

## CRMC Stages Spring Fling

**C**hase Puckett, Georgia's 2005 Teacher of the Year, delivered a talk titled "Standing In The Gap," for the Columbus Regional Mathematics Collaborative's Spring Fling workshop on March 8 at Hannan Elementary School. He described, to his audience of regional K-12 mathematics teachers, challenges facing Georgia's teachers along with a reminder of why they get into the profession, what separates good teachers from mediocre teachers and why Georgia's students deserve the best teachers possible.

Just prior to the event, word came that new funding totaling nearly \$155,000 had been secured to bolster CRMC programs such as Spring Fling that help teachers meet such challenges as set forth by Puckett.

The funding is courtesy of the University of Georgia's Improving Teacher Quality Higher Education Program in three No Child Left Behind Title II grants:

- Algebraic Thinking: Elementary School Building Blocks
- Algebra Links: The Key to the Equation
- Algebraic Thinking: Calculations of the Mind

The timing of the grants with Spring Fling could not have been better orchestrated, said CRMC Director Katheryn Fouche. "A major objective of the Elementary School Building Blocks grant is to teach mathematics through the use of children's literature. Integrating disciplines is not a new concept for middle school teachers, but it requires an appreciation and understanding of the broader curriculum. Mr. Puckett's message was for all teachers."

Puckett has taught 8th-grade language arts and reading for Screven County Middle School since 1998. He currently serves on the Georgia Title I Committee of Practitioners, is a member of the Georgia Teacher of the Year Association, and has been designated as a Model and Master teacher in the Reading Renaissance Program.

Regarding Puckett's presentation, Fouche said the participants came away inspired by hearing from "Georgia's



**Chase Puckett, Georgia Teacher of the Year speaks at CRMC's recent "Spring Fling."**

Best." "Teaching is a dynamic profession that requires continuous professional development. Those who attend workshops are looking for ideas to take straight to their students. Teachers lend their most attentive ear to a classroom teacher who speaks from the "front line," said Fouche.

One of CSU's six Centers of Excellence, the CRMC provides professional development support to regional P-16 mathematics teachers. In addition to leading the CRMC, Fouche also oversees the Centers of Excellence comprised of the following other learning outreach centers: Oxbow Meadows Environmental Learning Center, the Coca-Cola Space Science Center, the Carson McCullers Center for Writers and Musicians, the Childcare Resource and Referral Network and the Center for Quality Teaching and Learning. For more information, visit

<http://academics.colstate.edu/Excellence/>

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## MESSAGE FROM THE INTERIM DIRECTOR

Greetings and best wishes as you complete the 2004-2005 school year. The staff at CRMC has experienced a year of emotions, challenges, transformations, and successes. In July, the former Director, Ann Assad, moved back to Kentucky to care for her mother and to complete her dissertation. With her new doctorate from Southern Illinois University, Ann has been successful with both tasks. Her mother is proud and so are we.



Kitty Fouche

In July, the CRMC space was reorganized to make resources more accessible. If you have not visited us lately, we encourage you to take the Georgia tour. A list of our children's literature books that have mathematics or science as a theme is on the CRMC website, as is our list of manipulatives. We will also post a list of our print resources, software, and calculators.

The resource teachers have been busy with workshops, inservice opportunities, study groups, demonstration lessons, and mentoring. At the end of March, three of the teachers traveled to Tifton to receive training on the Georgia Performance Standards (GPS) and will train the rest of the staff. We anticipate that the responsibility for GPS training will exceed our staffing resources, so we invite all who would like to be involved on a part-time basis to contact us about being in our pool of trainers.

Fall MathFest and Spring Fling featured special guests who share Teacher of the Year titles. In the fall, Cynda Fickert, Alabama's Teacher of the Year from Auburn, Alabama, shared her teaching tips, experiences as a CSU graduate student, and with CRMC as an instructor in one of our summer camps. She certainly made us proud at Spring Fling. Chase Puckett, Georgia's Teacher of the Year, entertained us with familiar scenes from his classroom. He teaches reading and language arts in Sylvania at Screven County Middle School. Each event included breakout sessions for the three grade levels. We thank Ned Colley, Texas Instruments, Carolyn Hemmings, Lakewood Elementary Magnet Academy, and Sherree Hatcher, East Columbus Magnet Academy, for providing those fantastic inservice opportunities at Spring Fling.

