

CSU/UC
MATHEMATICS DIAGNOSTIC TESTING PROJECT

CONSEQUENTIAL-RELATED VALIDITY EVIDENCE FOR MDTP TESTS

Data submitted in response to California Community
Colleges Assessment Standards (March 2001, 4th edition)
for renewal of placement test instruments.
November 2004 (revised January 2005)

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OVERVIEW

In this report MDTP is submitting consequential-related validity evidence in support of its request for renewal of approved status by the California Community Colleges Chancellor's Office. MDTP tests are currently used for placement in mathematics classes by approximately 50 community colleges in California.

Data was gathered from 13 colleges in 11 districts, representing the diversity of the community college system state-wide. The evidence shows that when used for placement in the courses for which the tests were written, the CCC validation thresholds of either an average over all colleges of 75% favorable responses or a minimum of 6 colleges with at least 75% favorable responses was met.

ACKNOWLEDGEMENTS

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STUDY METHODOLOGY

BRIEF DESCRIPTION OF THE STUDY

The purpose of this study is to validate the use of the MDTP test forms listed on page 6 as part of the California Community College matriculation process. Specifically, the goal is to provide consequential-related validity evidence for the Algebra Readiness, Elementary Algebra, Intermediate Algebra, and Precalculus placement tests consistent with the CCC standards for renewal. The tests were initially approved in 1992, and approval was renewed in 1999. They continue to be available in Braille and large text versions.

Colleges currently using these examinations were invited to participate in this study and asked to provide information on placement test scores and class rosters for certain courses. In order to assess consequential-related validity, faculty administered a short in-class questionnaire to students addressing both method of placement and “fit” in the course. Faculty also rated each student on the degree to which they were prepared for the course material. Examples of the student questionnaire, directions to instructors for completion of the preparedness ratings, and the mathematical preparedness-rating roster are included in the attachments section of this report.

Only consequential-related evidence is included in this report since MDTP was told by the Educational Testing and Evaluation consultants to the Chancellor’s Office and the Assessment Specialist of the Matriculation Assessment Workgroup that it did not need to submit criterion-related evidence. Copies of the tests are being submitted with this report. Since the tests have not changed, no additional content-related descriptions are provided.

Below is a brief overview of the data elements provided by the colleges and the content of the survey instruments utilized in the study.

Class rosters:

- Course title
- Course number
- Course section
- Instructor’s name
- Students’ names
- Students’ identification numbers

The class rosters were those finalized by the colleges approximately two weeks after the start of the semester. Given the volume of data, adjustments to these rosters were not attempted.

Placement test results:

- Student name
- Student identification number
- MDTP test taken (identified by MDTP name, e.g. AR50/86)
- Date test taken
- Test score (total)

Placement test data was collected from colleges for students who took Algebra Readiness, Elementary Algebra, Intermediate Algebra, or Precalculus tests between April and September 2004¹. That is the time frame of placement testing for high school outreach and other entering community college students who enrolled in their first college mathematics class in Fall 2004.

Faculty ratings of student preparedness:

- Report date
- Five-point Likert scale rating for each student

The rosters for the preparedness ratings² were generated from the finalized class rosters described above. Rating guidelines were provided to each instructor, directing them to base their ratings on the student's demonstrated skills, understandings, and ability to comprehend course material as shown in homework, discussions, quizzes, tests, and other assignments. The scale was anchored so that a rating of "1" represented a student ill-prepared for the course who probably should have enrolled in a lower level course, and a rating of "5" represented a student exceptionally well-prepared for the course who possibly should have enrolled in a more advanced course. Instructors were asked to rate all students in their class whose names appeared on the rosters sent by the colleges; instructors were blind to the method of enrollment in the course, whether through completion of the prerequisite course or through advice based upon a placement test score. The ratings were to be completed and sent to MDTP by the sixth week of the semester.

¹ Data was collected at the district of the MDTP community college coordinator for students who took the placement tests between Spring 2003 and January 2004 for placement into Spring 2004 classes. (Analysis of these data for the district's two colleges is included in this report; the two colleges are treated as one for reasons explained under "College Selection".) This district agreed to serve as a pilot study to test and refine the study methodology and analysis.

² The survey instruments used for the faculty and student questionnaires were adapted from the exemplars included in "A Guide to Assist with the Design and Implementation of Investigations to Evaluate Tests in consideration of the CCC Assessment Standards (March, 2001, 4th Edition)", prepared by John Poggio and Douglas Glasnapp, and distributed at the CCC Matriculation Conference in March 2004.

Student questionnaires:

- Student name
- Student identification number
- Student social security number (if different from student ID)
- Self-report of method of placement in the course
- Self-report of course recommendation by the college
- Self-report of appropriateness of course placement
- Self-report of academic preparation for the course material
- Self-report of degree to which non-school related responsibilities affect performance in the course.

The student questionnaires were prepared by MDTP from the class rosters and sent to each instructor as a class set. Student names and ID numbers were pre-slugged and students only needed to bubble in their responses. Students who added a class after the roster had been submitted were given blank forms and had to bubble in their names and ID numbers, as well as their responses.

The method of placement (question 1) allowed students to select from eight options the factor(s) they believed were responsible for their course selection. Multiple responses were accepted.

Self-report of appropriateness of course placement (question 3) assessed students' attitudes toward the course in which they enrolled, without regard to the avenue by which that selection occurred. Responses to this question were forced-choice, and students could select from three alternatives, indicating that they "belong in this course", "should have enrolled in a lower (easier) course", or "should have enrolled in a higher (harder) course".

