

Approved: 1/20/94
Date

MINUTES OF THE SENATE COMMITTEE ON EDUCATION

The meeting was called to order by Chairperson Dave Kerr at 1:30 p.m. on January 19, 1994 in Room 123-S of the Capitol.

All members were present except: Senator Sherman Jones (Excused)

Committee staff present: Ben Barrett, Legislative Research Department
Carolyn Rampey, Legislative Research Department
Avis Swartzman, Revisor of Statutes
LaVonne Mumert, Committee Secretary

Conferees appearing before the committee:

Mark Tallman, Kansas Association of School Boards
Merle Hill, Kansas of Community Colleges
Ted Ayres, Kansas Board of Regents
Senator Sandy Praeger
Dr. Charles Himmelberg, University of Kansas
Dr. Jack Porter, University of Kansas
Dr. Jim Coffman, Provost, Kansas State University

Others attending: See attached list

Senator Emert made a motion that the minutes of the January 18, 1994 meeting be approved. Senator Oleen seconded the motion, and the motion carried.

Mark Tallman, Kansas Association of School Boards, requested that the Committee introduce a bill which would add student academic performance as one of several criteria regarding evaluation of certificated employees (Attachment No. 1). Senator Oleen made a motion that the Committee introduce such a bill. Senator Langworthy seconded the motion, and the motion carried.

Merle Hill, Kansas Association of Community Colleges, requested that the Committee introduce a bill which would permit community colleges to charge out-of-state tuition fees at the same rate or similar rates to those charged to in-state students (Attachment No. 2). Senator Emert made a motion that the Committee introduce such a bill. Senator Langworthy seconded the motion, and the motion carried.

Senator Walker requested that the Committee introduce a bill which would legalize home schooling and require: registration with the State Board of Education, the same amount of time as is required for public schools, participation in the state assessment program, providing the State Board of Education with a description of the program of instruction and achievement of a minimum level of competency (Attachment No. 3). Senator Walker made a motion that the Committee introduce such a bill. Senator Corbin seconded the motion, and the motion carried.*

Senator Langworthy requested that the Committee introduce a bill which would eliminate the requirement that the maximum amount of the local option budget is subject to reduction of a percentage equal to any increase in the base state aid per pupil. Senator Langworthy made a motion that the Committee introduce such a bill. Senator Emert seconded the motion, and the motion carried.

At the request of the State Board of Education, Senator Emert made a motion that the Committee introduce a bill allowing approximately 3,000 at-risk four-year olds to be counted at the rate of .5 for purposes of state aid. Senator Oleen seconded the motion, and the motion carried.

CONTINUATION SHEET

MINUTES OF THE SENATE COMMITTEE ON EDUCATION, Room 123-S Statehouse, at 1:30 p.m. on January 19, 1994.

SB 444 - Regents early mathematics testing program

Ted Ayres, State Board of Regents, described the background of the bill. The Regents established a pilot program during the 1989-90 school year for high school juniors at 23 schools in conjunction with the University of Kansas. The following year, 94 schools and all Regents institutions participated. The Regents unsuccessfully sought funding to support the program in FY 92 and FY 93. The Board did not request funding for either FY 94 or FY 95. Dr. Charles Himmelberg and Dr. Jack Porter, of the University of Kansas, appeared before the Legislative Educational Planning Committee to seek their support and endorsement of the concept; and the Committee introduced SB 444. Mr. Ayres advised that the Board of Regents reviewed the bill at its December meeting and the general consensus of the Board was that input should be obtained from the State Board of Education regarding their perspective and views on the matter.

Senator Sandy Praeger spoke in favor of the bill and introduced Dr. Himmelberg and Dr. Porter.

