematics teacher knows. Reinforcing new concepts and reviewing previously learned skills are an ongoing part of many mathematics classes. However, adding variety and spice to the essentials of drill and practice is often quite a challenge. Mentcomp is one way of providing this change of pace. This game not only reinforces the math skills, but also enhances listening skills. Each student is given a card from a shuffled deck. The student with the first card (marked begin) reads what is on that card. The person who has the answer reads what is on his/her card, and so on. Play continues until the original number is repeated. This activity is excellent for the occasional 10 or 15 minutes that can be left over at the end of a class.

PURPOSE: To reinforce mental computation of whole numbers, rational numbers and percents.

NUMBER OF PLAYERS: Entire Class

MATERIALS: Deck of MENTCOMP cards

PROCEDURE:

Shuffle deck and give one card to each student, (there may be enough cards so that some students will have two) until every card is dealt. One person starts by reading what is on the card (marked begin.) The person who has the answer reads what is on his/her card. Play continues until the original number is repeated.

GAME #1 (34 cards)

by David R. O'Neil

- (1) I have 25. Who has 4 less?
- (2) I have 21. Who has 20 less?
- (3) I have 1. Who has 17 times as many?
- (4) I have 17. Who has this less 1?
- (5) I have 16. Who has double this?
- (6) I have 32. Who has this minus 5?
- (7) I have 27. Who has this divided by 9, multiplied by 4, plus 18?
- (8) I have 30. Who has this times 2?
- (9) I have 60. Who has this divided by 12 less 3?
- (10) I have 2. Who has 2 more?
- (11) I have 4. Who has twice as many?
- (12) I have 8. Who has 3 times as many?
- (13) I have 24. Who has $\frac{1}{4}$ of this?
- (14) I have 6. Who has this minus 2, times 3, less 3?
- (15) I have 9. Who has this divided by 3?
- (16) I have 3. Who has a dozen more?
- (17) I have 15. Who has this multiplied by 2 minus 11?
- (18) I have 19. Who has this minus 2 plus a dozen more?
- (19) I have 29. Who has this plus 33 divided by 2?
- (20) I have 31. Who this less 5?
- (21) I have 26. Who has this divided by 2 plus 20?
- (22) I have 33. Who has this divided by 3 and 11 more?

- (23) I have 22. Who has this less 2?
- (24) I have 20. Who has $\frac{1}{4}$ of this?
- (25) I have 5. Who has 5 more?
- (26) I have 10. Who has 3 less?
- (27) I have 7. Who has this and 7 more?
- (28) I have 14. Who has double this?
- (29) I have 28. Who has 5 less?
- (30) I have 23. Who has this less 1 and divided by 2?
- (31) I have 11. Who has 1 more?
- (32) I have 12. Who has half as many more?
- (33) I have 18. Who has 5 less?
- (34) I have 13. Who has a dozen more?

Decimal MENTCOMP

by David R. O'Neil

(25 Cards)

- (1) My number is 2. Who has my number minus 1.9?
- (2) My number is .1. Who has my number times 2.5?
- (3) My number is .25. Who has my number plus a number that is twice my number?
- (4) My number is .75. Who has my number minus .7?
- (5) My number is .05. Who has my number plus .01?
- (6) My number is .06. Who has my number divided by .1?
- (7) My number is .6. Who has my number times .5?
- (8) My number is .3. Who has my number times .8?
- (9) My number is .24. Who has my number minus .04?
- (10) My number is .2. Who has my number times .01?
- (11) My number is .002. Who has my number divided by 2?
- (12) My number is .001. Who has my number times 10?

- (13) My number is .01. Who has my number plus .06?
- (14) My number is .07. Who has my number minus .05?
- (15) My number is .02. Who has my number plus .2?
- (16) My number is .22. Who has my number divided by 2?
- (17) My number is .11. Who has my number plus .59?
- (18) My number .7. Who has my number minus $\frac{1}{5}$ of 1?
- (19) My number is .5. Who has my number times 5?
- (20) My number is 2.5. Who has my number divided by 100?
- (21) My number is .025. Who has my number minus .018?
- (22) My number is .007. Who has my number minus .002?
- (23) My number is .005. Who has my number times 1000?
- (24) My number 5. Who has my number minus .5 of 10?
- (25) My number is 0. Who has my number plus the sum of 1.4 and .6?

Algebra MENTCOMP

by Benda D. Klingenberg

(25 cards)

- (1) I have $2x$. Who has my phrase squared?
- (2) I have $4x^2$. Who has my phrase times -3 ?
- (3) I have $-12x^2$. Who has this divided by 6?
- (4) I have $-2x^2$. Who has this cubed?
- (5) I have $-8x^6$. Who has this minus $2x^6$?
- (6) I have $-10x^6$. Who has this times $-2y$?
- (7) I have $20x^6y$. Who has this divided by x^6 ?
- (8) I have $20y$. Who has this phrase to the zero power?
- (9) I have 1. Who has this times $14y^3$?
- (10) I have $14y^3$. Who has $\frac{1}{2}$ of this?
- (11) I have $7y^3$. Who has this minus $10y^3$?