Self-report of academic preparation (question 4) allowed students to report on their level of academic preparation for the course material. A five-point Likert scale, similar to that used by the instructors, was provided for the responses. The anchors corresponded to "I am not prepared for this course" for a rating of "1", "I am adequately prepared for this course" for a rating of "3", and "I am fully prepared for this course" for a rating of "5".

COLLEGE SELECTION

An article in the MDTP Community College Coordinator's Fall 2003 newsletter invited all colleges using MDTP tests in matriculation to volunteer to participate in the validity study. Representatives of several colleges responded. In addition, a list of other potential participant colleges was compiled by examining usage figures for each of the MDTP tests and considering college location, urban vs. rural designation, and student diversity. This process resulted in a "target" list of 22 California community colleges. The mathematics department chair at each of the colleges on this list was contacted and thirteen of them agreed to participate in the study.

The colleges that provided data for this study are:

1. Cerritos College
2. Cosumnes River College
3. Cuesta College
4. Cuyamaca College
5. Diablo Valley College
6. Grossmont College
7. Los Angeles Pierce College
8. MiraCosta College
9. Napa Valley College
10. Orange Coast College
11. Santa Ana College
12. Santa Barbara City College
13. Santiago Canyon College

[Note added to generic report: The colleges are listed alphabetically above. The numbers to the left of the college name do not correspond to the random numbers used in the data tables.]

Since Santa Ana and Santiago Canyon Colleges are sister colleges in the Rancho Santiago Community College District (RSCCD), and share a common mathematics curriculum (same course names, course numbers, placement criteria, course outlines, textbooks, and final examinations), data from these two colleges were analyzed together as one group.

There are seven MDTP test forms³ currently on the Chancellor's "Approved Assessment Instruments, July 2004" list. Among the 50 California community colleges licensed in 2003-04 to use MDTP tests, the EA50C86 was used by the most colleges (43) and the PC60C86 was used by the fewest (7). Two tests are available at each level except for Elementary Algebra, and colleges generally have chosen to use just one of the two tests.

³ As in our 1999 validation report, we are combining data from AR50/86 and AR50/90 (currently approved as UC/CSU MDTP Algebra Readiness), from IA45C86 and IA45C91 (UC/CSU MDTP Intermediate Algebra), and from PC40C86 and PC60C86 (UC/CSU Pre-Calculus Readiness).

Thus the number of colleges providing data for each individual test ranges from four to thirteen. The following table gives the specifics:

MDTP Test	Test Form	Number of Colleges
Algebra Readiness	AR50/86	8
	AR50/90	5
Elementary Algebra	EA50C86	13
Intermediate Algebra	IA45C86	7
	IA45C91	6
Precalculus	PC40C86	9
	PC60C86	4

COURSE SELECTION

A careful study was made of the course descriptions in the catalogs of each of the colleges that agreed to participate in the study. Based on the catalog course descriptions, input from the MDTP community college coordinator who is familiar with course content at the colleges, rationales provided by the MDTP director and administrative assistant on the history and intent of the tests, and the information provided by the colleges on test use, MDTP identified courses whose content matched the intended use of MDTP tests. Courses that were preparatory or immediately subsequent to the intended use of the Algebra Readiness, Elementary Algebra, Intermediate Algebra, or Pre-calculus tests were also identified. Only courses meeting a preparatory, intended, or subsequent classification were included in the study. (A Course Classification Table listing the abbreviations used for these classifications is on page 10.) The MDTP community college coordinator verified course content and sequences during site visits to each participating college.

Altogether, the study sample consisted of over 1,000 course sections, with total enrollment of approximately 43,000 students. Data from the instructor or the students in a course section were needed in order to include that section in the course analysis. Furthermore, the analysis was limited to those students who had an MDTP test score in the range that qualified them for their course at their college. As a result, data were analyzed for approximately 5,000 students in each of the student self-assessment and instructor assessment consequential validity studies.

CONSEQUENTIAL-RELATED VALIDITY EVIDENCE

DATA ORGANIZATION

Consequential-related validity evidence:

- Students’ self-assessment of the appropriateness of their placement and of the adequacy of their preparation for the course
- Instructors’ assessment of the students’ preparation

Consequential-related validity evidence is presented for students whose MDTP test scores are within the range of scores used by their college to recommend placement into their course.⁴ Only those students are included in any counts reported in the tables. As each college determines its own cut scores for placement into mathematics courses, the range of scores for which student data is included at each test level varies among the colleges.

TEST– COURSE CLASSIFICATION CODE

Table heading shows the MDTP test for which evidence is being presented, as well as the three-letter code for course classification.

I. RESULTS BY COURSE:

College 1	Course(s) 2	Student Self-Assessment		Instructor
		Appropriate Placement 3	Adequate Preparation 4	Assessment of Student Preparation. 5
College 01				
College 02				
Total n and x 6				
Weighted mean proportions 7				

1. College: source colleges for the data presented.
2. Course(s): Course Number(s) of the course(s) from which data were collected.

⁴ This follows the method described in the section “Studies Addressing Consequential-Related Validity” of “A Guide to Assist with the Design and Implementation of Investigations to Evaluate Tests in consideration of the CCC Assessment Standards (March, 2001, 4th Edition)”.

