The California State University / University of California
MDTP
Mathematics Diagnostic Testing Project

NEWSLETTER
MAY 2005

MDTP Begins Creation of Written Response Materials for Prealgebra Readiness

With the overwhelmingly positive reception of its new Prealgebra Readiness (PR) test still fresh, MDTP's Written Response Committee recently began the creation of written response materials for that level. Since our new users of the PR are more likely to be middle school teachers who may be unacquainted with MDTP, its materials and services, we would like this article to introduce them—and any others who could use a refresher course—to the purpose and value of the written response materials.

MDTP's intent is to provide a written response item for each topic on every level of our multiple-choice tests. The multiple-choice tests provide teachers with a diagnostic picture of the class performance of topics on each test. Although the carefully chosen distractors provide teachers with a place to begin remediation, the thinking behind a student's response cannot be accurately determined by distractor choice alone. On the other hand, written response items provide the teacher with a more accurate and detailed view of each individual student's conceptual grasp of the topic.

For each written response item there is an essence statement, which pinpoints for the instructor the conceptual and procedural mathematics targeted by the item, and a specific rubric for scoring student work for that particular item. For the entire set of items there is a general rubric that defines the four-point scoring system we use. All materials are available in a binder that is provided free to California teachers on request. There is also a process by which teachers may continue receiving newly developed items as they are created.

Use of written response materials as an integral part of the mathematics instruction in a classroom affords students the opportunity to deepen their mathematical knowledge by communicating their understanding of concepts and procedures at their own level of mathematical notation and English language fluency. Even when English is not the student's primary language there are ways to encourage students to demonstrate their mathematics achievement in formats other than multiple-choice tests. This is one of those ways.

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A major benefit of using written response materials is that it promotes examination of student work by groups of teachers who are collaborating for a particular learning outcome. When two teachers decide upon an appropriate item, administer it, and collaboratively score both their own and each other's student work, there are nuances of the shared mathematics that emerge and both students as well as teachers grow.

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MDTP Relations with Schools Office
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Los Angeles, CA 90095-1555

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Suggestions to Support Efficient Scoring

California secondary school teachers may order MDTP materials and scoring services at any time during the calendar year. The California Academic Partnership Program (CAPP) provides support that enables MDTP to provide its precollegiate testing materials and scoring services (for multiple-choice tests) without charge to California teachers and schools. Please contact the regional site office in your area for more information or to request materials. Our web site includes an on-line order form as well as a PDF order form.

Before returning answer sheets to your regional site for scoring, take a few minutes to be sure they are properly assembled so that the forms can be processed quickly and accurately. The forms currently being used by sites include a Class Information Sheet (CIS), ScanTron Form No F-13424-UCB (Brown), and a Student Answer Sheet, ScanTron form number F-13423-UCB (Green). Teachers should submit a separate set of forms for each class. Each set should have a Class Information Sheet on top of the Student Answer Sheets. Do not combine all of the classes into one set. At the top of the CIS form, print the school name, address (including zip code), district name, phone number, and number of answer sheets. Carefully bubble the teacher name, test type and other information into the grids using a No. 2 pencil. This will ensure that the reports are sent to you at the correct location.

To facilitate scoring for your students and others, please quickly go through your student answer sheets and remove any blank forms and scratch paper. Be sure that students have bubbled in their names and erase stray marks that may interfere with scoring. Do not use staples, rubber bands, or other items that may mark or crease the forms since that can interfere with scoring. MDTP student answer sheets have notched corners. The CIS forms are not notched so that several class sets can be stacked together and MDTP staff can easily separate class sets without the need for paperclips or other devices. If you have any questions about what to do, please call your regional site office.

Written Response *continued from page 1*

MDTP willingly provides, at no charge, through its site directors and its Relations with Schools office, knowledgeable presenters who can work with departments to help strengthen their understanding of how to use its written response materials effectively. Such presentations provide professional development experiences where teachers discuss good uses of the materials and the implications of that use for their own curricular objectives. In addition, understanding the separate functions of both the general and specific rubrics—as well as the essence statement for scoring student work—complete a well-rounded and stimulating session for most mathematics teachers.

As a result of our recent start it is hoped that a small number of PR written response items will be ready for field-testing by next fall. We will try to have our first PR items ready for distribution as soon thereafter as possible. If you are willing to help us by field-testing a written response item, please contact the Relations with Schools Coordinator at (310) 206-8360 or e-mail bgwells@math.ucla.edu.