Dr. Charles Himmelberg, University of Kansas, outlined the Regents Early Math Testing program (Attachment No. 4). High school juniors who take the test indicate a choice of one Regents institution and two majors of study. Included in the results of the test is a letter explaining what college math courses the proposed majors will require and what additional high school mathematics courses are needed by the student. Dr. Himmelberg said that the initial pilot program in Kansas indicated an 40 percent increase in senior mathematics enrollment the following year. The program is modeled after an Ohio State University started in 1977. In Ohio, remedial enrollments have declined from 42 percent to 20 percent. Dr. Himmelberg said the program is designed to be a counseling tool and there is no conflict between the goals of this program and the state assessment program. He noted that similar programs have recently begun in Oklahoma, Nebraska and Iowa.

Senator Oleen commented that the LEPC spent a significant time on this issue during the last interim and strongly supported the program.

Dr. Jack Porter, University of Kansas, responded to questions from Committee members and advised that the test is also given to sophomores and seniors, under certain circumstances.

SB 443 - Community colleges, out-district tuition, courses in counties in which state educational institutions are located

Staff explained that the bill is designed to name the Salina campus of Kansas State University as the home of a Regents institutions so that the institution can sign off on proposals for community colleges to offer courses in their county in order that those community colleges can receive out-district tuition for those courses.

Dr. Jim Coffman, Provost, Kansas State University, testified in support of the bill and said that there is no intent to change the admissions of the college and that the purpose of the general education program is to support the general technical admissions.

Merle Hill, Kansas Association of Community Colleges, testified in favor of the bill (Attachment No. 5). He described some of the courses currently offered in Saline County.

The meeting was adjourned at 2:25 p.m. The next meeting is scheduled for January 20, 1994.

*See January 20, 1994 minutes for correction.

SENATE EDUCATION COMMITTEE

TIME: 1:30 PLACE: 123-S DATE: 1/19/94

GUEST LIST

NAME	ADDRESS	ORGANIZATION
Denise Apt	Topeka	KACC
Mark Tallman	Topeka	KAB
Merle Hise	"	KACC
Vic Braden	Lawrence	"
Sen. Sandy Praeger	Lawrence	KS Senate
Jack Porter	Lawrence	KU Math
Charles Himmelberg	Lawrence	KU Math. Inst.
Ann Merriam	Topeka	OK Council
Kathy Sexton	"	Div. of Budget
Tom DeRue	Topeka	Council on WED
Sue Chase	Topeka	KNEA
Sharon Freden	"	ICSBE
Cornie Hurrell	"	KSBE
Jeff Brownell	Emporia	Senate
Jacquie Dakes	Topeka	SQE
Labin Clements	Wichita	Wichita Public Schools
Kellie Martin	Wichita	Sedgewick County
BRENT DOWNS	WICHITA	KANUTS
BEV BRADLEY	Topeka	KS Assoc of Counties
Donna McDaniel	Topeka	Senator Burke's office
Tara Eshanks	Manhattan	Sue Peterson's intern
Sue Peterson	Manhattan	Kansas State
John Josselero	Lawrence	KU

SENATE EDUCATION COMMITTEE

TIME: 1:30 PLACE: 123-S DATE: 1/19/94

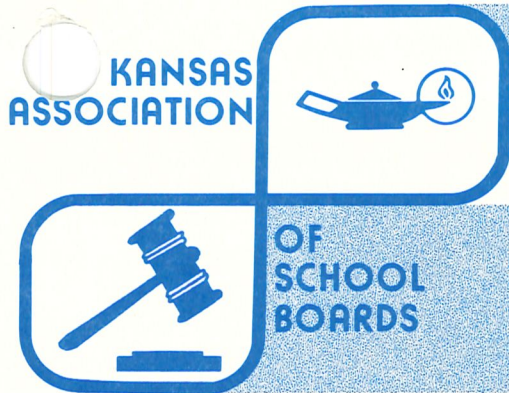
GUEST LIST

NAME

ADDRESS

ORGANIZATION

Bob Kelly	Topeka	KICA
TED D. AYRES	TOPEKA	REGENTS
Jim Goffman	Manhattan	KSU
Martine H. Paludan	Topeka	KS Bd Regents
Cristine Jannay	Manhattan	Associated Press