3. Appropriate Placement: information from question 3 on the student questionnaire. Students were asked to complete the sentence “I now believe that...”
 1. I should have enrolled in a lower (easier) course – this course is too difficult
 2. I belong in this course
 3. I should have enrolled in a higher (harder) course – this course is too easyThe table gives the percent (%) of students who responded “I belong in this course”, the total number (n) of student responses to this question, and the number (x) of students who responded “I belong in this course”.
4. Adequate Preparation: information from question 4 on the student questionnaire. Students were asked “How do you feel about your academic preparation for this course?” and were asked to fill in bubbles 1 through 5, on the following scale:
 - 1: I am not prepared for this course
 - 3: I am adequately prepared for this course
 - 5: I am fully prepared for this courseThe table gives the percent (%) of students who chose 3, 4, or 5 (adequately to fully prepared), the total number (n) of student responses to this question, and the number (x) of students who chose responses 3, 4, or 5.
5. Instructor Assessment of Student Preparedness: information from the faculty ratings of student’s mathematical preparedness. Instructors rated students on the following 5-point scale:
 - 1: Unprepared
 - 3: Adequately Prepared
 - 5: Extremely Well PreparedThe table gives the percent (%) of students assessed by instructors as being “adequately prepared” or better (ratings 3, 4, or 5), the total number (n) of students rated by faculty, and the number (x) of ratings of 3, 4, or 5.
6. Totals n and x: n represents the total number of responses, and x represents the total number of students self-rating as having been appropriately placed in the course, the total number of students self-rating as being adequately or better prepared, and the total number of students rated by instructors as being adequately or better prepared.
7. Weighted mean proportion: the weighted mean proportions across the colleges for columns 3, 4, and 5.

At some colleges there is no lower bound for scores used to recommend placement into certain courses; these courses are asterisked in the Results by Course tables.

II. COLLEGE SUMMARIES

College	Student Self-Assessment		Instructor
	Appropriate Placement 1	Adequate Preparation 2	Assessment of Student Preparation 3
College 01			
College 02			
Number of colleges $\geq 75\%$ 4			

1. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) who chose option 2 “I now believe that I belong in this course” to question 3 of the student questionnaire.
2. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) who reported they are adequately to fully prepared for the course on question 4 of the student questionnaire.
3. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) assessed by their instructors, on the instructors’ rating questionnaire, as being adequately to fully prepared for the course.
4. The number of colleges for the given test and level meeting the standard of at least 75% affirmative responses.

Note that the College Summaries tables are provided only for those courses whose content matched the use of the test intended by MDTP.

III. MDTP TESTS INCLUDED IN THIS REPORT

Test Type	Abbreviation
Algebra Readiness	AR
Elementary Algebra	EA
Intermediate Algebra	IA
Precalculus	PC

IV. COURSE CLASSIFICATION TABLE

Test Used	Course Classification	Abbreviation
AR	Preliminary to AR test	PAR
AR	Intended for AR test	IAR
EA	Preliminary to EA test	PEA
EA	Intended for EA test	IEA
IA	Preliminary to IA test	PIA
IA	Intended for IA test	IIA
IA	Subsequent to IA test	SIA
PC	Preliminary to PC test	PPC
PC	Intended for PC test	IPC

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Note added to Generic Report: The data tables in the reports that were submitted to the Chancellor's Office included the College Name and Course Numbers. In order to protect the college's identity, the college name and course numbers have been revised for this Generic Report. Each college was assigned a random number from 1 through 12. The college names have been replaced with "College" followed by the random number that was assigned to that college. The Math Course numbers have been replaced with "xxx". The tables were then reformatted and sorted by College 01 through College 12.

MDTP CONSEQUENTIAL VALIDITY TABLES

RESULTS BY COURSE

ALGEBRA READINESS TEST – PAR

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	74%	57	42	95%	57	54	70%	67	47
College 02	Math xxx	100%	3	3	100%	3	3			
College 02	Math xxx	86%	14	12	86%	14	12	83%	6	5
College 03	Math xxx*	90%	19	17	84%	19	16	35%	26	9
College 04	Math xxx	78%	37	29	76%	37	28	77%	34	26
College 05	Math xxx	74%	42	31	91%	42	38	86%	56	48
College 06	Math xxx	75%	194	145	87%	193	168	81%	246	200
College 07	Math xxx*	85%	26	22	65%	26	17	79%	33	26
College 08	Math xxx	61%	31	19	97%	31	30	92%	13	12
College 09	Math xxx	95%	22	21	74%	23	17	70%	23	16
College 10	Math xxx*	88%	26	23	76%	25	19	20%	10	2
College 10	Math xxx*	0%	2	0	100%	2	2	67%	3	2
College 11	Math xxx*	78%	50	39	88%	50	44	63%	64	40
College 12	Math xxx	72%	183	131	93%	183	171	71%	150	107
Total n and x			706	534		705	619		731	540
Weighted mean proportions		76%			88%			74%		

* Placement into these courses is recommended with no lower bound on the AR test scores.