We are now in high gear to prepare for the summer workshop and camps. We will take a quick break in July and then dive into algebraic thinking as our focus for next year. CRMC is a point of pride for CSU and the region. I have enjoyed serving as the Interim Director and now look forward to working with the new leader. As one of CSU's Centers of Excellence, there is no limit to the opportunities for CRMC. Thank you for being a part of the organization.

Kitty Fouche  
Interim Director  
Columbus Regional Mathematics Collaborative

## Middle Grades Update

By Hope Phillips, Middle Grades Resource Teacher

Thanks to the work of many good teachers at many good schools, the work of CRMC middle grades has been successful this year. Our project schools are Fort Middle, Central at Talbotton, and East Columbus Magnet Academy (ECMA). Teachers at these schools have participated in study groups after school, two all-day meetings held at CSU, and kindly allowed me to teach in their classrooms throughout the year.

At Fall MathFest in October, John Dobbins from Fort Middle School presented information on geometry lessons he created and gave each participant a copy of the lessons on a CD. He also showed the group amazing (and free!) templates available online for use in the classroom. Recently at Spring Fling, Sherree Hatcher from ECMA prepared us for March 14, or Pi Day. Teachers learned to derive pi and enjoyed listening to Sherree read a great mathematics/literature connection, *Sir Cumference and the Dragon of Pi* by Cindy Neuschwander.

Ruby Tucker and I look forward to summer workshop and PRIME Camp. We will be using selected lessons/units from the National Science Foundation-funded middle school curricula and Mark Driscoll's *Fostering Algebraic Thinking*. Add us to your summer "to-do" list.

## Fall MathFest A Success

Approximately 80 regional teachers, pre-kindergarten through college-level, gathered at Shaw High School on October 26 for the ninth annual Fall MathFest, sponsored by the Columbus Regional Mathematics Collaborative at Columbus State University and the Chattahoochee Council of Teachers of Mathematics. The event, themed "One Team, One Goal," featured a keynote presentation by CSU graduate and 2005 Alabama Teacher of the Year, Cynda Fickert. Topics emphasized cooperation among teachers as a tool for enhancing the learning environment.



Alabama teacher of the year, Cynda Fickert was the keynote speaker at CRMC's Fall Math Fest.

Fickert, an educator for 12 years, teaches eighth-grade pre-algebra at Auburn Junior High School where she devised the "Green Thumbs at School" project to correlate technology-based data collection with skills in algebra and pre-algebra. A collaboration with Auburn University's horticulture department, the project is in its second year and has students comparing shading effects on the same types of plants. Using data collection devices, students record measurements of soil pH, relative humidity, temperature, etc. and graph the information while exploring basic algebraic concepts. Fickert secured a \$10,000 Toyota Time Grant to initiate and fund the project.

During the 2004-05 school year, Fickert is on leave from her teaching duties in order to serve as a full-time spokesperson for education in her role as Teacher of the Year in Alabama.

Fickert holds a master's degree from CSU (2001) in middle grades education. Her career started in Rome, Georgia, where she earned her bachelor's degree in 1991 from Berry College. Four years later, she joined the Auburn Junior High School faculty.

# Online MATH Resources

CRMC staff is often asked how to find mathematically rich online resources. We have composed a list of our favorites and hope these soon become your favorites, too.

<http://www.octm.org/>

The Oregon Council of Teachers of Mathematics Web site with a great list of other Web sites and problem resources

[www.nctm.org](http://www.nctm.org)

Great resources and articles for all grade levels

[www.pbs.org](http://www.pbs.org)

Great resources for teachers of all grade levels - click on PBS Teacher Source

[www.matti.usu.edu](http://www.matti.usu.edu)

Virtual manipulatives

<http://math.rice.edu/~lanius/fractions/>

Nice conceptual lessons on adding, multiplying, and dividing fractions; good graphics; more lesson from Cynthia Lanus listed under link on homepage; middle grades

<http://mathforum.org/yeargame/2005/>

Math puzzles, problems and games. Grades 3-12

<http://balancedassessment.concord.org>

300 innovative assessment tasks for teachers of grades K-12

<http://www.illuminations.nctm.org>

PreK-12

<http://www.mathforum.com/>

Grade levels K-12

[www.mathblues.com](http://www.mathblues.com)

Grade levels 9-12

<http://www.univie.ac.at/future.media/moe>

Grades 9-12, activities on transformations, click on Gallery, go to Functions I

<http://education.jlab.org/solqiz/index.html>

Grades 9-12, good standardized test practice site. This site can be very useful for preparing students for the GHS GT or an EOCT

## CRMC Summer Camps

Register online at [www.conted.colstate.edu](http://www.conted.colstate.edu) or call (706) 568-2023, fax (706) 569-3113.