1420 S.W. Arrowhead Rd. Topeka, Kansas 66604
913-273-3600

**Request for Bill Introduction
Before the Senate Committee on Education**

**By Mark Tallman, Director of Governmental Relations
Kansas Association of School Boards
January 19, 1994**

Mr. Chairman, Members of the Committee:

Thank you for the opportunity to request the introduction of a committee bill. Since the end of the 1993 Session, the KASB Legislative Committee proposed that the state statute on evaluation of certificated employees be amended to add student academic performance as one of several criteria. Our Delegate Assembly approved this proposal.

Our concern in this area is motivated by the development of Quality Performance Accreditation standards. If school districts are going to be evaluated for accreditation on the basis of student performance - which we support - we believe that districts have the ability to evaluate their employees on the same basis.

We have presented the revisor with a balloon of a proposed amendment. Thank you for your consideration.

Sen. Ed.
1/19/94
Attachment 1



KANSAS ASSOCIATION OF COMMUNITY COLLEGES

Jayhawk Tower, Suite 401 • 700 S.W. Jackson • Topeka, KS 66603

W. Merle Hill
Executive Director

Phone 913/357-5156
Fax 913/357-5157

To: Senate Committee on Education

From: Merle Hill, Executive Director
Kansas Association of Community Colleges

Date: January 19, 1994

Subj: Request for **Permissive Legislation** Relative to Out-of-State Tuition

Mr. Chairman, members of the Committee, I am Merle Hill, executive director of the Kansas Association of Community Colleges. Thank you very much for giving the Association members the opportunity to request introduction of permissive legislation relative to out-of-state tuition.

At the present time, the minimum out-of-state tuition community colleges may charge is **\$67.50 per credit hour**, a rate that is set by the Legislature and is **2.5 times the statutory credit-hour rate of \$28 per credit hour**. A number of the colleges which are located near the state's borders charge the minimum rate in order to provide equal access to citizens living in their "market areas," but other colleges charge a fee similar to that charged per credit hour by the regional state universities.

The elected trustees of the Kansas Association of Community Colleges request the introduction of legislation that will permit locally elected boards of trustees to **set an out-of-state tuition charge for courses offered in their business-and-industry programs that is the same as or closer to the rate charged for in-state students**. Please remember that **no state aid is received for out-of-state enrollments**.

Sen. Ed.
1/19/94
Attachment 2

In Wyandotte County, for example, Kansas City Community College is required by statute to charge General Motors \$27 per credit hour for Kansas residents, the college's current tuition rate, but \$67.50 for General Motors' employees who reside in Missouri. Approximately half of those employed at the General Motors plant in Wyandotte do reside in Missouri, and **management at the plant does not fully understand** why General Motors is charged different fees for its employees when they are enrolled in the same training-retraining courses.

The Kansas City Community College trustees and trustees at other colleges would like to **have the option** of charging employees of firms like General Motors, who are Missouri residents and are enrolled in business-and-industry training or retraining courses offered for a Kansas business, **the same per-credit-hour rate they charge residents of Kansas.**

The request is for:

1. Permissive legislation.
2. Courses offered only for Kansas businesses and industries whose employees reside in another state.

I shall attempt to answer any questions you may have. Thank you.

WHAT THIS BILL DOES (3 RS 1797)

1. Legalizes home schooling.
2. Requires home schoolers to register with State Board of Education and indicate number and ages of children in the school.
3. Requires students be in school roughly the same time as those in public schools.
4. Students in private and home schools must participate in the Kansas assessment program.
5. A description of the program of instruction must be provided to State Board of Education.
6. Home schools must achieve minimum level of competency (not mastery of essential skills as is required for all public schools).

