2005-2006

San Diego County Office of Education

Closing THE Gap MATHEMATICS

K-12 Mathematics

SAN DIEGO COUNTY OFFICE OF EDUCATION

Please post this copy

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Spring Newsletter

CAHSEE Compact Update

On February 22-24, 2006, a Curriculum and Instruction Leadership Symposium was held at Asilomar, California, focusing on visionary leadership for the 21st century. At the symposium, Leslie Hays, Jameson Rienick, and Cathy Williams presented a workshop session entitled "Closing the Achievement Gap in Mathematics." They expanded on the work of the San Diego County Office of Education (SDCOE) mathematics team and the intervention mathematics materials that have been instrumental in closing the achievement gap. How SDCOE has produced a series of coordinated intervention mathematics curricula was also discussed. The curricula shared included "Math Language That Works: Teaching and Learning Essential Mathematics Vocabulary Grade 6 – Algebra I," "CAHSEE Prep," "Exit Exam Mathematics Assessment Preparation (EEMAP)," and "Getting Ready for Algebra: Online Professional Development." They also discussed how the tools have focused mathematics professional development in San Diego County and has introduced a powerful suite of instructional strategies, to close the learning and achievement gaps for at-risk students. Participants, who were district/site administrators and mathematics leaders, from counties throughout California found the session very useful in two ways. First, participants were able to gather effective intervention resources that they could take back to their respective sites and share with mathematics teachers. Second, they learned how to implement, monitor, and adapt each of the resources to meet their own unique needs for increasing students' mathematics achievement.

Mathematics Framework: Why were changes made?

The state's K-12 Curriculum Frameworks in the core subject areas are on a six-year cycle. During a revision cycle, the State Board of Education must decide if the framework needs a complete rewrite, an update, or no change. For this cycle an update was decided upon to reflect current legislation, assessment information and research, and to correct mathematical errors.

It is important to remember that the standards are the basis for the framework and so the mathematics content was not changed. The updated 2005 Mathematics Framework for California Public Schools will be available for purchase Spring 2006.

One highlight is a new Appendix E containing Mathematics Intervention materials (grades 4-7) and Algebra Readiness materials (grades 8 and higher), available at http://www.cde.ca.gov/ci/ma/cf/index.asp Bear in mind the framework allows flexibility for implementing the two programs. Another change is the new Appendix F: Design Principals Information for publishers to create materials. Work is being done to get ready for the 2007 K-8 Mathematics Adoption. Over 150 reviewers will be needed to evaluate the submitted materials. Teachers who are interested in serving as a reviewer must apply before September 6, 2006. Contact Mary Sprague at (916)319-0510 or msprague@cde.ca.gov.

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SAN DIEGO COUNTY
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Please feel free to contact the San Diego County Office of Education Learning Resources and Educational Technology Division to learn more about how the San Diego County Office of Education is supporting county schools and districts. Contact Sandra, Cathy or Jameson if we can be of service.

…or check us out online.
The Mathematics Unit has a website that offers helpful links and resources:
www.sdcoe.net/lret/math/

Standards Management System
to view the following materials:
Professional Development Calendar
Instructional Materials Matrix
Key Contacts
Local Mathematics Publications
MathVision
Online Resources
ITV Standards Alignment for Mathematics
CISC Math Support Modules

Got a Question?

Send us your question or a discussion idea and we will put our heads together and publish our thoughts in the next issue.

Subject line: "I gotta question," to ssincek@sdcoe.net

A Conversation with Randall I. Charles

Big Ideas and Understandings as the Foundation for Elementary and Middle School Mathematics

Research is beginning to identify important characteristics of highly effective teachers (Ma 1999, Stigler 2004, Weiss, Heck and Shimkus 2004). For example, effective teachers ask appropriate and timely questions, they are able to facilitate high-level classroom conversations focused on important content, and they are able to assess students' thinking and understanding during instruction.