RESULTS BY COURSE

ALGEBRA READINESS TEST – IAR

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	86%	103	89	81%	103	83	67%	99	66
College 02	Math xxx	85%	13	11	93%	13	12	67%	6	4
College 03	Math xxx	82%	44	36	98%	44	43	85%	46	39
College 04	Math xxx	80%	46	37	100%	46	46	77%	43	33
College 05	Math xxx	67%	3	2	100%	3	3	100%	2	2
College 05	Math xxx	67%	6	4	100%	6	6	86%	7	6
College 06	Math xxx	82%	39	32	87%	38	33	84%	44	37
College 07	Math xxx	80%	39	31	69%	39	27	64%	52	33
College 08	Math xxx	76%	55	42	93%	55	51	87%	30	26
College 09	Math xxx	84%	58	49	81%	58	47	87%	62	54
College 10	Math xxx	85%	73	62	77%	73	56	66%	79	52
College 11	Math xxx	89%	36	32	89%	36	32	84%	44	37
College 12	Math xxx	81%	26	21	85%	26	22	89%	27	24
Total n and x			541	448		540	461		541	413
Weighted mean proportions		83%			85%			76%		

SUMMARY BY COLLEGE

ALGEBRA READINESS TEST – IAR

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 01	86%	81%	67%
College 02	85%	93%	67%
College 03	82%	98%	85%
College 04	80%	100%	77%
College 05	67%	100%	89%
College 06	82%	87%	84%
College 07	80%	69%	64%
College 08	76%	93%	87%
College 09	84%	81%	87%
College 10	85%	77%	66%
College 11	89%	89%	84%
College 12	81%	85%	89%
Number of Colleges $\geq 75\%$	11	11	8

RESULTS BY COURSE

ELEMENTARY ALGEBRA TEST – PEA

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	78%	51	40	85%	52	44	59%	49	29
College 02	Math xxx	81%	80	65	90%	80	72	28%	43	12
College 03	Math xxx	77%	114	88	86%	114	98	81%	136	110
College 04	Math xxx	74%	162	119	91%	162	148	64%	148	95
College 05	Math xxx	86%	58	50	93%	58	54	75%	57	43
College 05	Math xxx	33%	6	2	100%	6	6	100%	9	9
College 06	Math xxx	80%	109	87	87%	107	93	72%	148	107
College 07	Math xxx*	81%	78	63	81%	78	63	56%	95	53
College 08	Math xxx	77%	43	33	93%	43	40	81%	33	27
College 09	Math xxx	84%	82	69	95%	82	78	85%	88	75
College 10	Math xxx*	82%	124	102	80%	124	99	65%	138	90
College 11	Math xxx	72%	36	26	97%	36	35	94%	47	44
College 11	Math xxx	0%	2	0	100%	2	2	100%	2	2
Total n and x			945	744		944	832		993	696
Weighted mean proportions		79%			88%			70%		

* Placement into these courses is recommended with no lower bound on the EA test scores.

RESULTS BY COURSE

ELEMENTARY ALGEBRA TEST – IEA

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	71%	94	67	90%	93	84	81%	111	90
College 02	Math xxx	90%	19	17	74%	19	14	57%	7	4
College 03	Math xxx	75%	40	30	93%	40	37	83%	46	38
College 04	Math xxx	83%	136	113	87%	137	119	66%	145	96
College 05	Math xxx	67%	6	4	83%	6	5	67%	6	4
College 05	Math xxx	100%	2	2	100%	2	2	100%	2	2
College 06	Math xxx	85%	103	88	88%	102	90	78%	122	95
College 07	Math xxx	86%	43	37	84%	43	36	68%	44	30
College 07	Math xxx	82%	67	55	73%	67	49	64%	67	43
College 08	Math xxx	74%	42	31	93%	42	39	68%	47	32
College 08	Math xxx	87%	30	26	80%	30	24	77%	22	17
College 09	Math xxx	76%	74	56	87%	74	64	80%	90	72
College 10	Math xxx	81%	198	160	90%	199	179	66%	247	164
College 10	Math xxx	84%	110	92	81%	109	88	76%	139	105
College 11	Math xxx	60%	5	3	80%	5	4	90%	10	9
College 12	Math xxx	54%	39	21	85%	39	33	85%	34	29
Total n and x			1008	802		1007	867		1139	830
Weighted mean proportions		80%			86%			73%		

SUMMARY BY COLLEGE

ELEMENTARY ALGEBRA TEST – IEA

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 01	71%	90%	81%
College 02	90%	74%	57%
College 03	75%	93%	83%
College 04	83%	87%	66%
College 05	75%	88%	75%
College 06	85%	88%	78%
College 07	84%	77%	66%
College 08	79%	88%	71%
College 09	76%	87%	80%
College 10	82%	87%	70%
College 11	60%	80%	90%
College 12	54%	85%	85%
Number of Colleges \geq 75%	9	11	7

RESULTS BY COURSE

INTERMEDIATE ALGEBRA TEST – PIA

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	75%	36	27	89%	35	31	69%	39	27
College 02	Math xxx	74%	50	37	82%	50	41	32%	19	6
College 03	Math xxx	87%	15	13	93%	15	14	80%	15	12
College 04	Math xxx	75%	161	120	94%	160	151	59%	182	107
College 05	Math xxx	68%	19	13	90%	19	17	75%	24	18
College 05	Math xxx	33%	6	2	83%	6	5	75%	8	6
College 07	Math xxx*	79%	28	22	68%	28	19	61%	31	19
College 08	Math xxx	80%	15	12	80%	15	12	82%	22	18
College 08	Math xxx	71%	24	17	92%	24	22	56%	16	9
College 09	Math xxx	74%	50	37	98%	50	49	80%	55	44
College 10	Math xxx*	74%	86	64	83%	86	71	66%	95	63
College 11	Math xxx	40%	10	4	80%	10	8	78%	9	7
Total n and x			500	368		498	440		515	336
Weighted mean proportions		74%			88%			65%		

* Placement into these courses is recommended with no lower bound on the IA test scores.