Jack Porter, REMT
Department of Mathematics
University of Kansas
Lawrence, KS 66045

REMT

A BOARD OF REGENTS PROGRAM

INVOLVING

MATHEMATICS PREPARATION

AT

EMPORIA STATE UNIVERSITY
FORT HAYS STATE UNIVERSITY
KANSAS STATE UNIVERSITY
PITTSBURG STATE UNIVERSITY
UNIVERSITY OF KANSAS
WICHITA STATE UNIVERSITY

Sen. Ed.
1/19/94
Attachment 4

Brief Description of Regents Early Math Testing

The Regents Early Math Testing (REMT) program is a testing and counseling program for high school juniors developed at KU with the cooperation of all six Regents institutions. Its purpose is to advise high school students in the middle of the junior year about their mathematical preparation for college.

It works as follows. Each student selects on the test answer sheet one Regents institution and two majors of study at that institution. When the tests are graded, a computer analyzes the results and writes a letter to the student telling him/her how well prepared he/she is to begin study on the chosen major in the chosen school. The letter also explains exactly what college math courses the proposed majors require and tells the student what additional high school mathematics courses are needed so remedial courses will not be needed in college. Some sample letters are shown at the end of the attached packet.

That, briefly, is how REMT works. The program grew out of concern by educators at all the Regents institutions over the lack of mathematics preparation found in large numbers of college-bound students—students who in most cases are not taking advantage of all the opportunities for mathematical preparation available to them in high school. In response to this concern a pilot version of REMT was devised by Prof. Jack Porter at the University of Kansas. It was modeled after the very successful testing and counseling program developed at Ohio State University and offered to Ohio high school juniors since 1977.

A pilot program was offered in 1989 by KU to juniors in 23 Kansas schools. It was extraordinarily well-received and many other high schools asked us to provide the program for their students. So in 1990, the early testing program was expanded to 94 high schools from all parts of the state with all six Regents universities participating. In addition a calculus readiness test was offered as an alternate option. Those two years were funded by KU. However, the program fell victim to funding cuts in 1991 and has not been offered since.

In both 1989 and 1990 REMT was enthusiastically received by all the schools in which it was offered. A survey after the first year showed that most of the original 23 schools experienced 40% increases in senior mathematics enrollment in the year following the test. This is consistent with results obtained by Ohio high schools after their first year of testing.

We have a lot of data from the Ohio program, some of it is summarized on the attached pages. For example, Ohio State University found that students needing remedial mathematics in college have a very poor chance of graduating: in 1980 only 34% of students needing remedial mathematics graduated or achieved senior status after four years, versus 80% for calculus ready students. Ohio State also found that its testing program brought about a sharp decline in remedial enrollments, which declined from 42% of the freshman class in 1977 (the first year of testing) to 20% in 1989.

We have been trying to obtain funding for REMT since 1991. It was included in the Regents budget request for two years, but failed to make it into the Governors' budget request. The Regents continue to endorse it, and the Governor has said she will support it if the legislature funds it.

Finally, questions have arisen regarding REMT's compatibility with the KATM standards and the mathematics curriculum standards adopted by the Kansas State Board of Education. We wish to lay to rest any such concerns.

The University of Kansas' Mathematics Department and in particular, Prof. Jack Porter, the developer and director of REMT, strongly support the mathematics curriculum objectives of the KSBE and will ensure that REMT is not only compatible with the content of KSBE's curriculum objectives but that it will promote its completion during the 11th and 12th grades.

To this end, KU professors Porter and Himmelberg have met at length with Kim Gattis of the KSBE staff. We studied carefully both the KSBE's mathematical outcomes objectives and the REMT's counseling role for college preparatory studies and determined that there is no real conflict between them and that, in fact, in addition to counseling students about their college readiness, REMT can serve an important role in encouraging high school students to complete the KSBE's desired outcomes in the 11th and 12th grades.