The purpose of what follows is to initiate a conversation about the notion of "Big Ideas" in mathematics. Although Big Ideas have been talked about for some time, they have not become part of mainstream conversations about mathematics standards, curriculum, teaching, learning and assessment. Given the growing evidence as to their importance, it is timely to start these conversations.

What is a "Big Idea" in mathematics?
If you ask a group of teachers or any group of mathematics educators for examples for big ideas, you'll get quite a variety of answers. Some will suggest a topic, like equations, others will suggest a strand, like geometry, others will suggest an expectation, and some will even suggest an objective, such as those found in many district and state curriculum standards. Although all of these are important, none seems sufficiently robust to qualify as a big idea in mathematics. Below is a proposed definition of a big idea.

DEFINITION: *"A Big Idea" is a statement of an idea that is central to the learning of mathematics, one that links numerous mathematical understandings into a coherent whole.*

There are several important components of this definition. First, a Big Idea is a statement; here's an example:

Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.

For ease of discussion, each Big Idea below is given a word or phrase before the statement of the Big Idea (e.g., Equivalence). It is important to remember that this word or phrase is a name for the Big Idea; it is not the idea itself. Rather, the Big Ideas are the statements that follow the name. Articulating a Big Idea as a statement forces one to come to grips with the essential mathematical meaning of that idea.

The second important component of the definition of a Big Idea given above is that it is an idea central to the learning of mathematics. For example, there are many mathematical concepts (e.g., number, equality, numeration) and there are many mathematical processes (e.g., solving linear equations using inverse operation and properties of equality) where understanding is grounded on knowing that mathematical objects like numbers, expressions, and equations can be represented in different ways without changing the value or solution, that is, equivalence. Also, knowing the kinds of changes in representations that maintain the same value or the same solution is a powerful problem-solving tool.

Ideas central to the learning of mathematics can be identified in different ways. One way is through the careful analysis of mathematics concepts and skills; a content analysis that looks for connections and commonalities that run across grades and topics. This approach was used to develop the Big Ideas presented here, drawing on the work of others who have articulated ideas central to learning mathematics (see e.g., NCTM 1989, 1992, 2000; O' Daffer and others, 2005; Van de Walle 2001).

The third important component of the definition of a Big Idea is that it links numerous mathematics understandings into a coherent whole. Big Ideas make connections. As an example, the early grades curriculum introduces several "strategies" for figuring out basic number combinations such as 5+6 and 6x7. The strategy of *use a double* involves thinking that 5+6 is the same as 5+5 and 1 more. The strategy of *use a five fact* involves thinking that 6x7 is the same as 5x7 and 7 more. Both of these strategies, and others, are connected through the idea of equivalence; both involve breaking the calculation apart into an equivalent representation that uses known facts to figure out the unknown fact. Good teaching should make these connections explicit.

A mathematical understanding is an important idea students need to learn because it contributes to understanding the Big Idea. Some mathematical understandings for Big Ideas can be identified through a careful content analysis, but many must be identified by "listening to students, recognizing common areas of confusion, and analyzing issues that underlie that confusion" (Schifter, Russell, and Bastable 1999). Research and classroom experience are important vehicles for the continuing search for mathematical understanding.

Why are Big Ideas important?

Big Ideas should be the foundation for one's mathematics content knowledge, for one's teaching practices, and for the mathematics curriculum. Grounding one's mathematics content knowledge on relatively few Big Ideas establishes a robust understanding of mathematics. Heibert and his colleagues say, "We understand something if we see how it is related or connected to other things we know." Big Ideas have connections to many other ideas, therefore understanding Big Ideas develops a deeper understanding of mathematics. When one understands Big Ideas, mathematics is no longer seen as a set of disconnected concepts, skills, and facts. Rather, mathematics becomes a coherent set of ideas. Also, understanding Big Ideas has other benefits. Effective teachers know how Big Ideas connect topics across grades.

What are Big Ideas for elementary and middle school mathematics?