RESULTS BY COURSE

INTERMEDIATE ALGEBRA TEST – IIA

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	79%	42	33	93%	41	38	82%	50	41
College 01	Math xxx	71%	14	10	79%	14	11	85%	13	11
College 02	Math xxx	100%	1	1	100%	1	1	33%	3	1
College 02	Math xxx	82%	11	9	73%	11	8	33%	6	2
College 03	Math xxx	89%	9	8	78%	9	7	100%	6	6
College 03	Math xxx	92%	12	11	100%	12	12	80%	5	4
College 03	Math xxx	93%	27	25	93%	27	25	75%	8	6
College 04	Math xxx	80%	54	43	82%	54	44	63%	65	41
College 04	Math xxx	73%	82	60	89%	84	75	65%	88	57
College 06	Math xxx	89%	35	31	86%	35	30	50%	50	25
College 07	Math xxx	100%	3	3	100%	3	3	40%	5	2
College 07	Math xxx	82%	17	14	88%	17	15	90%	19	17
College 07	Math xxx	80%	5	4	80%	5	4	88%	17	15
College 07	Math xxx	100%	3	3	67%	3	2	50%	2	1
College 08	Math xxx	63%	27	17	93%	27	25	76%	25	19
College 08	Math xxx	75%	4	3	50%	4	2	100%	6	6
College 08	Math xxx	100%	4	4	100%	4	4			
College 09	Math xxx	92%	36	33	83%	36	30	76%	37	28
College 10	Math xxx	92%	12	11	92%	12	11	83%	6	5
College 10	Math xxx	87%	46	40	94%	46	43	71%	52	37
College 10	Math xxx	86%	29	25	93%	29	27	88%	34	30
College 10	Math xxx	87%	31	27	77%	30	23	91%	11	10
College 11	Math xxx	89%	18	16	89%	18	16	83%	12	10
College 12	Math xxx	81%	16	13	94%	16	15	64%	14	9
College 12	Math xxx	60%	25	15	96%	25	24	76%	17	13
Total n and x			563	459		563	495		551	396
Weighted mean proportions		82%			88%			72%		

SUMMARY BY COLLEGE

INTERMEDIATE ALGEBRA TEST – IIA

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 01	77%	89%	83%
College 02	83%	75%	33%
College 03	92%	92%	84%
College 04	76%	86%	64%
College 06	89%	86%	50%
College 07	86%	86%	81%
College 08	69%	89%	81%
College 09	92%	83%	76%
College 10	87%	89%	80%
College 11	89%	89%	83%
College 12	68%	95%	71%
Number of Colleges $\geq 75\%$	9	11	7

RESULTS BY COURSE

INTERMEDIATE ALGEBRA TEST – SIA

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	100%	7	7	86%	7	6	100%	6	6
College 06	Math xxx	94%	16	15	75%	16	12	81%	16	13
College 12	Math xxx	83%	6	5	100%	6	6	38%	8	3
Total n and x			29	27		29	24		30	22
Weighted mean proportions		93%			83%			73%		

RESULTS BY COURSE

PRECALCULUS TEST – PPC

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	89%	54	48	96%	54	52	100%	21	21
College 02	Math xxx	75%	8	6	88%	8	7	33%	6	2
College 04	Math xxx	83%	36	30	81%	36	29	84%	25	21
College 04	Math xxx	83%	35	29	86%	35	30	38%	48	18
College 05	Math xxx	71%	7	5	100%	7	7	50%	8	4
College 05	Math xxx	67%	3	2	100%	3	3	67%	3	2
College 06	Math xxx	92%	12	11	67%	12	8	64%	14	9
College 07	Math xxx*	75%	4	3	75%	4	3	75%	4	3
College 07	Math xxx*	50%	4	2	100%	4	4	86%	7	6
College 08	Math xxx	57%	7	4	100%	7	7	100%	8	8
College 08	Math xxx	0%	3	0	100%	3	3			
College 10	Math xxx*	100%	4	4	100%	4	4	60%	5	3
College 10	Math xxx*	82%	11	9	91%	11	10	57%	14	8
College 11	Math xxx	100%	1	1	100%	1	1	100%	1	1
College 12	Math xxx	80%	5	4	100%	5	5	50%	4	2
Total n and x			194	158		194	173		168	108
Weighted mean proportions		81%			89%			64%		

* Placement into these courses is recommended with no lower bound on the PC test scores.

RESULTS BY COURSE

PRECALCULUS TEST – IPC

College	Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		%	n	x	%	n	x	%	n	x
College 01	Math xxx	80%	40	32	85%	40	34	82%	17	14
College 02	Math xxx	91%	21	19	86%	21	18	57%	7	4
College 03	Math xxx	100%	2	2	100%	2	2			
College 04	Math xxx	85%	148	126	81%	148	120	74%	150	111
College 06	Math xxx	82%	28	23	86%	28	24	83%	30	25
College 07	Math xxx	81%	21	17	86%	21	18	83%	24	20
College 08	Math xxx	92%	12	11	100%	12	12	64%	11	7
College 09	Math xxx	75%	4	3	100%	4	4	100%	4	4
College 10	Math xxx	82%	65	53	77%	65	50	71%	31	22
College 11	Math xxx	100%	9	9	78%	9	7	100%	9	9
College 12	Math xxx	81%	21	17	95%	21	20	86%	22	19
Total n and x			371	312		371	309		305	235
Weighted mean proportions		84%			83%			77%		