In order to advance these objectives and also to allay concerns of high school teachers that the KSBE outcomes interfere with a college preparatory curriculum, we agreed on a list of mathematics teachers and coordinators from all sections of Kansas with whom Prof. Porter would consult on the next version of the REMT test. We believe that the resulting REMT test will greatly improve the preparedness of Kansas high school graduates for college and university studies and that it will not only be compatible with the KSBE standards but will promote the achievement of the desired KSBE outcomes.

A DESCRIPTION OF THE PROGRAM FOR EARLY MATHEMATICS TESTING OF HIGH SCHOOL JUNIORS

Educators are becoming increasingly alarmed over the lack of mathematical preparation found in large numbers of college-bound students. Many such students do not even take advantage of all the opportunities for mathematical preparation available to them in high school.

In response to this problem, during 1989-90, a pilot program for early mathematics testing of high school juniors was started by the University of Kansas. The pilot program was patterned after the successful, ten year old program in Ohio. The program started by testing the mathematical ability of high school juniors. Each tested junior received a personal letter containing information concerning his or her present level of mathematical proficiency and contained a comparison of this level of performance with the college mathematics requirements for two majors selected by the tested student. This information acquainted the Kansas student (as it has in Ohio) to deficiencies in his or her mathematical preparation for college. High school counselors and mathematics teachers were provided with a detailed advising manual to interpret the test results for other college majors and to help the students select a mathematics course for their senior year. The first year started with the testing of high school juniors from twenty-three high schools, mainly from the northeast part of the state.

During 1990-91, the second year of the program, the early testing program was expanded to 94 high schools from all parts of the state with all six regents universities participating in the program (students had the flexibility to select two majors from any participating institution), and a calculus readiness test was offered as an alternate option to the algebra/geometry test currently being given.

The program has been neither funded nor offered since 1991. This document is a proposal for fiscal year 1995. It is proposed that the early mathematics testing of high school juniors (herein referred to as REMT—an acronym for Regents Early Mathematics Testing) be established as a Kansas Board of Regents program for the 1995 fiscal year. During 1994-95, the communication lines among the mathematics departments of the Regents universities and Kansas high schools will continue to be improved, the REMT program will be made available to all Kansas high schools, and the ground work for including all colleges in Kansas will be started.

The REMT program will aid Kansas students in assessing their own college mathematical readiness and motivate them to continue further with essential mathematical preparation while still in high school. The expected increase in Kansas high school students who are prepared to enter college and the expected increase in the number of Kansas freshmen who eventually complete college are major benefits of this program.

PROPOSED BUDGET FOR 1994-95 REGENTS PROGRAM
FOR EARLY MATHEMATICS TESTING OF HIGH SCHOOL JUNIORS

Personnel 69,529

Director

1/4-time Academic Year '94-95	15,810
Summer (2 months)	
July 94	6,692
June 95	7,027

Assistant Director

2/3-time, 12 mos., 94-95	30,000
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Secretary

1/2-time, 12 mos., 94-95	10,000
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Travel	3,000	3,000
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Operating Expenses 28,500

Telephone, postage, etc.	5,000
Test printing	10,000
Test scoring	2,500
Computer generated letters to students	2,000
Teachers/Counselors Manual	1,000
Computer equipment (first year only)	8,000

TOTAL	\$101,029
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BUDGET NOTES:

Director. During fiscal 1995, the director will continue establishing and developing communication lines with high schools through out the state of Kansas, providing in-service work shops to different school districts, and coordinating the efforts of all for the regents' mathematics departments, and will start the development of graphics calculator based tests. The third year of the project is the time to begin the development of the plans to bring Kansas Colleges into the early mathematics testing program.

Assistant Director. The assistant director, in addition to helping the director in the activities described above, will compose newsletters to the high schools, write a

brochure for parents of high schools students, and continue developing the machinery for testing (fine tuning the algebra/geometry test and removing glitches after the first year of use of the calculus readiness test). The assistant director must be able to statistically evaluate tests (the tests will be continuously changed to reflect the new guidelines of the NCTM Standards), answer technical questions from the high school teachers (algebra through calculus), and work with the regents universities and colleges in preparing advising manuals and course outlines to be issued to the high schools for advising purposes. Also, the assistant director will assist with telephone and written inquiries from principals, counselors, mathematics teachers, high school juniors and their parents.