Twenty-one Big Mathematical Ideas for elementary and middle school mathematics are given at the end of this paper. A discussion of the process I used and some issues I confronted might be helpful if you wish to modify it or to build your own.

As part of a Kindergarten through Grade 8 curriculum development project, several colleagues and I articulated "math understandings" for every lesson we wrote in the program. Using the long list of math understandings we created, I organized these across content strands rather than grade levels. When I did that, it became apparent that there were clusters of math understandings, ideas that seem to be connected to something bigger. I then started the process of trying to articulate what it was that connected these ideas; I developed my definitions of a Big Idea and used that as a guide. My sense is that Big Ideas need to be big enough so that it is relatively easy to articulate several related ideas, what I called mathematical understandings. I also believe that Big Ideas need to be useful to teachers, curriculum developers, test developers, and to those responsible for developing state and district standards. The initial list had 31 Big Ideas grouped into the traditional content strands. However, Big Ideas are BIG because many run across strands. This led to a reduction in the number on my list.

Finally, the fact that there are relatively few Big Ideas on the list is what makes the notion of Big Ideas so powerful. One's content knowledge, teaching practices, and curriculum can all be grounded on a small number of ideas. This not only brings everything together for the teacher but, most importantly, it enables students to develop a deep understanding of mathematics.

What are some ways Big Ideas can be used?

Here are a few ways that Big Mathematical Ideas and Understandings can be used.

Curriculum Standards and Assessment

- Curriculum coherence and effective mathematics instruction starts with standards that embrace not just skills but also big mathematical ideas and understandings.
- Develop individual teacher, district, state, or national assessments around Big Mathematical Ideas and Understandings. Alignment of standards and assessment is important for many reasons and both need to address big ideas, understandings, and skills.

Professional Development

- Build professional development courses focused on mathematics content and anchored on Big Ideas and Understandings.
- Do a lesson study where Big Ideas are used to connect content and teaching practices.
- Develop chapter/unit and individual lesson plans by starting with Big Ideas. Generate mathematical understandings specific to the content and grade level(s) of interest.

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Randall I. Charles (continued)

I am rather certain that it is not possible to get one set of Big Ideas and Understandings that all mathematicians and educators can agree on. Fortunately, I do not think it's necessary to reach a consensus in this regard. Use the Big Ideas and Understandings presented here as a starting point for the conversations they are intended to initiate; edit, add, and delete as you feel best. But, as you develop your own set, keep these points in mind. First, do not lose the essence of a Big Idea as defined here, and second, do not allow your list of Big Ideas and Understandings to balloon to a point where content and curriculum coherence are lost. Big Ideas need to remain BIG and they need to be the anchors for most everything we do.

*A **Big Idea** is a statement of an idea that is central to the learning of mathematics, one that links numerous mathematical understandings into a coherent whole.*

1. ***Numbers:** The set of real numbers is infinite, and each real number can be associated with a unique point on the number line.
2. **The Base Ten Numeration System:** The base ten numeration system is a scheme for recording numbers using digits 0-9, groups of ten, and place value.
3. ***Equivalence:** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
4. ***Comparison:** Numbers,expressions, and measures can be compared by their relative values.
5. ***Operation Meanings and Relationships:** The same number sentence (e.g. 12-4=8) can be associated with different concrete or real-world situations, AND different number sentences can be associated with the same concrete or real-world situation.
6. ***Properties:** For a given set of numbers there are relationships that are always true, and these are the rules that govern arithmetic and algebra.
7. **Basic Facts & Algorithms:** Basic facts and algorithms for operations with rational numbers use notions of equivalence to transform calculations into simpler ones.
8. **Estimation:** Numerical calculations can be approximated by replacing numbers with other numbers that are close and easy to compute with mentally. Measurements can be approximated using known referents as the unit in the measurement process.
9. ***Patterns:** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
10. ***Variable:** Mathematical situations and structures can be translated and represented abstractly using variables, expressions, and equations.
11. ***Proportionality:** If two quantities vary proportionally, that relationship can be represented as a linear function.
12. ***Relations & Functions:** Mathematical rules (relations) can be used to assign members of one set to members of another set. A special rule (function) assigns each member of one set to a unique member of the other set.
13. ***Equations & Inequalities:** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
14. **Shapes & Solids:** Two- and three-dimensional objects with or without curved surfaces can be described, classified, and analyzed by their attributes.
15. **Orientation & Location:** Objects in space can be oriented in an infinite number of ways, and an object's location in space can be described quantitatively.
16. **Transformations:** Objects in space can be transformed in an infinite number of ways, and those transformations can be described and analyzed mathematically.
17. **Measurement:** Some attributes of objects that are measurable can be quantified using unit amounts.
18. **Data Collection:** Some questions can be answered by collecting and analyzing data, and the question to be answered determines the data that needs to be collected and how best to collect it.
19. **Data Representation:** Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.
20. **Data Distribution:** There are special numerical measures that describe the center and spread of numerical data sets.
21. **Chance:** The chance of an event occurring can be described numerically by a number between 0 and 1 inclusive and used to make predictions about other events.

