

KY MATH SMART

STRATEGIES, MANIPULATIVES, ASSESSMENT, RESOURCES AND TECHNOLOGY FOR KENTUCKY'S MATH EDUCATORS

VOLUME 3

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Edited by Karen Campbell—River Region (karen.campbell@daviess.kyschools.us)

Don't forget:

- National Math Recovery Conference in Newport, KY April 15-18, 2008. For information go to www.kentuckymathematics.org.
- Math Solutions, June 16-20, 2008 in Danville. Sponsored by Central Kentucky Special Educational Cooperative. For more information go to www.cksec.org.
- Marcy Cook Math sponsored by Southeast/Southcentral Educational Cooperative on June 18 and 19 at EKU. For more information contact tom.bonny@eku.edu.
- Kentucky Valley Special Education Cooperative Summer Institute, July 30-31 at Hazard Community College Campus. For more information contact Cheryl Mathis at cheryl.mathis@hazard.kyschools.us.
- Kentucky Council for Teachers of Mathematics annual conference October 11, 2008 in Louisville. See www.kctm.org

A Tiered Elementary Mathematics Intervention System by Alice Gabbard

Kentucky primary intervention students have made astonishing progress in mathematics achievement and they (*and* their intervention teachers) are enjoying mathematics more than ever. After nearly two years of the statewide intervention initiative, the Kentucky Center for Mathematics (KCM) has determined that effective intervention requires training and ongoing support for teacher growth in the following areas:

- Deep understanding of the **complexity** of mathematics content beginning in the earliest grades.
- Awareness of the progression of typical student numeracy **development**.
- Skill in using diagnostic assessments that provide an **asset model** for pinpointing student progress and isolating specific problems.
- Ability to use formative assessment to design differentiated instruction that builds a strong mathematical foundation and flexible men-

tal computation skills, including opportunities for deep thinking, both silently and aloud, to **make sense of mathematics**.

For help in making decisions about purchasing the best scientifically-based diagnostic intervention program(s), refer to the KCM document, "Considerations for Selecting a Supplemental K—12 Diagnostic Intervention Program." A tiered intervention system model that has been highly acclaimed by Kentucky mathematics intervention teachers and deserves careful consideration is the Math Recovery professional development package of SNAP, Add+Vantage MR, and Math Recovery Specialist Certification:

Tier 1, Whole class *core intervention*—Student Numeracy Assessment Progression (SNAP) is an individual student folder system for graphing progress on the numeracy assessment profile and includes assessment probes and instruc-

tional guidance for number sense, addition, and subtraction. The two-day SNAP training for teachers, assistants, or volunteers with materials is \$295 per person.

Tier 2, Small group *strategic intervention*—Add+Vantage MR is a diagnostic intervention program that develops teachers' practical knowledge and abilities to pinpoint student progress and design appropriate instruction using the Math Recovery frameworks. The four day course 1 (focused on number sense, addition, and subtraction) with materials is \$900 and the two day course 2 (focused on multiplication and division and place value) with materials is \$495.

Tier 3, *Intensive intervention*—Math Recovery Specialist Certification allows teachers to gain extensive expertise in diagnosing student difficulties and designing instruction geared to an individual's zone of proximal development.

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Spring—where every day counts! Hopefully all of the bad weather is behind us, spring break is almost a memory and every day brings us one day closer to the testing window. It's not the time to panic, but the time to polish what they know and keep on teaching. Good luck!

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KY MATH SMART

STRATEGIES - FAMILY MATH NIGHT BY GWEN MORGAN

Increased family involvement in a child's education is one of the best indicators of student achievement and success. One way a school can increase family involvement is by conducting Family Math Nights. Family Math Nights can improve students' and parents' attitudes toward learning math, can give parents and students a risk free environment in which to experience math activities, allow parents to

see how something fun can also be concept building and educational, and give students opportunities to see that their parents value mathematics. Family Math Nights help parents gain insight into your mathematics program and help parents realize that being good in mathematics isn't "genetic" (Kaidy Educational Resources, www.kaidy.com). "The only requirements in

implementing a Family Math Night is the belief in the importance of family involvement in education and the desire to share mathematics in a non-threatening and enthusiastic way".

(Thompson, Virginia. *Family Math - The Middle School Years*. 1998).