Each participating high school will designate a mathematics coordinator, and the director and the assistant director will be accessible to the principal, one or more counselors, and one or more mathematics teachers from each of the participating high schools. Many telephone calls between the high schools and the director will be made during the testing period. The advising period begins immediately after the student has received the results of the test. Many phone calls are expected concerning mathematics requirements for particular majors and, if there are options, selection of the most appropriate mathematics course to take during the senior year. This extensive interaction is the reason why it is so important to have a second person, an assistant director, in the program. Also, the director and the assistant director will visit a number of the participating high schools to explain the details of the program and to ensure the smooth operation of the testing process.

Half-time Secretary. The experience of the pilot years indicates that many secretarial duties are involved in running the program. These duties involve from answering a telephone, typing letters, copying individual students' letters, running the computer programs, packaging and mailing tests to the high schools, and receiving answer sheet packages from high schools.

During the 1994-95 academic year, over 30,000 high school juniors will be attending the 350 plus high schools in Kansas. The Ohio model suggests that approximately $\frac{3}{4}$ ths of these students and high schools will participate in the early testing program. These numbers alone indicate that the director, the assistant director, and the secretary will be kept very busy during the academic year and the summer.

COMPUTER AND PRINTER EQUIPMENT NEEDS: The amount of data collected for 25,000 students per year from 250 high schools will be enormous. To manipulate this data and to provide the flexibility needed to respond to requests from principals for a personal high school analysis, the program will need a personal computer and printer. The personal computer should be reasonably fast and have a large hard disk memory; a PC-486 with 120 megabytes of hard disk memory and a 50 MHz speed has the necessary capabilities. A Hewlett Packard laser printer which prints sixteen pages per minute will handle the printing demand.

REGENTS EARLY MATHEMATICS TESTING PROGRAM

QUESTIONS AND ANSWERS

What is the Regents Early Mathematics Testing (REMT) Program?

It is an opportunity for college-bound high school juniors to determine their progress towards adequate preparation for college level mathematics. If a student's progress is inadequate, there is one additional year in high school for the student to correct deficiencies. As part of the REMT program, the student selects two college majors from a Regents university and receives a letter in which the student's test result is used to determine how prepared in mathematics the student is for the two majors. Frequently, students are awakened by the news that their dream of majoring in a specific area may be delayed by a semester (or longer) if they do not take any mathematics during their senior year.

Will the results of this test be used to compare one school with another?

Individual students will be informed of their own results and individual high schools will be informed of their own results; otherwise, no summary data for students, teachers, schools, or districts will be made available to anyone.

If no data is collected for the REMT program, how is it possible to determine whether the program is successful?

The primary goal of the REMT program is to encourage juniors (especially those who may be college bound) to take mathematics in the twelfth grade. So, the measure of success of this program is whether there is an increase in mathematics enrollment in the twelfth grade. The results in Kansas have been similar to those in Ohio where senior math enrollments increased by 40% after the test had been well-established. In Kansas, senior math enrollments increase by more than 40% in the small sample of schools who participated during AY 89-90 pilot program. Senior enrollments in a couple of the smaller schools more than doubled.

Also, in Ohio, remedial enrollments at Ohio State University decreased from 43% of the entering class of 1979 to 20% of the 1989 class (see one of the other enclosures). The REMT program has not been offered for enough years to enough students to verify that REMT will duplicate the success of the Ohio State program at increasing the percentage of "math qualified" college entrants. However, the preliminary results on increased senior math enrollments indicate that the continuation of the program on a statewide scale will lead to a substantial decrease in remedial enrollments in colleges and universities in Kansas.

Are students less likely to graduate from college if they need to take high school level math in college?