** The Big Ideas most relevant to algebra.*

Assessment Corner

by Bruce Arnold
MDTP San Diego Director (UCSD)

Benchmark Testing

Many teachers and administrators have recently implemented, are in the process of implementing, or are considering implementing benchmark tests in their schools or districts. What are benchmark tests? What purposes do they serve? What are the implications of implementing benchmark tests? We will briefly discuss these questions.

Benchmark tests. *Taking Center Stage* (CDE, 2001) defines a benchmark test or assessment as a "formative, uniform measure of student progress relative to standards. Benchmark tests are common, grade-level or subject, standardized tests that are administered within a school or within a district to compare all students in that grade-level or subject. Benchmark tests provide a uniform basis for measuring student progress on standards at specific intervals during the course of the year. The uniformity is maintained through standardized on-site administration and scoring procedures that help maintain the validity, reliability, and fairness of the assessment. These formative assessments are the primary basis for a local performance standards system."

Monitoring progress. Benchmark tests are designed to measure students' progress relative to standards. The Mathematics Framework for California Public Schools, Kindergarten Through Grade Twelve (CDE, 2005) defines several different types of assessment and indicates that since assessments serve different purposes they are designed accordingly. One purpose of an assessment is to monitor the progress of students as they progress through a course. A benchmark assessment would, therefore, be an example of an assessment to monitor students' progress. A benchmark assessment should:

1. Include standardized administration procedures and tasks.
2. Document performance.
3. Be linked to items currently being taught.
4. Help teachers make instructional decisions and adjustments based on documented performance.
5. Indicate when direct interventions are needed for students who are struggling to master the standards.

Summative evaluation. The Framework defines another purpose for assessment is a summative evaluation. Summative evaluation measures on a more formal basis the progress students have made toward meeting the standards. Benchmark tests may be used as part of students' summative evaluations, i.e., their scores on benchmark tests may be used in the assignment of course grades.

Diagnosis. Assessment can improve instruction when teachers use the results to analyze what students have learned. (Framework, p. 9) Successful diagnostic teaching demands that the teacher try to determine the cause of each student's learning difficulties and correct these learning difficulties through appropriate instruction, remediation, and support. (Framework, p. 230) If the results of students' work on individual items on benchmark tests are made available to teachers, then benchmark tests may be used by teachers to better understand what their students have (and have not) learned.