No two Family Math Nights look the same, but how do you begin planning for a Family Math Night? One starting point is getting oth-

ers in your building interested in conducting a Family Math Night. If that is not achievable, consider having one just for your students' parents; you never know – it might motivate others to join you! With that in mind, here is a general outline and some pointers to assist you when planning:

- Get to know your parents – take a survey to gather information on their concerns, needs, attitudes, convenient times
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Family Math Night provides the opportunity for families to "play" with math toys and learn together.

MANIPULATIVES

Six-sided, twelve-sided. Wooden, plastic or paper. Dots or numbers. Clear overhead or quiet foam. Teeny tiny or floor sized. How about one within another. When it comes to dice, the choices are almost endless.

We are used to dice telling us how far to move on a game board, but how can they be used in a classroom beyond

that? One roll can decide how many students are to go to the board, how many problems to do or what problems to do. A roll of two dice, especially if they are ten-sided, can create a quick review of basic addition or multiplication facts. Rolling three or more dice can reinforce associative or commutative properties.

Dice are often used in high school to reinforce probability, but they can be used to

create equations for practice. Give each student or team 2 dice. The first die is the coefficient of the variable, the second die is the constant on the same side as the variable. The two dice are then added or multiplied to create the constant on the other side of the equation. A third die could be rolled to decide positives and negatives. Roll an even and the number on the other die is positive, and it will be negative if the rolls is odd.

Dice—the simple manipulative that can make any math more fun.



Math Night is the chance for students to reinforce current knowledge and explore new applications of that knowledge.

ASSESSMENT

Spring break is here so that only means one thing—state assessment is just around the corner. Are your palms clammy? Is your heart racing at just the mention of

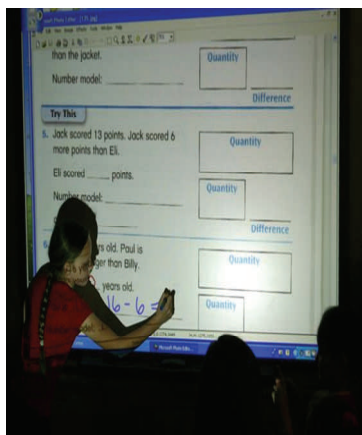
CATS?

Relax. All year you made sure that every lesson could be cross-referenced to multiple bullets on the Core Content for assessment. Better

than that, you have covered every standard for your grade or course on the Program of Studies. Daily you conduct multiple formative and summative assessments—formally and informally—and use that information to direct your instruction. You have provided numerous opportunities for your students to practice and demonstrate their ability with multiple choice and open response questions. Whenever they get stuck, they have multiple strategies to assist

them at their fingertips. Your students can recite power/action/do verbs forward and backward in their sleep. They voluntarily use a variety of graphic organizers to plan their responses. You have done your job!

Now, take the same advice you give to your students—get plenty of sleep, eat a good breakfast and drink plenty of water. You have prepared them well. Now believe in them!



Family Math Night allows students to show off with the latest technology.

RESOURCES

The world is at your fingertips. With just a few clicks of a mouse you are linked with every other math teacher.

One of my favorite resources is the Kentucky Math listserv. If you haven't signed up for this ongoing meeting that shares ideas you haven't heard opportunity knocking.

Granted, everything that comes through the listserv doesn't apply to me and when that happens, I cherish my delete button, but there are

often strands of thought about math topics that I didn't realize I needed to know.

Sometimes the conversations remind me that I'm on the right track, while other times they are food for thought. I don't always agree, but I always close my email having grown professionally.

In today's fast paced world the listserv is a place where you can ask for help. Starting a new unit and out of fresh ideas? One question on the

listserv will often serve up several ideas. Want to know what research-based materials are being used by other math teachers? One question on the listserv will supply many ideas.

From counting to fractions to algebra, it's all there for the asking. If you want to subscribe to KYMATH, the LISTSERV for the Kentucky Math Teachers, go to <http://www.uky.edu/Education/kylists.html>

TECHNOLOGY

I have two problems when it comes to using technology in the classroom. 1. The time required to discover it, evaluate it and implement it. 2. The cost.

To solve the first problem I had to remember that I was not the only teacher out there looking for solutions through technology. A teacher down the hall, across the county or on the listserv may already be using what you are thinking about. Colleagues can send you in

the right direction or help you steer clear of costly or time consuming mistakes. Don't hesitate to contact other groups such as your regional special or regular educational cooperative or the Kentucky Center for Mathematics. Ask around before you reinvent the wheel.

