



CSU/UC MDTP

Mathematics Diagnostic Testing Project

NEWSLETTER

Ordering MDTP Materials for Spring Testing

Spring MDTP Testing

Each spring there is a surge in MDTP testing activity toward the end of the school year. Since spring is just beginning, this is a good time to recall when and how to order materials and to remember that there may be some brief delays in scoring tests during our busiest periods.

When to Test

Teachers should determine the appropriate time to test their classes. In the spring, testing ideally occurs late enough in the term that all the tested material has been covered in the course. On the other hand, testing also occurs early enough that there is time for the teacher to help the class address any weaknesses that are revealed by the results. Other ways teachers can use spring tests include helping structure review activities for students over the summer and looking back on courses to see what worked well and what improvements are needed when the same course is taught next year.

Some schools and districts use MDTP spring test results as one component of their placement process. MDTP recognizes this use but cautions that it may compromise the quality of the diagnostic reports. A test may be given earlier than it should be in order to facilitate enrollment planning. The students may try to get the highest possible score instead of the truest score, which is preferred for accurate formative assessment. In addition, MDTP insists that its tests are never used to direct students away from college preparatory programs; students should be counseled into courses where they have enough mathematical background to learn the material well, but it is quite damaging to deny students access to programs that

will lead to developing enough mathematical background to succeed in college. Finally, MDTP test results should never be the sole factor in determining a student's enrollment in a course.

What to Order

Test Booklets

Any teacher may request review copies of test booklets of tests that he or she is considering using. MDTP recommends that teachers make sure the test they give is appropriate for their students.

If a teacher is administering MDTP tests online on Daskala, the teacher will not need copies of test booklets for his or her students. All other MDTP test administrations must be from MDTP test booklets.

Teachers and schools have been very cooperative in reusing MDTP test booklets; this has helped keep MDTP expenses low and enabled MDTP to fill all requests for its materials. If a teacher is teaching several sections of the same class, only as many tests as needed for the largest section should be ordered. If the same test was administered in the past and the booklets are still available, teachers should reuse those booklets and only order as many copies as needed to have enough for the largest section being given that test.

Test booklets should be stored in a secure location and should never be given to students to take home or to use as study materials.

Answer Sheets

Unless the tests will be scored directly on Daskala, Datawise, or Edusoft, each student must complete an MDTP Answer Sheet that the teacher submits to MDTP for scoring. Teachers or schools should order enough answer sheets to provide one to each student, but they should not order excessive quantities.

Class Information Sheets

An MDTP Class Information Sheet (CIS) must be submitted to MDTP with the answer sheets for each class. The CIS scantron forms must be ordered from MDTP. Teachers who wish to receive aggregated reports for multiple sections given the same test may request them in addition to the individual class test results reports. Grouping multiple sections under a single CIS should be strictly avoided, since

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CSU
California State University

UC
University of California

CAPP
California Academic
Partnership Program

DASKALA REACTIONS

In the fall MDTP began offering its tests to California teachers in a new format. The tests can now be given online to students in classes. The full MDTP test results reports and more information are immediately available to the teachers online. (A detailed description of MDTP's online services, which are available on the Daskala platform, was in the first article of MDTP's Fall 2009 newsletter and is available on the MDTP web site (<http://mdtp.ucsd.edu>) by selecting Information for California K-12 Users: Computer Delivered Tests and Reports - Daskala from the menu in the left pane.) A PDF description of some of the features of the online test results report, including instructions for how to access them, will be included with instructions sent to teachers when their classes are set up.

MDTP held several focus groups throughout the state to receive feedback from teachers about the new online format. This article reports some of the teachers' reactions to the online tests and reports.

Tests

Several teachers reported that students tend to be more engaged with the online tests than with paper tests. Some said their students spent more time taking the tests than they had taking paper tests and that their students tended to return to unanswered questions. (This is easy to do since the screen indicates by number those questions that have and have not been answered.)

Some teachers also reported that seeing only one question at a time appeared to help some students focus on only that question.

Teachers thought that students were more likely to not answer questions presented electronically. (It was also noted that students couldn't answer the wrong question and could not accidentally mark two answers to the same question.)

Several teachers reported that class time was saved by students having a quick login procedure instead of filling out information and bubbling in their names on answer sheets. One teacher was enthusiastic about the time she saved by not having to handle all the answer sheets and prepare them for scoring.