Program planning. Assessment is important to ensure that all students are provided with mathematics instruction designed to help them progress at an appropriate pace. Knowing which standards students have mastered through benchmark tests, allows teachers and administrators to better plan the instructional program for each student or for groups of students with similar needs. (Framework, p. 229-230) The results of benchmark tests may be used as an objective basis for making decisions about individual students, e.g., retention, remediation or support. The results may also be used to make program decisions about classroom practice and the curriculum. (Taking Center Stage, p. 63)

Developing benchmark tests. How do schools or districts develop benchmark tests? The process of developing benchmark tests requires close collaboration among grade-level or subject teachers within a school (or district). The decisions about what topics to include on benchmark tests, the number of questions per topic, the format of the questions (e.g., multiple-choice, constructed-response), and the level of rigor are best made by teachers who are involved in the daily instruction and assessment of the curriculum. (Aiming High, p. 46) While teachers may differ in their beliefs about what topics to include, the format of questions, and the level of rigor, the process of reaching consensus on these issues is vitally important if the benchmark test is to have face validity among teachers. Schools and districts should not underestimate or undervalue the task that lies ahead. If sufficient care and thought are placed in the development of benchmark tests, then the results from these tests will be useful to students, teachers, and administrators.

The process of developing benchmark tests requires teachers to carefully examine their curriculum to make these decisions. As a result of going through this process, teachers will have a better understanding of the relative importance of various topics in the curriculum and how to measure students' understanding of these topics. This understanding will have palpable impacts on how they teach their subject.

Ideally, the process of developing benchmark tests is iterative. After administering a benchmark test and evaluating students' results, a group of representative teachers should meet to review the efficacy of the test. Did the test measure students' performance on the topics as intended? Was the test reliable and consistent with other measures of students' performance? Were any test items poorly worded or confusing to students? Were any test items not particularly helpful in diagnosing students' understandings?

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Assessment Corner (continued)

Also, if the curriculum changes over time, then the benchmark tests will likely need to be rewritten to reflect these changes.

Consequences. Benchmark tests have several consequences, some intended and others unintentional. Two of these consequences are standardization and preparation (for external tests).

1. Standardization. Benchmark tests tend to standardize curriculum and instruction. Teachers want to be on the same "page" every day, since they know that their students will be tested against a school-wide or district-wide benchmark test every several weeks. Schools or districts may develop pacing guides to assist teachers in covering the necessary topics in a timely manner. However, pacing guides should never become straitjackets that stifle teacher creativity.

2. Preparation for external tests. Since benchmark tests measure students' progress against standards, school and districts can estimate how well their students might perform on external tests like STAR or CAHSEE. If benchmark tests are given prior to such external tests, then teachers and administrators may be able to help prepare students through intervention programs.

In summary, benchmark tests may serve several purposes for school and districts: monitoring progress of students' toward standards; part of the summative evaluation process; providing diagnostic feedback to teachers about what their students understand (or don't understand); and making programmatic decisions about individual students. Developing benchmark tests requires a substantial, collaborative effort on the part of a group of representative grade-level or subject teachers. Lastly, benchmark tests tend to standardize the curriculum and instruction.

Spotlight on Higher Ed

by Linda M. Holt
Professor of Mathematics
CSU San Marcos

Helping Students to Prepare for College Math Courses

The California State University (CSU) system requires prospective first-time freshman students to have successfully completed the following courses with a grade of C or better:

a. 2 years of history and social science,
b. 4 years of college preparatory English,
c. 3 years of mathematics (4 years recommended) including Algebra I, Geometry, Algebra II, or higher level,
d. 2 years of laboratory science,
e. 2 years of language other than English (in the same language),
f. 1 year of visual and performing arts,
g. 1 year of an elective, selected from the areas above.

In lieu of the above math requirements, students who are admitted to the CSU can demonstrate readiness for college-level mathematics courses in a variety of ways, including passing the CSU's Entry Level Mathematics (ELM) exam. However, a significant number (about 36% as of Fall 2004) of students fail to satisfy the ELM requirement. As a result, these students have to spend time taking remedial courses in college, making it more difficult for them to graduate in a timely fashion. Students are often confused – they did everything right in high school, so why do they have to take remedial courses in college? Remedial education is also costly, for both the student and the state.