- (12) I have $-3y^3$. Who has this plus $-12y^3$?
 (13) I have $-15y^3$. Who has this plus $-15y^3$?
 (14) I have $-30y^3$. Who has this divided by y^3 ?
 (15) I have -30 . Who has this minus -20 ?
 (16) I have -10 . Who has this times $-2x^3$?
 (17) I have $20x^3$. Who has this divided by $4x$?
 (18) I have $5x^2$. Who has this squared?
 (19) I have $25x^4$. Who has this plus $5x^4$?
 (20) I have $30x^4$. Who has this times $2y^2$?
 (21) I have $60x^4y^2$. Who has this plus $-15x^4y^2$?
 (22) I have $45x^4y^2$. Who has this divided by $-9xy^2$?
 (23) I have $-5x^3$. Who has this plus $-10x^3$?
 (24) I have $-15x^3$. Who has this times $2y$?
 (25) I have $-30x^3y$. Who has this divided by $-15x^2y$?

(Activity idea from Dr. David O'Neil's ECI 653 course at Georgia State University)

Unscramble the Properties

Objective: To give reinforcement in the learning of the definitions of the vocabulary words.

To give extra practice in spelling the new vocabulary words.

Materials Needed: Pencil, one copy of the activity for each student.

Unscramble the properties and match it to the sentence demonstrating that property.
 (Some properties may be used more than once.)

- (1) $3 + 4 = 4 + 3$ _____
 (2) $7 \times (2+4) = 7 \times 2 + 7 \times 4$ _____

- (3) $7 \times (3 \times 4) = (7 \times 3) \times 4$ _____
 (4) $7 = 7$ _____
 (5) If $3 + 3 = 6$ and $6 = 2 \times 3$ then $3 + 3 = 2 \times 3$ _____
 (6) If $18 = 6 \times 3$ then $6 \times 3 = 18$ _____
 (7) $8 + (2 + 3) = (2 + 3) + 8$ _____
 (8) $8 + 0 = 8$ _____
 (9) $5(2) + 5(4) = 5(2 + 4)$ _____
 (10) $14 \times 1 = 14$ _____
 (11) $\frac{1}{2} \times 2 = 1$ _____
 (12) $3 \times 8 = 8 \times 3$ _____
 (13) $-3 + 3 = 0$ _____

Properties:

Vnesier
 Eelfrxvie
 Urtdvtiebiis
 Dtntyteii
 Tavcaessoii
 Yemcmsirt
 Ttsaiievnr
 Utmtmcoaevi

Answers:

Commutative
 Distributive
 Associative
 Reflexive
 Transitive
 Symmetric
 Commutative
 Identity
 Distributive
 Identity
 Inverse
 Commutative
 Inverse

Making Mathematics FUN

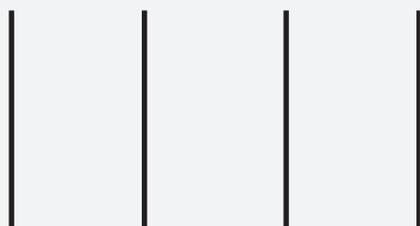
Dr. Rock's Math Mystery

by David Rock
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Elementary Brain Teaser

From Last Issue

A Perfect 10!



Observe the four straight, vertical line segments above. Add 5 more straight line segments to make 10.

A Perfect 10! Solution: T E N.

New One!

Not a Clue

Four men sat down to play,
 They played all night until the break of day,
 They played for money and not just for fun,
 With separate scores for each one,
 When they came to square accounts,
 They all had profited quite nice amounts,
 This paradox is puzzling and we would like you to explain,
 Just how that no one lost yet they could all possibly gain.

Challenge Round

From Last Issue

That's That!

If THAT = (AH)(HA) and each letter represents a unique digit, determine THAT.

That's That! Solution: 6786.

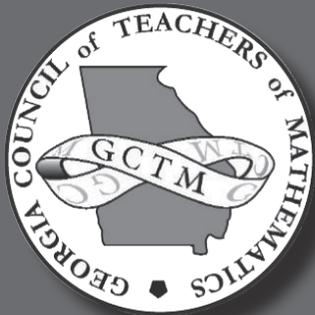
Since each letter is a digit, THAT = (AH)(HA) is
 $1000t + 100H + 10A + T = (10A + H)(10H + A)$
 $1001t + 100H + 10A = (10A + H)(10H + A)$
 $1001t = (10A + H)(10H + A) - 100H - 10A$
 $1001t = 100AH + 10A^2 + 10H^2 + AH - 100H - 10A$
 $1001t = (10H + A)(10A + h - 10)$

The prime factors of 1001 are 7, 11, 13 and divide one of the factors on the right side of the equation. Only 13, 26, 42, 49, 56, 66, 78, 88, and 98 represent numbers that are divisible by at least one of 7, 11, and 13 for both $(10H + A)$ and $(10A + h - 10)$. Of these, only 78 (with 77 for $10A + h - 10$) works. Hence, $A = 8$ and $H = 7$. Since $78 \times 87 = 6786$, the $T = 6$. THAT = 6786.

New One!

Two Reciprocals

Find the sum of the reciprocals of two real numbers, given that these numbers have a sum of 50 and a product of 25.



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City, State, Zip+4 _____
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Work Phone _____

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School or University Name _____

Grade Level and/or Title _____

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Graduate students who have never taught professionally

Advisor Signature _____

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GaETC

November 2-4, 2011

Atlanta, GA