### S.M.A.R.T. Camp

Instructors: Cynthia Hill / Kimberly Voltz

#### Science, Math, and Reading Together - S.M.A.R.T. Camp:

Math Fun and Games - Be a survivor by discovering the mathematics of literature, games, and mysteries.

Overcome the Mathematics Fear Factor. Campers will find that mathematics is "no problem" when you know how to play the game. Yes, Math can be fun.

#### Section A: (Rising 2nd-3rd grade)

Monday - Friday - 9:00 a.m. to 3:00 p.m.

June 13 - June 17

#### Section B: (Rising 4th-5th grade)

Monday - Friday - 9:00 a.m. to 3:00 p.m.

June 13 - June 17

**Fee: \$160**

### PRIME: Math Magic

#### (GIRLS ONLY - 6TH-8TH GRADE)

Instructor: Hope Phillips

Is the hand really quicker than the eye, or is the magician a mathematician? Campers will learn the tricks of the trade as they solve the mystery and power of mathematics.

Monday - Friday - 9:00 a.m. to 3:00 p.m.

June 13 - June 17

**Fee: \$160**

### POWER: Math Magic

#### (BOYS ONLY - 6TH-8TH GRADE)

Instructor: Katheryn Fouche

Is the hand really quicker than the eye, or is the magician a mathematician? Campers will learn the tricks of the trade as they solve the mystery and power of mathematics.

Monday - Friday - 9:00 a.m. to 3:00 p.m.

June 20 - June 24

**Fee: \$160**

### Copious Codes (9TH-11TH GRADE)

Instructor: Katheryn Fouche/Christie Nestor

Positive Reinforcement in Mathematics and Science Education for High School Students.

Discover the adventure, mystery, and mathematics of sending and receiving secret codes. From Caesar Cipher, position codes and codes wheels, to affine ciphers and Public-Key cryptology, campers will learn the language of secret codes. For real world applications or pastime, cryptology can be fun for everyone.

Monday - Friday - 9:00 a.m. to 3:00 p.m.

June 20 - June 24

**Fee: \$160**

**COLUMBUS REGIONAL MATHEMATICS  
COLLABORATIVE SUMMER  
PROGRAM FOR K-12 TEACHERS  
(June 6-10, 2005)  
(SDUS AND GRADUATE CREDIT AVAILABLE)**

**Elementary, Middle Grades, and  
High School Workshops**

In three concurrent sessions - early childhood, middle grades, and high school - our summer programs will focus on use of a variety of representations for problem situations. Workshop fee is \$200 for teachers from member systems and \$250 for those from nonmember systems. Two SDUs will be awarded for the workshop, and additional professional development credit may be awarded for attendance at follow-up activities throughout the academic year (ie: study groups and online professional development).

**Algebraic Thinking:  
Elementary  
School Building Blocks**

The focus of this workshop will be to increase teachers' ability to identify algebraic thinking in students' written work, and increase the use of children's literature as a teaching tool for mathematics.

*Examining Student's Written Work* and *Listening to Students*, two modules of *The Fostering Algebraic Thinking Toolkit: A Guide for Professional Development*

(Driscoll, 2001) will be used to train participants to recognize and understand their own algebraic thinking and the algebraic thinking of their students.

Participants will explore alternative assessment methods such as designing and implementing non-routine problems and will share effective methods for raising levels of achievement for all students.

CRMC staff will help elementary teachers identify children's literature that provides strong connections to mathematics.

Participants may apply to teach in S.M.A.R.T. (Science, Math and Reading Together) Camp for students in grades 2-5.

**Algebra Links: The Key to the Equation**

The focus of the middle grades workshop will be to increase teachers' understanding and use of algebraic thinking and to analyze written student work on open-ended problems to inform instruction.

*Examining Student's Written Work* and *Listening to Students*, two modules of *The Fostering Algebraic Thinking Toolkit: A Guide for Professional Development* (Driscoll, 2001) will be used to train participants to recognize and understand their own algebraic thinking and the algebraic thinking of their students. A study of alternative assessment will focus on open-ended tasks. These tasks are designed to elicit a range of responses requiring mathematical reasoning, representation, and communication. Teachers will solve mathematically rich problems and share approaches and strategies, as well as representations selected for use.