From an MDTP User

Olive Grove Charter School has been using the Mathematics Diagnostic Testing Project's Readiness Tests from the Cal Poly site for the past four years. These readiness tests have been found to be very useful not only in the math placement of our students but also in our teaching methods. We use these tests prior to a student enrolling in a course (e.g., Algebra 1) to see which areas the student may need to work on throughout the year to get ready for that course (e.g., fractions, exponents, graphing). At the end of the course, the student is given the same test to check over the progress made throughout the year. We are able to easily compare both sets of data with the printouts sent from Cal Poly. Teachers are able to analyze which areas the student has improved in. Teachers are also able to reflect the teaching methods being used to better meet all students' math needs.

Because the format of the MDTP tests is so user-friendly, all of our teachers feel very confident in using them. A teacher administers the test to a student (45 minutes) and collects the answer sheet. Once a week, the answer sheets are sent to Cal Poly for analysis. Within two weeks, we are sent the results with an individualized report on each student. These reports are really beneficial to the teacher, student and the parents. Not only do the reports have the overall score of the test, but they also include the following:

- scores within each topic area
- mastery level in comparison with the student's level
- area(s) needed for review
- area(s) needed for substantial review

All of us here at Olive Grove Charter School are very appreciative of the opportunity to participate in this program offered through Cal Poly, San Luis Obispo.

—Dawna Sivertson

On-line MDTP Tests

MDTP's second on-line test, a Calculus Readiness Test, is now available on its web-site. Its content is similar to other MDTP calculus readiness tests, but none of its questions appear on other currently available MDTP tests. Students may take the test on-line to get an indication of how well prepared they are to begin a calculus course or to take one of the MDTP calculus readiness tests as a placement test at a California university or college. High school seniors entering the University of California are much more likely to take a placement test at the calculus readiness level than at the mathematical analysis readiness level. More importantly, students should use the diagnostic report provided to guide their review for a college level calculus course.

Each MDTP on-line readiness diagnostic test is designed for use by individual students at their discretion. We recommend that students take the test under test-like conditions to get more useful information. When a student is finished taking a test, the student immediately receives a report indicating not only total and topic scores but also the correct answer and the answer selected for each question. At that time, the student also can easily access questions for review. A printer friendly version of the scoring report is available.

The first MDTP on-line test, a Mathematical Analysis Readiness Test, was revised to a 40 question test in July 2004. The test will be of particular interest to students who have completed the minimum CSU/UC math requirement of Algebra 2. High school seniors entering the California State University are much more likely to take a placement test at the mathematical analysis readiness level than at the calculus readiness level. Some CSU campuses recommend that entering students take the on-line MR test to give them an indication of how well prepared they are for ELM and other tests and—more importantly—to guide their review for those tests and courses.

Visit http://mdtp.ucsd.edu

If you are interested in MDTP materials and services, then a visit to our web-site may pleasantly surprise you. The layout has been changed to simplify access to its valuable information. An improved navigation bar now appears on the left side of each page. That navigation bar has a hierarchical structure that facilitates moving directly from one area of interest to another. Additions to the web-site include a News and Events page that reports the latest information about testing materials and MDTP user conferences. In addition to the on-line order form, there is now a PDF order form online if you prefer to order by mail, fax, or phone. The PDF order form includes a list of available tests and a list of regional site contact information. This provides an easy way to print those lists. The process of updating the MDTP web-site is ongoing. We welcome your suggestions and comments.

Upcoming Users' Conferences

Teaching is often described as a lonely profession. The picture of the lone teacher stuck inside an empty classroom correcting a stack of papers often comes to mind when this is said. To a degree, there is some truth in this. Many of us chose the contemplative life and readily acknowledge that a lot of our work is done alone. However, an invigorating exchange of ideas among people who are facing the same challenges can provide enlightened perspectives and a renewal of energy. The MDTP Regional Users' Conferences are an example of the kind of professional engagement that we hope produce such results. We know there are many who have never attended a Users' Conference. If this describes you, why not consider attending one of these events this year, and consider bringing a colleague along?

CSU San Bernardino: May 14, 2005
Preparing for College Mathematics
8:30 a.m.-1:30 p.m.
Contact: Tiffany Talavera
(909) 880-7670 or mdtp@csusb.edu

UC Davis: **November 16, 2005**
4:00-7:30 p.m.
Contact: Trish Ramos (530) 752-2105
or plramos@ucdavis.edu

UC Davis Site Department Name Change

The campus department that houses the MDTP at UC Davis has changed its name from Student Special Services to Advising Services. All other contact information for the UC Davis site remains unchanged.