SUMMARY BY COLLEGE

PRECALCULUS TEST – IPC

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 01	80%	85%	82%
College 02	91%	86%	57%
College 03	100%	100%	
College 04	85%	81%	74%
College 06	82%	86%	83%
College 07	81%	86%	83%
College 08	92%	100%	64%
College 09	75%	100%	100%
College 10	82%	77%	71%
College 11	100%	78%	100%
College 12	81%	95%	86%
Number of Colleges $\geq 75\%$	11	11	6

CSU/UC
MATHEMATICS DIAGNOSTIC TESTING PROJECT

SUPPLEMENT TO
CONSEQUENTIAL-RELATED VALIDITY
EVIDENCE FOR MDTP TESTS REPORT

Data submitted in response to California Community Colleges
Assessment Standards (March 2001, 4th edition) for renewal of
placement test instruments.

January 2005

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JANUARY 2005 SUPPLEMENT

This supplement contains consequential-related validity evidence that is presented for review by the MAC Assessment Workgroup Committee in response to the preliminary report from Dr. John Poggio and Dr. Douglas R. Glasnapp, from the Center for Educational Testing and Evaluation at the University of Kansas. The data is reported using the grouping of ratings 2, 3, and 4 for the faculty preparedness ratings (instead of using ratings 3, 4, and 5), and for students only question 3 responses are reported (instead of also reporting question 4 responses). The description of the Study Methodology in the November report is not repeated in this supplement because it has not changed. The two changes just described about data reporting are the only changes for the supplement. The supplement must be read in the context of the November report.

CONSEQUENTIAL-RELATED VALIDITY EVIDENCE

DATA ORGANIZATION

Consequential-related validity evidence:

- Students' self-assessment of the appropriateness of their placement
- Instructors' assessment of the students' preparation

TEST– COURSE CLASSIFICATION CODE

Table heading shows the MDTP test for which evidence is being presented, as well as the three-letter code for course classification.

I. RESULTS BY COURSE:

College 1	Course(s) 2	Student Self-Assessment	Instructor
		Appropriate Placement 3	Assessment of Student Preparation. 4
College 01			
College 02			
Total n and x 5			
Weighted mean proportions 6			

1. College: source colleges for the data presented.
2. Course(s): Course Number(s) of the course(s) from which data were collected.
3. Appropriate Placement: information from question 3 on the student questionnaire. Students were asked to complete the sentence “I now believe that...”
 1. I should have enrolled in a lower (easier) course – this course is too difficult
 2. I belong in this course
 3. I should have enrolled in a higher (harder) course – this course is too easy
 The table gives the percent (%) of students who responded “I belong in this course”, the total number (n) of student responses to this question, and the number (x) of students who responded “I belong in this course”.
4. Instructor Assessment of Student Preparedness: information from the faculty ratings of student’s mathematical preparedness. Instructors rated students on the following 5-point scale:
 1. Unprepared
 2. Marginally Prepared
 3. Adequately Prepared
 4. Well Prepared
 5. Extremely Well Prepared
 The table gives the percent (%) of students assessed by instructors as being “marginally prepared”, “adequately prepared”, and “well prepared” (ratings 2, 3, or 4), the total number (n) of students rated by faculty, and the number (x) of ratings of 2, 3, or 4.
5. Totals n and x: n represents the total number of responses, and x represents the total number of students self-rating as having been appropriately placed in the course and the total number of students rated by instructors as being marginally to well prepared.
6. Weighted mean proportion: the weighted mean proportions across the colleges for columns 3 and 4.

At some colleges there is no lower bound for scores used to recommend placement into certain courses; these courses are asterisked in the Results by Course tables.

II. COLLEGE SUMMARIES

College	Student Self-Assessment	Instructor
	Appropriate Placement 1	Assessment of Student Preparation 2
College 01		
College 02		
Number of colleges $\geq 75\%$ 3		

1. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) who chose option 2 “I now believe that I belong in this course” to question 3 of the student questionnaire.
2. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) assessed by their instructors, on the instructors’ rating questionnaire, as being marginally, adequately, or well prepared for the course.
3. The number of colleges for the given test and level meeting the standard of at least 75% affirmative responses.

Note that the College Summaries tables are provided only for those courses whose content matched the use of the test intended by MDTP.

III. MDTP TESTS INCLUDED IN THIS SUPPLEMENT

Test Type	Abbreviation
Algebra Readiness	AR
Elementary Algebra	EA
Intermediate Algebra	IA
Precalculus	PC

IV. COURSE CLASSIFICATION TABLE

Test Used	Course Classification	Abbreviation
AR	Preliminary to AR test	PAR
AR	Intended for AR test	IAR
EA	Preliminary to EA test	PEA
EA	Intended for EA test	IEA
IA	Preliminary to IA test	PIA
IA	Intended for IA test	IIA
IA	Subsequent to IA test	SIA
PC	Preliminary to PC test	PPC
PC	Intended for PC test	IPC

MDTP CONSEQUENTIAL VALIDITY TABLES

RESULTS BY COURSE

ALGEBRA READINESS TEST – PAR

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	74%	57	42	67%	67	45
College 02	Math xxx	100%	3	3			
College 02	Math xxx	86%	14	12	67%	6	4
College 03	Math xxx*	90%	19	17	85%	26	22
College 04	Math xxx	78%	37	29	79%	34	27
College 05	Math xxx	74%	42	31	89%	56	50
College 06	Math xxx	75%	194	145	76%	246	186
College 07	Math xxx*	85%	26	22	79%	33	26
College 08	Math xxx	61%	31	19	62%	13	8
College 09	Math xxx	95%	22	21	78%	23	18
College 10	Math xxx*	88%	26	23	80%	10	8
College 10	Math xxx*	0%	2	0	100%	3	3
College 11	Math xxx*	78%	50	39	77%	64	49
College 12	Math xxx	72%	183	131	71%	150	107
Total n and x			706	534		731	553
Weighted mean proportions		76%			76%		

* Placement into these courses is recommended with no lower bound on the AR test scores.