Participants may apply to teach in PRIME Camp for middle grades girls or in Power Camp for middle grades boys.



**Algebraic Thinking:  
Calculations of the Mind**

The focus of this high school workshop is to assist teachers in developing algebraic thinking in students by reviewing written work and using graphing calculators as problem solving tools.

The curriculum will be *The Fostering Algebraic Thinking Toolkit: A Guide for Professional Development* (Driscoll, 2001). Summer workshop will focus on

Module 1, *Examining Student's Written Work*, guiding teachers to recognize algebraic thinking in their students. Summer camp will give teachers opportunities to apply these skills. Follow-up activities will continue building teachers' recognition of algebraic thinking via Module 2 *Listening to Students*. Throughout all activities, teachers will use graphing calculators as tools to enhance problem solving.

Participants may apply to teach in the Copious Codes Camp for rising ninth and tenth-grade girls and boys.

# Columbus Regional Mathematics Collaborative Workshops

June 6-10, 2005

## REGISTRATION FORM FOR TEACHERS

Name \_\_\_\_\_ SSN \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

School \_\_\_\_\_ School System \_\_\_\_\_

School Address \_\_\_\_\_ School Phone ( ) \_\_\_\_\_ - \_\_\_\_\_  
\_\_\_\_\_

Home Address \_\_\_\_\_ Home Phone ( ) \_\_\_\_\_ - \_\_\_\_\_  
\_\_\_\_\_

All workshops will begin promptly at 8:30 a.m.

Please check the workshop you will attend:

Algebraic Thinking: Elementary School Building Blocks (Grades K-5) \_\_\_\_\_

Algebra Links: The Key to the Equation (Grades 6-8) \_\_\_\_\_

Algebraic Thinking: Calculations of the Mind (Grades 9-12) \_\_\_\_\_

All workshops are \$200 for member systems and \$250 for nonmember systems. Participants will receive 2 Staff Development Units (SDUs). Additional professional development credit may be awarded for attendance at follow-up activities throughout the academic year. Cost includes materials and breakfast. All workshops will be held in the Elizabeth Bradley Turner Center at Columbus State University. Call (706) 568-2023 for directions.

Please choose one of the following:

SDUs \_\_\_\_\_ Graduate Credit \_\_\_\_\_ No Credit \_\_\_\_\_

Please indicate method of payment:

Check (make payable to CSU) \_\_\_\_\_ Money Order \_\_\_\_\_

MC/Visa: \_\_\_\_\_ Account # \_\_\_\_\_

Exp. Date \_\_\_\_\_ Signature \_\_\_\_\_

\*Purchase order number \_\_\_\_\_

\* *Required if registration fee is being paid by school/school system; must be submitted with this form.* Registration **WILL NOT** be accepted without a purchase order number.

Registration Deadline is Friday, June 3. Return this form and method of payment to:

Continuing Education,  
Columbus State University,  
4225 University Avenue  
Columbus, GA 31907-5645

# Lesson Plan

## An Algebra Crossnumber Puzzle

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>6</b>			<b>7</b>	
	<b>8</b>		<b>9</b>	<b>10</b>
<b>11</b>	<b>12</b>	<b>13</b>		
	<b>14</b>		<b>15</b>	

Each letter has a different whole number value.

$a = \_$ ,  $b = \_$ ,  $c = \_$ ,  $d = \_$ ,  $e = \_$ ,  $f = \_$ ,  $g = \_$

The heavy lines show where a number value stops.

### ACROSS

1. $bd$	11. $d^2$
3. $a^5$	13. $acf$
6. $13g$	14. $e^2$
7. $(ab)^2$	15. $a^3d$
8. $48b^2$	

### DOWN

2. $f^2$	9. $(b + f)^2$
3. $bg$	10. $ce$
4. $a^4 + d$	11. $abe$
5. $d^2 - b$	12. $ef$
6. $ab^2$	13. $ad$

## An Algebra Crossnumber Puzzle

### Problem-solving skills pupils might use:

- Make use of previous knowledge – evaluating monomials and binomials with exponents
- Guess and check
- Eliminate possibilities
- Record solution possibilities

### Materials needed:

- None

### Comments and suggestions:

Some class time will be needed to get the pupils into the problem. You might suggest 3-Across for a place to start. Pupils realize that  $a$  must be 2 since  $a^5$  is a two-digit number. If  $a$  had any other whole number value, it would not be a two-digit number. Let pupils work on their own before providing other clues.