Yes. A scientific study of this question was conducted at Ohio State University for its 1980 freshmen class. This study showed a strong correlation between math readiness level and college dropout rate and between math readiness and four-year senior status. The results of this study are presented in the following pages.

Are many students entering the university and taking courses which were available in their high school?

Yes, approximately 60% of the fall 90 entering freshmen at K.U. are enrolled in the high school mathematics courses of intermediate algebra (Math 002) and advanced algebra (Math 101).

At Ohio State University, 56% of the 1987 entering freshmen class placed in advanced algebra courses or lower.

At the University of Illinois at Urbana-Champaign approximately 20% of the entering students need to take high school level courses before they can start the college level math courses required for their chosen majors. The University of Illinois has selected admission and the 1985 entering class had ACT scores that averaged 27.3 (about 92 percentile) and an average high school rank in class near the ninetieth percentile.

Does the Regents test provide any information not supplied by the ACT and SAT examinations or the assessment test given by the State Department of Education?

The Regents test is very similar to tests given in Louisiana, Ohio, Illinois, Nebraska, and other states. It tests specific skills and the understanding necessary for success in college level math. By contrast, the quantitative sections of the ACT and SAT tests are primarily tests of quantitative aptitude and reasoning ability. Few, if any, of the questions on these tests cover content beyond elementary algebra. The Kansas test covers a broad range of topics in the beginning college level mathematics courses. Also, in the REMT program, a student selects two majors from a Regents university in Kansas and compares the test results with the mathematics requirements of those two majors. It is not only the testing which encourages students to enroll in a mathematics course during their senior year, but the individual report describing their college prospects with the mathematics they have learned to date. The testing provides a personal link, and the message is from the Regents universities in Kansas (as opposed to a national message from ACT or SAT). Another reason for the success of the program is the level of and flexibility of implementation. The communication is at the grass roots level between a mathematics professor and a high school mathematics teacher or counselor and then between a high school teacher or counselor and the student.

The assessment test given by the State department of Education is for all tenth graders (including those not college bound) and is based on material through only the middle of tenth grade; that test is not suitable for use as a placement test assessing a student's preparedness to take mathematics at the college or university level. By the middle of the eleventh grade, college-track students are finally prepared for the first course beyond remedial mathematics - a college algebra course. Also, the assessment test is designed to accommodate all tenth graders, including those going into vocational careers. The REMT program does more than test students, it provides information about their mathematical standing at a state university based on two majors selected by the student and provides strong motivation, through its counseling letter for the student, to continue taking mathematics through the senior year of high school.

If a college bound junior has good grades in math courses, is there any reason to take the Regents early mathematics test?

Good grades in high school math courses are certainly an important predictor of future success in college. However, high school grades do not provide a very accurate measure of the extent to which a student has retained the mathematical skills that are essential for success in college level math. The Regents test is designed to measure this retention over a range of math courses.

If a student does well on the Regents test, will the student really be ready for college math?

A good performance on the Regents test is certainly a strong indication that a student is on the track for success in college math. However, retaining and improving the student's current command of mathematics is important. The best way to accomplish this is by taking more math during the senior year in high school.

How much does this cost the high school?

There are no costs to the high school. The second year of the program was funded by K.U.; there was no funding for the current year. The Board of Regents are requesting funds from the Kansas Legislature to support this program for next year. Participating high schools are required to provide:

(1) A test coordinator/contact person who is a local high school mathematics teacher.

(2) Suitable space, time, and proctors to administer the test. The test is a 45 minute timed test, and also, students need an additional 5 - 10 minutes to fill out the necessary background information.

(3) An opportunity for high school counselors and mathematics teachers to advise students concerning enrollment in senior mathematics courses and mathematics prerequisites for various college majors.

What is the new Calculus Readiness Test (CRT)?