A Call for Papers…

In this issue there is an article from a user describing how MDTP multiple-choice tests are used in a particular school setting. Over the years we have heard about many varied and inventive ways these materials are being used to increase the effectiveness of mathematics instruction.

As the lead story in this issue attests, MDTP also produces written response materials. We know that many California teachers are still not aware of the written response materials and think of MDTP only as the producers of the multiple-choice tests. In the last issue of this newsletter we asked readers to respond to a survey that attempted to discover to what extent these materials are being used.

The responses showed us that there are some teachers who are using these materials at all levels of the courses they teach. We also know that teachers use materials in a number of different ways.

As a way of encouraging other teachers to try these materials, we would like to feature in a future MDTP newsletter some of the ways that written response materials have been used by teachers. These materials are designed to be used in the classroom to increase students' conceptual and procedural understanding as well as their ability to communicate said understanding.

If you use written response materials and would like to share your experience with other teachers, please write an article for the newsletter describing your use and concomitant outcomes. If you are unfamiliar with these materials, we encourage you to contact your site director to ask for a demonstration for your department so that your students won't miss yet another wonderful opportunity to grow mathematically.

CSU/UC MDTP Mathematics Diagnostic Testing Project

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Produced by the MDTP Relations with Schools Office
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Relations with Schools Coordinator: Barbara Griggs Wells

See the MDTP Website: http://mdtp.ucsd.edu

In addition, MDTP is collecting student responses to each written response item. When presenting written response materials at workshops, it is helpful to have actual exemplars of student work to show teachers how to apply the general and specific scoring rubrics. If you use written response materials (and do not want to write an article), we would appreciate your sending us copies of student papers for any of our items with your scores. Sending a small representative sample of papers at each scoring level would be most helpful. It is useful for us to know the course. No information identifying the student, the school, or the teacher will be included in any presentations.

Both possible articles and exemplars of student work may be submitted to: Barbara G. Wells, MDTP Relations with Schools Coordinator, UCLA Department of Mathematics, 2353 MSB, Box 951555, Los Angeles, CA 90095-1555 or email: bgwells@math.ucla.edu.

Tom's Teasers *as in Tom Walters, former UCLA Site Director*

1. How many possible scores is it possible to make in three throws of two dice? How many possible scores is it possible to make with *m* throws of *n* dice?

2. Using math symbols to modify four fours it is possible to make expressions for all numbers from 0 to 100 and beyond. Example 4/4 + 4*4 =17. Arrange four fours to equal these progressively more difficult numbers: 13, 19, 33. Big hint: a 4 with a dot over it is 0.444444. . . .

Answers in next issue!

Answers to Last Issue's Teasers

1. Three math teachers play a game with the understanding that the loser is to double the money of the other two at the end of each game. After three games, each has lost just once, and each has $24. How much did each have to start?
12, 21, and 39 dollars

2. A young algebra teacher is twice as old as her favorite student was when she was as old as the student is now. She is 24. How old is the student?
Clearly, the student is 18.

3. Fermat requires us to provide the remainder when 5^999,999 is divided by 7.
That would be 6.

MDTP TESTS AVAILABLE

Spanish versions for all MDTP tests are available at the AR, EA, GR and SR levels, and for MR45A92 and PC40 test versions.