RESULTS BY COURSE

ALGEBRA READINESS TEST – IAR

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	86%	103	89	84%	99	83
College 02	Math xxx	85%	13	11	50%	6	3
College 03	Math xxx	82%	44	36	61%	46	28
College 04	Math xxx	80%	46	37	79%	43	34
College 05	Math xxx	67%	3	2	50%	2	1
College 05	Math xxx	67%	6	4	100%	7	7
College 06	Math xxx	82%	39	32	75%	44	33
College 07	Math xxx	80%	39	31	87%	52	45
College 08	Math xxx	76%	55	42	97%	30	29
College 09	Math xxx	84%	58	49	87%	62	54
College 10	Math xxx	85%	73	62	70%	79	55
College 11	Math xxx	89%	36	32	82%	44	36
College 12	Math xxx	81%	26	21	85%	27	23
Total n and x			541	448		541	431
Weighted mean proportions		83%			80%		

SUMMARY BY COLLEGE

ALGEBRA READINESS TEST – IAR

College	Student Self-Assessment	Instructor
	Appropriate Placement	Assessment of Student Preparation
College 01	86%	84%
College 02	85%	50%
College 03	82%	61%
College 04	80%	79%
College 05	67%	89%
College 06	82%	75%
College 07	80%	87%
College 08	76%	97%
College 09	84%	87%
College 10	85%	70%
College 11	89%	82%
College 12	81%	85%
Number of Colleges $\geq 75\%$	11	9

RESULTS BY COURSE

ELEMENTARY ALGEBRA TEST – PEA

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	78%	51	40	80%	49	39
College 02	Math xxx	81%	80	65	35%	43	15
College 03	Math xxx	77%	114	88	76%	136	104
College 04	Math xxx	74%	162	119	80%	148	119
College 05	Math xxx	86%	58	50	91%	57	52
College 05	Math xxx	33%	6	2	100%	9	9
College 06	Math xxx	80%	109	87	78%	148	116
College 07	Math xxx*	81%	78	63	82%	95	78
College 08	Math xxx	77%	43	33	97%	33	32
College 09	Math xxx	84%	82	69	88%	88	77
College 10	Math xxx*	82%	124	102	70%	138	96
College 11	Math xxx	72%	36	26	68%	47	32
College 11	Math xxx	0%	2	0	100%	2	2
Total n and x			945	744		993	771
Weighted mean proportions		79%			78%		

* Placement into these courses is recommended with no lower bound on the EA test scores.

RESULTS BY COURSE

ELEMENTARY ALGEBRA TEST – IEA

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	71%	94	67	67%	111	74
College 02	Math xxx	90%	19	17	43%	7	3
College 03	Math xxx	75%	40	30	65%	46	30
College 04	Math xxx	83%	136	113	76%	145	110
College 05	Math xxx	67%	6	4	83%	6	5
College 05	Math xxx	100%	2	2	100%	2	2
College 06	Math xxx	85%	103	88	74%	122	90
College 07	Math xxx	86%	43	37	59%	44	26
College 07	Math xxx	82%	67	55	70%	67	47
College 08	Math xxx	74%	42	31	72%	47	34
College 08	Math xxx	87%	30	26	77%	22	17
College 09	Math xxx	76%	74	56	84%	90	76
College 10	Math xxx	81%	198	160	83%	247	204
College 10	Math xxx	84%	110	92	91%	139	126
College 11	Math xxx	60%	5	3	80%	10	8
College 12	Math xxx	54%	39	21	88%	34	30
Total n and x			1008	802		1139	882
Weighted mean proportions		80%			77%		

SUMMARY BY COLLEGE

ELEMENTARY ALGEBRA TEST – IEA

College	Student Self-Assessment	Instructor
	Appropriate Placement	Assessment of Student Preparation
College 01	71%	67%
College 02	90%	43%
College 03	75%	65%
College 04	83%	76%
College 05	75%	88%
College 06	85%	74%
College 07	84%	66%
College 08	79%	74%
College 09	76%	84%
College 10	82%	86%
College 11	60%	80%
College 12	54%	88%
Number of Colleges $\geq 75\%$	9	6

RESULTS BY COURSE

INTERMEDIATE ALGEBRA TEST – PIA

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	75%	36	27	74%	39	29
College 02	Math xxx	74%	50	37	42%	19	8
College 03	Math xxx	87%	15	13	60%	15	9
College 04	Math xxx	75%	161	120	77%	182	141
College 05	Math xxx	68%	19	13	83%	24	20
College 05	Math xxx	33%	6	2	100%	8	8
College 07	Math xxx*	79%	28	22	68%	31	21
College 08	Math xxx	80%	15	12	86%	22	19
College 08	Math xxx	71%	24	17	63%	16	10
College 09	Math xxx	74%	50	37	73%	55	40
College 10	Math xxx*	74%	86	64	85%	95	81
College 11	Math xxx	40%	10	4	67%	9	6
Total n and x			500	368		515	392
Weighted mean proportions		74%			76%		

* Placement into these courses is recommended with no lower bound on the IA test scores.