If after several minutes pupils have made no progress, you might give them some of the values;  $a = 2$  and  $b = 3$  will provide a good start.

### Additional clues you may need to provide later:

- Focus attention on 7 across  $(ab)^2$ : If  $a = 2$  and  $(ab)^2$  must be a two-digit number, then  $b$  can be either 3 or 4. Try 3 first.
- Focus attention on 6 down,  $ab^2$ : If  $b = 3$ , then  $ab^2 = 18$ .
- Focus attention on 5 down,  $d^2 - b$ : If  $b = 3$ , the  $d^2 - 3$  must equal a two-digit number ending with 6. This means that  $d$  must equal 7.

### Answers:

1 2	2 1	3 3	4 2	5 4
6 1	4	3	7 3	6
8	8 4	3	9 2	10 4
11 4	12 9	13 1	2	0
8	14 6	4	15 5	6

### One solution path:

3 across:  $a = e$

7 across suggest either 3 or 4 as a value for  $b$ . If 3 is chosen\* the following is one sequence which will complete the puzzle.

- |                  |                         |
|------------------|-------------------------|
| 6 down           | 9 down                  |
| 5 down; $d = 7$  | 13 across; $c = 5$      |
| 4 down           | 6 across; $g = 11$      |
| 1 across         | 3 down                  |
| 8 across         | 11 down; $e = 8$        |
| 11 across        | 12 down, also 14 across |
| 15 across        |                         |
| 13 down          |                         |
| 2 down; $f = 12$ |                         |

\* If 4 is chosen instead, then  $d^2 - 4$  must equal a two-digit number ending with 4. No whole number works.

### Another possible solution path could start as follows:

- |           |           |           |
|-----------|-----------|-----------|
| 3 across; | $a = 2$   |           |
| 6 across  | } $b = 3$ |           |
| 3 down    |           | } $g = 1$ |
| 2 down    |           |           |

**C**RMCM staff recently received word of the grants from the Improving Teacher Quality Higher Education Program at UGA. While the three grants target specific schools, all member schools are encouraged to take advantage of the resources provided through these initiatives.

The goal of the elementary school grant, Algebraic Thinking: Elementary School Building Blocks, is to improve student learning through professional development.

The goal of the middle school grant, Algebra Links: The Key to the Equation, is to equip teachers with content knowledge

and instructional practices to improve student learning. The goal of the high school grant, Algebraic Thinking: Calculations of Mind, is to improve student learning through professional development.

Two modules of *The Fostering Algebraic Thinking Toolkit: A Guide for Professional Development* (Driscoll, 2001) will be used for staff development. Teachers will be trained to recognize and understand their own algebraic thinking and that of their students. A summer camp gives teachers the opportunity to apply new skills. Proposed activities, designed by the elementary and middle level resource teachers from the CRMC, will also help

teachers transition to the Georgia Performance Standards.

We look forward to working with the following 2005-2006 grant schools:

- Brewer Elementary and River Road Elementary in Muscogee County
- Central Elementary/High School in Talbot County (grades 1-12)
- Chattahoochee Educational Center in Chattahoochee County (grades 1-12)
- Phenix City Intermediate School in Phenix City, AL (grades 5-6)
- Rothchild Middle in Muscogee County
- Shaw High in Muscogee County

## Thank You!

**T**he Collaborative expresses sincere gratitude to the following schools for participating in this year's projects: Reading, Writing, and Talking about Mathematics in the Early Grades, Phase II; Reading, Writing, and Talking about Mathematics in the Middle Grades, Phase II; and Representing High School

Mathematics with Technology, Phase II.

- New Quitman Elementary, Quitman
- Central Elementary/High Talbot
- Wynnton Elementary, Muscogee
- Eastway Elementary, Muscogee
- East Columbus Magnet Academy, Muscogee
- Fort Middle, Muscogee
- Greenville Middle, Meriwether
- Hardaway High, Muscogee

- Carver High, Muscogee
- Kendrick High, Muscogee
- Greenville High, Meriwether

These projects would not be possible without the support of and funding through the NO CHILD LEFT BEHIND ACT and Dr. Edward Davis, Director of Operations, Improving Teacher Quality Higher Education Program, University of Georgia.

4225 University Avenue  
Columbus, Georgia 31907

The Columbus Regional  
Mathematics Collaborative

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