Test Level/ Test Name	Description	Calculator Prohibited	Calculator Optional	Calculator Required
PR Prealgebra Readiness	Assesses some concepts needed for success in a course immediately preceding a first-year course in algebra and subsequent success in that first-year algebra course. This test should be given near the beginning of a course immediately preceding a first year algebra course.	PR40A04 0814004		
AR Algebra Readiness	Tests readiness for success in a first course in algebra. The calculator-prohibited versions require more arithmetic facility.	AR50/90 0715090 AR45A00 0714500		AR50X92 0775092
EA Elementary Algebra Diagnostic	Tests readiness for success in a second-year algebra course. Appropriate when the second course follows immediately after the first-year algebra course and students have not been exposed to a year of geometry.		EA50A90 0315090	*Scientific* EA45X91 0374591
GR Geometry Readiness	Tests readiness for a geometry course. Includes some informal geometry students should have encountered prior to and during algebra. Would most likely be given near the end of Algebra I or near the beginning of a geometry course.		GR45A93 0414593	GR45X94 0474594
SR Second-Year Algebra Readiness	Tests readiness for success in a second-year algebra course that follows a geometry course. Measures first-year algebra and geometry topics critical for success in second-year algebra. Appropriate near the end of geometry or near the beginning of second-year algebra.		SR45A93 0314593	*Scientific* SR45X94 0374594
IS Integrated Second Year Readiness	Tests readiness for success in the second year of an integrated algebra curriculum. This test was based on the common content of two of the integrated curricula in use in California.		IS45A00 0414500	
IT Integrated Third Year Readiness	Tests readiness for success in the third year of an integrated algebra curriculum. This test was based on the common content of two of the integrated curricula in use in California.		IT45A00 0314500	
MR Mathematical Analysis Readiness	Assumes two years of algebra and a year of geometry in preparation for a precalculus course. It has significant geometry content. It would ordinarily be given near the end of the prerequisite courses or near the beginning of the next course, typically trigonometry, precalculus, or mathematical analysis.		MR45A92 0214592	*Scientific* MR45X94 0274594
CR/PC Calculus Readiness	Tests topics needed for success in a first calculus course. The CR versions contain more emphasis on geometry. Suggested times are 60 minute for 40 question tests and 90 minutes for tests with 55 or 60 questions. PC versions are still available on a limited basis. PC40 versions are available in Spanish.		CR40A97 0114097 CR55A97 0115597	*Scientific* CR40X96 0174098 CR55X96 0175596
BC Beginning Calculus	Designed for students in a first calculus course requiring graphing calculators. Students need to decide when to use a graphing calculator. The test can help identify strengths and weaknesses of students' mathematical skills and abilities and can provide information about students' facility with graphing calculators. Suggested time is 60 minutes.			*Graphing* BC30X97 0173097

MDTP tests were developed to provide students and teachers with diagnostic information. This information can help students identify specific areas where additional study or review is needed. It can help teachers identify topics and skills that need more attention in courses. MDTP tests are diagnostic, not comprehensive; they should not be used as final exams or as the only placement measure. MDTP provides a notebook of written response materials to supplement most of its tests.

MDTP Regional Sites

Berkeley Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Sonoma, and Stanislaus counties.	Emiliano Gomez Judie Welch mdtp@math.berkeley.edu	(510) 642-0752 (510) 642-0846 Fax: (510) 642-6726
Chico Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, and Yuba counties.	Jack Ladwig mdtp@csuchico.edu	(530) 898-6367
Davis Alpine, Amador, Calaveras, El Dorado, Placer, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties.	Phil Knox Trish Ramos plramos@ucdavis.edu	(530) 752-2021 (530) 752-2015 Fax: (530) 752-7706
Fresno Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, southern San Benito, Tulare, and Tuolumne counties.	Peter Tannenbaum petert@csufresno.edu	(559) 278-4029 (559) 278-2992
Fullerton Orange County, and schools in Los Angeles and Riverside counties near Fullerton.	David Pagni Christine Brackett mdtp@fullerton.edu	(714) 278-2671 (714) 278-2691 Fax: (714) 278-3972
Los Angeles Los Angeles and Ventura counties except for schools near Fullerton.	Barbara G. Wells Jade Chien **Shipping and Scoring** John Hoover mdtp@ucla.edu	(310) 206-8360 (310) 825-8030 Fax: (310) 825-8914 (310) 825-2495 Fax: (310) 206-7261
San Bernardino Schools in and northwest of the city of Riverside in Riverside County and San Bernardino County.	John Sarli Tiffany Talavera mdtp@csusb.edu	(909) 880-5374 (909) 880-7670 Fax: (909) 880-7119
San Diego Imperial, San Diego, and Riverside counties, except for schools near Fullerton or in or northwest of the city of Riverside in Riverside County.	Bruce Arnold Jean Forsythe mdtpsandiego@ucsd.edu	(858) 534-3298 (858) 534-3373 Fax: (858) 534-1011
San Luis Obispo San Luis Obispo, Santa Barbara, and southern Monterey counties.	Steve Agronsky Dale Wilbur dwilbur@calpoly.edu	(805) 756-1683 (805) 756-2206 Fax: (805) 756-6537
Santa Cruz Northern Monterey, northern San Benito, Santa Clara, and Santa Cruz counties.	Bruce Cooperstein Karen Quinn klquinn@ucsc.edu	(831) 459-2150 (831) 459-2400 Fax: (831) 459-3260