The ELM tests students on material that they have learned in their college preparatory mathematics courses. So why are so many of them failing the ELM exam? One problem is that many students complete their mathematics requirements prior to their senior year in high school, and then choose not to take math in their senior year. Oftentimes a year or more will pass between a student's last mathematics course and the time they take the ELM exam. Their mathematics skills deteriorate as time goes on – leading to failure when they finally take the ELM.

Mathematics faculty at Cal State San Marcos worked with local high school teachers through the Collaborative Academic Preparation Initiative (CAPI). At several high schools, we compared ELM outcomes with high school records to try to understand what makes some students successful in preparing for college math and others not. One thing we discovered was that students who passed intermediate algebra with a B or C in 10th or 11th grades and who didn't take any additional math courses were likely to fail the ELM exam when they took the ELM in 12th grade. So all but the very best students become "rusty."

The lesson to be learned from this is clear. Encourage students to take math in their senior year, even if they have completed all high school and college preparatory math requirements.

The CSU has instituted a program, called the Early Assessment Program (EAP), which gives many students an incentive to take mathematics in their senior years. Students can take an augmented California Skills Test (CST) in 11th grade. The augmented test is aligned with the ELM exam. There are three possible outcomes for each student: exempt, conditionally exempt, and non-exempt.

- Students who score at the highest levels are considered to be exempt from taking the ELM exam. They are more than ready for college level mathematics, even if their skills deteriorate somewhat over the following year.

- Students who have shown sufficient skills to pass the ELM, but not much higher, are considered to be

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Instructional Leadership Critical to Teaching and Learning in Mathematics

Tony Spears, Senior Director, SDCOE
Curriculum, Instruction, and Assessment Unit

During a recent professional development session with principals, and a next day classroom walk-through with a schools instructional leadership team, I am more convinced of the critical work ahead for school leaders. In the past three years, major positive efforts focusing on literacy have required very focused attention. While we are aware that the work is not done, it's time to direct our attention to numeracy and ensuring that our classrooms at all levels have a contextual and balanced program in pre-K–12 mathematics. As the instructional leader, we encourage all school leaders to review the new updated mathematics framework at California Department of Education website at: www.cde.ca.gov, and especially the new section in Chapter 10, discussing intervention and algebra readiness. As you plan your summer or fall professional development, please keep in mind the importance of teachers collaboration time, learning time, and planning around the key elements leading to quality instruction. You, as the instructional leader can create an environment and motivate all staff to improve and engage in continuous learning.

These elements and guiding questions include:

- **Balanced Curriculum/Instruction**: Do you see ongoing evidence of procedures, conceptual development and problem solving?
- **Conversations in Mathematics**: In your classroom walk-through/observation are students talking about mathematics?
- **Instructional Minutes**: Do our instructional minutes reflect the balance of instruction and attention to math intervention and acceleration?
- **Academic Language/Vocabulary**: How are we supporting the development of academic content vocabulary in our mathematics classrooms?
- **Intervention Strategies**: Is the curriculum pacing guides and instruction helping us to go deep or mostly cover the important math topics?
- **Role of Student Work**: How does the math student's work inform your instruction and increase achievement?

Along with using data to drive decisions, attention to these elements will create a high performing professional learning community. Additional resources are available at the San Diego County Office of Education website: www.sdcoe.net.

You make a difference in teaching and learning. Thank you for all you do.

Spotlight.... (continued)

conditionally exempt. These are the students who are likely to fail the ELM if they allow a year or more to pass without taking mathematics. If they participate in an approved senior year experience, they will be exempt from taking the ELM exam, and will be ready for college level mathematics. Examples of approved senior year experiences could include additional mathematics or physics courses that have Algebra II as a prerequisite, an AP math course, or an AP statistics course.

- Students who do not have mathematics proficiency at the ELM level are considered non-exempt. They must take the ELM exam or satisfy the ELM in other ways (see http://www.csumentor.edu/planning/high_school/elm.asp).

For more about the EAP program, see http://www.calstate.edu/eap/. You can learn more about how to help students prepare for college level mathematics at the Math Success website at: http://www.csumathsuccess.org/mshome.