We learned that it is important to make sure that the computers are properly set-up before testing begins. The setup is fairly straightforward in most cases, but it is best if IT personnel carry out the process and check each computer that will be used by students.

A major issue reported by many teachers was that it may be easier for students to copy other students' answers since other students' computer screens may be visible. (This means that tests must be carefully proctored and reemphasizes the importance of teachers explaining that on diagnostic tests accurate indications of what students know are more important than high scores. MDTP is working

with Daskala to consider possible modifications to the online test screens to reduce opportunities for cheating.)

One teacher's overall comment about the online test administration process was, "As long as the computers work, it's great."

Reports

The online reports, which are available as soon as students submit their tests, have several added features that make them easier to use in support of formative assessment and data-driven decisions.

One teacher was amazed at how much was there. She found the online reports and the new features, "interesting and useful, not overwhelming."

Another teacher said the ability to display test questions by drilling down from data that made the question interesting was "awesome".

Some teachers appreciated the ability to easily order the students by their scores from high to low or from low to high.

The online reports include the average amount of time each question was on students' screens and the amount of time each question was displayed to each student. The data may indicate that some students guessed on some items.

One teacher commented that the electronic reports are easier to use, which meant they were more likely to be used. Another teacher found the reports "very easy to use, user friendly." A third teacher cautioned that some professional development or workshop activity was needed to learn about some of the report's features and to see how to use the reports wisely. Everyone seemed to agree that as soon as they saw how to use the reports, access to desired information was quite easy.

One teacher said that it was "easier to conduct a meeting with other teachers than using only paper."

A teacher told us that she liked looking at distractors with other teachers and suggested this was much more difficult to do—if even possible—with paper reports.

All the teachers we heard from found that projecting the online reports to an overhead screen facilitated group discussions of the test results and led to conversations about how to use them to strengthen students' mathematical understanding. (Department chairs are given access to all of their school's results; teachers receive only their own classes' results.)

One teacher thought the online reports would be a "very helpful professional development tool." Another summed up her reaction to the online reports: "I was surprised at how valuable it was—only after I used it. Before that, I could not imagine it would be worth it." A third described the online reports as "invaluable". A mathematics curriculum specialist noted that MDTP results lead to data-driven conversations.

Status of New AR and CR Tests

This summer, the MDTP workgroup hopes to finish the development of a new Algebra Readiness Test that began five years ago. It will analyze the results of this year's field test of the AR45D09 test. If the data show a need for only minor changes, then a new Algebra Readiness Test will be released in the fall. The new test will include many new items and reflect current ways of teaching and assessing mathematics. A major effort has been made to include more conceptual and less formulaic data analysis questions concerning the interpretation and representation of data. The timing of the actual release will depend on several factors including: preparing a galley proof of the exam, proofing the exam, printing the exam, and distributing the printed exams to our sites for further distribution to teachers. We anticipate that the earliest tests would be available to distribute to teachers would be late August or early September, but a later release may be necessary if any of the processes mentioned takes longer than expected. Please make a note to check MDTP's web site or with your regional MDTP site to see if the new Algebra Readiness test is available for testing your students at the beginning of fall 2010 first year Algebra courses.

The workgroup will continue the development of a new Calculus Readiness (CR) Test. This year we field-tested the CR45D09 test that included several new items addressing more trigonometry content. The workgroup will analyze the results of the field test this summer and develop a revised test for field-testing next year. We anticipate one more year of field-testing the following year to finalize the new CR test. If you are interested in field-testing the new Calculus Readiness test next fall, please contact your regional site director for more information. When you participate in field-testing multiple-choice tests, the responses provided by your students are analyzed by our workgroup and this analysis drives the next stage of test development. We greatly appreciate the cooperation of teachers who administer field tests for us.

As always, thank you.

Materials in Spanish

MDTP currently provides most of its readiness tests in Spanish as well as English. Spanish versions are available for the Prealgebra (PR40A04S), Algebra (AR45A00S and AR50/90S), Geometry (GR45A06S), and Second-Year Algebra (SR45A06S) Readiness tests and the Elementary Algebra Diagnostic test (EA50A90S). These Spanish versions can help teachers evaluate the mathematical background of some students who are not yet proficient English speakers. Teachers can request these Spanish test versions using the online order form available at <http://mdtp.ucsd.edu>. Teachers can mix both English and Spanish test versions of the same test form within a single class, if desired. For example, a teacher could administer both the PR40A04 (English) and the PR40A04S (Spanish) Prealgebra Readiness Tests to his or her class.