On the topic of cost, I recently learned that if you don't ask, they can't say no. "They" might be an administrator with access to funds

you weren't aware of. "They" might be a community member or corporate sponsor willing to help. (Always check with your administration before going down this road.) "They" might be the people reviewing a grant application. You will never know until you ask.

The solution to both problems is simple—just ask!



Math in the evening? You bet! It's engaging and fun for students, parents and teachers..

FAMILY MATH NIGHT — CONTINUED

- Create a time-line – begin planning at least a month or two in advance
- Decide on a theme or consider having it on the same night as a Family Reading Night
- Begin gathering activities and materials – activities should be challenging but easy to learn and cover a broad range of math topics addressing the NCTM strands
- Call local businesses for donations to purchase prizes and refreshments
- Advertise – hang posters and flyers, call the local radio, newspapers, and TV stations
- Visit the classrooms and play a sample game with the students
- Display some prizes that can be won during the Family Math Night
- Send flyers home informing parents about the event three weeks in advance and then a day or two prior to the event
- Call community workers to come and set up stations showing how they use math in their jobs
- Contact the community college and the local high school to obtain volunteers
- Offer a training session to familiarize the helpers with the games
- Make a packet of games for parents to take home and a brochure giving tips on how they can help improve their child's mathematical knowledge
- Offer a training session to familiarize the helpers with the games
- Hang posters at various places directing participants to locations throughout the building
- Assign someone to take pictures
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Kentucky's Special Education Cooperative Math Consultants

Kentucky's Special Education Cooperative Math Consultants are here to serve you. Contact your district's Director of Special Education if you need assistance from a math consultant. The math consultants and math contacts for each Cooperative are listed below.

Tammy Wall—**Big East Educational Cooperative**
Liz Brewer—**Caveland Educational Cooperative**
John Beardsley—**Central Kentucky Cooperative**
Connie Wilson—**Jefferson County Exceptional Child Educational Services**
Gwen Morgan—**Kentucky Valley Cooperative**
Marinell Kephart—**Northern Kentucky Cooperative**
Carrie Bearden—**Ohio Valley Cooperative**
Karen Campbell—**River Region Cooperative**
Cheryl Lancaster—**Western Kentucky Cooperative**
Belinda Bowling—**Wilderness Trail Cooperative**
Connie Brookins—**Upper Cumberland Cooperative**
Connie Hunt—**Upper Cumberland Cooperative**

MATH INTERVENTION —CONTINUED FROM PAGE 1

Training consists of 10 full days, 3 in-person coaching visits from a leader, at least 3 three-hour collegial team meetings, 100 hours of videotaped instruction, 100 hours of video analysis, an assessment project, and a case study. The cost of training and materials is \$5500 and fulfills a prerequisite for becoming a Math Recovery leader who can train others in SNAP, Add+Vantage, and Math Recovery Specialist Certification.

The series of three books by Dr. Robert Wright, et. al. (2006) that provide a comprehensive overview of the Math Recovery intervention system are *Teaching Number in the Classroom with 4—8 year olds*, *Teaching Number: Advancing Children's Skills and Strategies*, and *Early Numeracy Assessment for Teaching and Intervention*. For more information on bringing Math Recovery training to your school or district, see <http://mathrecovery.org>. To join the Kentucky Center for Mathematics intervention teacher training program, including Math Recovery, see Intervention/Training Details at <http://kentuckymathematics.org>.

Math Night—from pg 3

- Evaluate your Family Math Night
- Send follow up letters home
- Have FUN

This list is not complete! There is no ONE way to organize a Family Math Night – just keep in mind that you are the EXPERT on what will work best in your community and school.

Two good Family Math Night resources include: *The Family Math Night - Math Standards in Action*

Series by Jennifer Taylor-Cox, Ph.D. Eye on Education, 6 Depot Way West, Suite 106, Larchmont, NY 10538.

The Family Math Series by Jean Kerr Stenmark, Grace Davila Coates, and Virginia Thompson. Equals. Lawrence Hall of Science

Some good Family Math Night websites include: <http://www.kaidy.com/FamilyMathNight.htm>
<http://techteachers.com/mathweb/familymathnights.htm>



<http://www.ed.gov/pubs/parents/Math/index.html>
<http://orion.math.iastate.edu/danwell/MathNight/oldhomepage.html#intro>

Family Math Night—yes, it really is this much fun! Thanks to Knox County District, Owsley County Elementary and Whitely Central Primary for the pictures of their recent Math Nights.