The Mathematics Standards Management System

The Mathematics Standards Management System puts the California mathematics standards, approved instructional materials, research and resources at your fingertips at:
http://iret.sdcoe.net/sms/ma/home

Topics include:
Instructional Leadership
Community Partnerships
Accountability & Assessment
Culture & Communication
Professional Development
Teaching & Learning

Tools include:
Standards Browser
Student Record Sheet
Observation Guide for Mathematics

Essential Web Sites

SDCOE Mathematics Standards Management System
http://Iret.sdcoe.net/sms/ma/home and www.sdcoe.net/Iret/math/

Cognitively Guided Instruction
This website has information, articles and newsletters about CGI.
http://ccvi.wceruw.org/ccvi/cgispider/CGIatCCVI/CGIat CCVI

California Mathematics Council
www.cmc-math.org

California Online Mathematics Education Times (COMET)
http://csmp.ucop.edu/cmp/comet

Hot Off the Press!

Math Language That Works

Teaching and Learning Essential Mathematics Vocabulary Grades 6 – Algebra 1

This resource provides background information for math teachers on the benefits of effective vocabulary instruction. The matrices are researched-based strategies that identify the math content vocabulary found in the standards addressed in *CAHSEE Prep* and *Getting Ready for Algebra.*

To order go to:
www.sdcoe.net/compact/pubs.asp
Fax orders to (858)292-3772

Hot Workshops & Student Events

Elementary Math Field Day
Grades 4 and 5:
May 18, 2006
Location: San Diego Jewish Academy
Call Sandra Sincek at (858)292-3806

24 Challenge
May 23, 2006
Location: Marina Village
Call Carole Manderson at (619)444-5573

Fantasy Baseball
June 9, 2006
Location: Marina Village
Call Jameson Rienick at (858)569-5302

Middle School Math Field Day
Grades 6 – 8:
May 20, 2006
Location: Francis Parker Middle School
Call Christi Cole at (858)569-7900x207

Math Language That Works
A 3-hour professional development that explores academic content vocabulary.
May 9, 2006
Location: Escondido Union High School District Board Room
Call Cathy Williams at (858)569-5411

Mathematics Publisher Professional Development

AB466/SB472

McDougal Littell, Structure and Method, Algebra 1
May 22-26, 2006
Location: Oceanside Unified

Harcourt, K-6
June 19-23, 2006
Location: SDCOE

Houghton Mifflin, K-6
July 10-14, 2006
Location: SCREC

Prentice Hall, Pre-Algebra/Algebra 1
July 31-August 4, 2006
Location: SCREC

McDougal Littell, Concepts and Skills, Course 1/Algebra 1
August 7-11, 2006
Location: SCREC

McGraw Hill, K-6
August 14-18, 2006
Location: SDCOE

For more information, contact Jameson Rienick at (858)569-5302

An Opportunity Not to Be Missed!

The California Math Science Partnership (CaMSP) **Getting Ready for Algebra Summer Institute 2006** will take place on August 21, 22 and 23 at the San Diego County Office of Education. The institute will include presentations by Nicholas Branca, Professor Emeritus, SDSU and Nadine Bezuk and Rafaela Santa Cruz, Professors, SDSU, as well as members of the SDCOE mathematics team. A key feature of the institute will be the roll-out of *Getting Ready for Algebra Online*, including key concepts addressed in the resource, grade-level lessons, intervention lessons, connections to other mathematics concepts, correlations to textbooks and state standards, and additional strategies for intervention. Anyone from one of the consortium districts may attend the institute—you do not need to have attended last year's institute or the subsequent mini-courses. If you have questions about your eligibility, contact Leslie Hays at lhays@sdcoe.net or (858) 292-3758. If you are a district that was not served by the 2005-2006 CaMSP project, you may inquire about participating in the 2006-2007 project year also by calling Leslie Hays.