RESULTS BY COURSE

INTERMEDIATE ALGEBRA TEST – IIA

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	79%	42	33	46%	50	23
College 01	Math xxx	71%	14	10	69%	13	9
College 02	Math xxx	100%	1	1	100%	3	3
College 02	Math xxx	82%	11	9	17%	6	1
College 03	Math xxx	89%	9	8	83%	6	5
College 03	Math xxx	92%	12	11	80%	5	4
College 03	Math xxx	93%	27	25	88%	8	7
College 04	Math xxx	80%	54	43	80%	65	52
College 04	Math xxx	73%	82	60	74%	88	65
College 06	Math xxx	89%	35	31	64%	50	32
College 07	Math xxx	100%	3	3	80%	5	4
College 07	Math xxx	82%	17	14	79%	19	15
College 07	Math xxx	80%	5	4	71%	17	12
College 07	Math xxx	100%	3	3	100%	2	2
College 08	Math xxx	63%	27	17	64%	25	16
College 08	Math xxx	75%	4	3	100%	6	6
College 08	Math xxx	100%	4	4			
College 09	Math xxx	92%	36	33	86%	37	32
College 10	Math xxx	92%	12	11	100%	6	6
College 10	Math xxx	87%	46	40	81%	52	42
College 10	Math xxx	86%	29	25	79%	34	27
College 10	Math xxx	87%	31	27	73%	11	8
College 11	Math xxx	89%	18	16	67%	12	8
College 12	Math xxx	81%	16	13	79%	14	11
College 12	Math xxx	60%	25	15	71%	17	12
Total n and x			563	459		551	402
Weighted mean proportions		82%			73%		

SUMMARY BY COLLEGE

INTERMEDIATE ALGEBRA TEST – IIA

College	Student Self-Assessment	Instructor
	Appropriate Placement	Assessment of Student Preparation
College 01	77%	51%
College 02	83%	44%
College 03	92%	84%
College 04	76%	77%
College 06	89%	64%
College 07	86%	77%
College 08	69%	71%
College 09	92%	86%
College 10	87%	81%
College 11	89%	67%
College 12	68%	74%
Number of Colleges $\geq 75\%$	9	5

RESULTS BY COURSE

INTERMEDIATE ALGEBRA TEST – SIA

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	100%	7	7	100%	6	6
College 06	Math xxx	94%	16	15	75%	16	12
College 12	Math xxx	83%	6	5	100%	8	8
Total n and x			29	27		30	26
Weighted mean proportions		93%			87%		

RESULTS BY COURSE

PRECALCULUS TEST – PPC

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	89%	54	48	86%	21	18
College 02	Math xxx	75%	8	6	50%	6	3
College 04	Math xxx	83%	36	30	64%	25	16
College 04	Math xxx	83%	35	29	58%	48	28
College 05	Math xxx	71%	7	5	63%	8	5
College 05	Math xxx	67%	3	2	67%	3	2
College 06	Math xxx	92%	12	11	79%	14	11
College 07	Math xxx*	75%	4	3	100%	4	4
College 07	Math xxx*	50%	4	2	100%	7	7
College 08	Math xxx	57%	7	4	75%	8	6
College 08	Math xxx	0%	3	0			
College 10	Math xxx*	100%	4	4	60%	5	3
College 10	Math xxx*	82%	11	9	64%	14	9
College 11	Math xxx	100%	1	1	100%	1	1
College 12	Math xxx	80%	5	4	75%	4	3
Total n and x			194	158		168	116
Weighted mean proportions		81%			69%		

* Placement into these courses is recommended with no lower bound on the PC test scores.

RESULTS BY COURSE

PRECALCULUS TEST – IPC

College	Course(s)	Student Self-Assessment			Instructor		
		Appropriate Placement			Assessment of Student Preparation		
		%	n	x	%	n	x
College 01	Math xxx	80%	40	32	47%	17	8
College 02	Math xxx	91%	21	19	14%	7	1
College 03	Math xxx	100%	2	2			
College 04	Math xxx	85%	148	126	83%	150	124
College 06	Math xxx	82%	28	23	90%	30	27
College 07	Math xxx	81%	21	17	79%	24	19
College 08	Math xxx	92%	12	11	82%	11	9
College 09	Math xxx	75%	4	3	75%	4	3
College 10	Math xxx	82%	65	53	81%	31	25
College 11	Math xxx	100%	9	9	89%	9	8
College 12	Math xxx	81%	21	17	86%	22	19
Total n and x			371	312		305	243
Weighted mean proportions		84%			80%		

SUMMARY BY COLLEGE

PRECALCULUS TEST – IPC

College	Student Self-Assessment	Instructor
	Appropriate Placement	Assessment of Student Preparation
College 01	80%	47%
College 02	91%	14%
College 03	100%	
College 04	85%	83%
College 06	82%	90%
College 07	81%	79%
College 08	92%	82%
College 09	75%	75%
College 10	82%	81%
College 11	100%	89%
College 12	81%	86%
Number of Colleges \geq 75%	11	8