We also can provide student letters in Spanish. In some schools, the availability of these letters in Spanish gives teachers an improved ability to communicate with some of their students and, possibly more importantly, with these students' parents. Teachers can include a request for student letters in Spanish when they submit their answer sheets for scoring.

Spring Orders

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teachers would lose the ability to analyze the results of each of their sections and because teachers can request aggregated reports that combine multiple sections.

How to Order

The best way to order materials is to use MDTP's online order form. If that is not convenient, there is a PDF order form that can be printed and mailed to a regional MDTP site. Most sites will also accept telephone orders and faxed orders, but delays may occur in placing and filling these orders. Links for the online form and PDF are available on the MDTP web site or by selecting Information for California K-12 Users: Order Forms from the navigation bar on the left side of MDTP web pages.

When to Order

While MDTP tries to fill all orders as quickly as possible, MDTP strongly recommends that orders be placed at least two weeks prior to the expected test date. This is especially important for testing from April through June and from mid-August through mid-October.

Test Results

Except for tests scored by Daskala, Datawise, or Edusoft using the MDTP approved screens and forms, all MDTP tests administered to California secondary school students must be scored by MDTP. Teachers or schools must return class sets of answer sheets with a class information sheet for each class to a regional MDTP site for scoring. The MDTP site will usually be able to score the tests and send out test result reports to teachers within two working days of receipt of the materials. During very busy periods, it may take some sites a little longer.

Daskala, Datawise, and Edusoft send MDTP data so that MDTP can provide teachers with printed test results reports in addition to the online test results that are available immediately after scoring. [Note, the MR45A08 test form is not available for use with Edusoft. Since these tests cannot be scored on Edusoft, students who take the MR45A08 test must record their answers on MDTP Answer Sheets that must be sent to MDTP for scoring. MR45A92 is still available for use with Edusoft.]

Schools can request comma or tab separated text files from MDTP that can be used to upload student data to other information management systems. MDTP text files are compatible with most data record systems.

AVAILABLE MDTP DIAGNOSTIC TESTS

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 algebra course and subsequent success in that first-year algebra course. This test is often given near the beginning of a course immediately preceding a first-year algebra course. Spanish version available.	PR40A04 0814004		
AR Algebra Readiness	Assesses some concepts needed for success in a first course in algebra. Calculator prohibited and calculator required versions available. 45 question and 50 question versions available. Spanish versions available.	AR50/90 0715090 AR45A00 0714500		AR50X92 0775092
EA Elementary Algebra Diagnostic	Assesses some concepts needed for success in a second course in algebra. Appropriate when the second course follows immediately after a first-year algebra course and students have not studied a year of geometry. Spanish versions available.		EA50A90 0315090	<i>Scientific</i> EA45X91 0374591
GR Geometry Readiness	Assesses some concepts needed for success in geometry after completing Algebra I or II. Includes some informal geometry students should have encountered prior to and during algebra. Spanish versions available. [GR45A93 available while in stock.]		GR45A93 0414593 GR45A06 0414506	GR45X94 0474594
SR Second Year Algebra Readiness	Assesses some concepts needed from first-year algebra and geometry for success in intermediate algebra following a course in geometry. Spanish versions available. [SR45A93 available while in stock.]		SR45A93 0314593 SR45A06 0314506	<i>Scientific</i> SR45X94 0374594
IS Integrated Second Year Readiness	Assesses some concepts needed for success in the second year of an integrated mathematics 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	Assesses some concepts needed for success in the third year of an integrated mathematics 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	Assesses some concepts needed for success in a course following two algebra courses and a geometry course. This course is often called trigonometry, precalculus, or mathematical analysis. [MR45A92 available while in stock.]		MR45A92 0214592 MR45A08 0214508	<i>Scientific</i> MR45X94 0274594
CR Calculus Readiness	Assesses some concepts needed for success in a first calculus course. 40 question and 55 question versions available, with suggested times of approximately 60 and 90 minutes respectively.		CR40A97 0114097 CR55A97 0115597	<i>Scientific</i> CR40X96 0174096 CR55X96 0175596
BC Beginning Calculus Readiness	Assesses some concepts and facility with graphing calculators needed for success in a first calculus course requiring graphing calculators. Some questions require the use of a graphing calculator.			<i>Graphing</i> BC30X97 0173097

*Calculators are not recommended on GR45A06, SR45A06, and MR45A08

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

MDTP REGIONAL SITE INFORMATION

<p>Berkeley Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Sonoma, and Stanislaus counties.</p>	<p>UC Berkeley Site Director: Emiliano Gomez Phone: (510) 642-0752 Asst: Jacqueline Bonds (510) 642-0846 Fax: (510) 642-8204 mdtp@math.berkeley.edu</p>
<p>Chico Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, and Yuba counties.</p>	<p>CSU Chico Site Director: Jack Ladwig Phone: (530) 898-6367 Asst: Jessica Voisine (530) 898-4103 Fax: (530) 898-3097 mdtp@csuchico.edu</p>
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PROBLEM CORNER

We received three solutions (including one from a student) to "The Scoring Title Problem" in the Problem Corner of the Fall 2009 newsletter. The winning entry was from Alisa Byrne who teaches at Fillmore High School in Fillmore. Alisa will receive a grant from MDTP to purchase Daskala for one of her classes for next year (up to a \$40 value)!

Alisa used an equations/inequalities approach to solve the problem. If Jordan scores x points in his last game, then he has an average of $\frac{2313+x}{82}$ points per game. Similarly, if

Shaq scores y points in his last game, then his average is $\frac{1666+y}{60}$ points per game. Consequently, Shaq wins

the scoring title whenever $\frac{1666+y}{60} > \frac{2313+x}{82}$, and Jordan

wins the scoring title whenever $\frac{1666+y}{60} < \frac{2313+x}{82}$. Solving

the equality $\frac{1666+y}{60} = \frac{2313+x}{82}$, we get $y = \frac{30}{41}x + \frac{1084}{41}$

(a linear graph). All lattice points (integer values of x and y) above the line (in the first quadrant) represent where Shaq wins, and all lattice points below the line (in the first

quadrant) represent where Jordan wins. For example, if Jordan didn't score any points in his last game ($x = 0$), then Shaq would need to score more than $\frac{1084}{41} \approx 26.44$ points (or at least 27 points) to win.

Another approach to solve this problem uses functions. Represent each player's average points per game for the whole season as a function of the points he scores in the final game, for Jordan $A = f(x) = \frac{2313+x}{82}$ and for Shaq

$A = g(y) = \frac{1666+y}{60}$. For any $k > \frac{2313}{82}$, the x values where

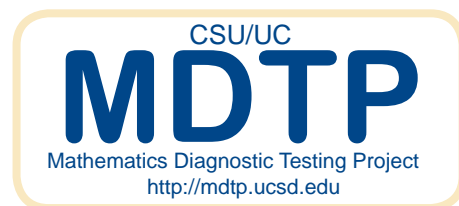
the graphs of f and g intersect the horizontal line $A=k$ are the numbers of points Jordan and Shaq need to score in the last game to obtain a season average of k . For example, to obtain a season average of 28.4 points per game Jordan would need to score 16 points and Shaq would need to score 38 points.

It happened that Shaq scored 39 points in his last game and Jordan scored 44 points. Therefore, Jordan won the scoring title since $\frac{1666+39}{60} (\approx 28.42) < \frac{2313+44}{82} (\approx 28.74)$.

The Scoring Title Problem (From Fall 2009 Newsletter)

In April 1998, Michael Jordan and Shaquille (Shaq) O'Neal were vying for the National Basketball Association (NBA) season individual scoring title until the last game of the season. The scoring title is won by the player with the highest average number of points per game, calculated by dividing the total number of points by the number of games the player has played. Before the last game, Jordan had scored 2313 points in 81 games and Shaq had scored 1666 points in 59 games.

Given the above information, with what numbers of points in their final games does Shaquille (Shaq) O'Neal win the scoring title over Michael Jordan? (With permission from the authors of Mathematics for High School Teachers: An Advanced Perspective. Usiskin, Peressini, Marchisotto, and Stanley. Prentice Hall. 2003)



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