There are two tests - one is used to determine if students are ready for intermediate algebra (a remedial mathematics course at the university level) or for college algebra and the other (CRT) is used to determine those ready for calculus. The high school mathematics teacher decides who takes which test, and about one-fifth to one-sixth of the students take the CRT. The CRT is designed to help identify those high school students who are ready for a college level calculus course before high school graduation. This test would be suitable for juniors who began algebra in the eighth grade and have completed three years of algebra and geometry and are taking advanced or precalculus math in their fourth year. Also, the test can be given to seniors in their fourth year of college preparatory mathematics sequence by teachers interested in providing this type of feedback to their students. The students taking the CRT receive the same type of individual letter as students taking the algebra test.

REMT INFO

Summary of Math Enrollments at Ohio State University

Ohio State University	1977	1979	1981	1983	1985	1987	1989
Number of Ohio High Schools Enrolled in the Early Testing Program	1	37	214	608	716	748	677
Number of Entering Freshmen	7476	8172	6342	6730	6862	6169	6047

Mathematics Placement Level of Entering Freshmen

Remedial Math Level	42%	43%	37%	34%	25%	20%	20%
College Algebra, Trig Precalculus, Calculus Level	58%	57%	63%	66%	75%	80%	80%

1. The enrollment in remedial mathematics courses at Ohio State University has decreased from 42% in 1977 to 20% in 1989.

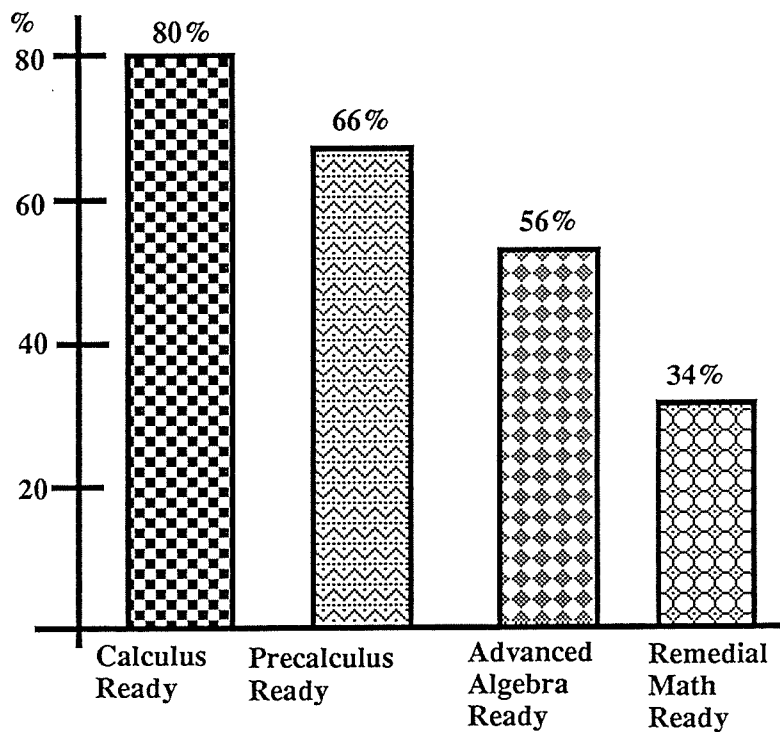
2. In 1983, OSU received funding from the legislature and opened the program to all high schools in Ohio. Since 1983, about 600 Ohio high schools and 60,000 students (about 75% of the total) have participated in the program. It is noteworthy that

(a) the percent of test-taking juniors who are not enrolled in any mathematics course as juniors has declined from 14.57% in 1983-84 to 6.58% in 1988-89 and

(b) a high school experiences, on the average, a 40% enrollment increase in senior mathematics courses the year after initial participation in the Ohio early testing program.

REMT INFO

All entering freshmen at Ohio State University take a mathematics placement examination and for the purposes of this chart are separated into four levels - calculus ready, precalculus ready, advanced algebra ready, and remedial math ready. The following chart indicates the percent of those Ohio State University students reaching senior status or graduating after four years (1980-84).

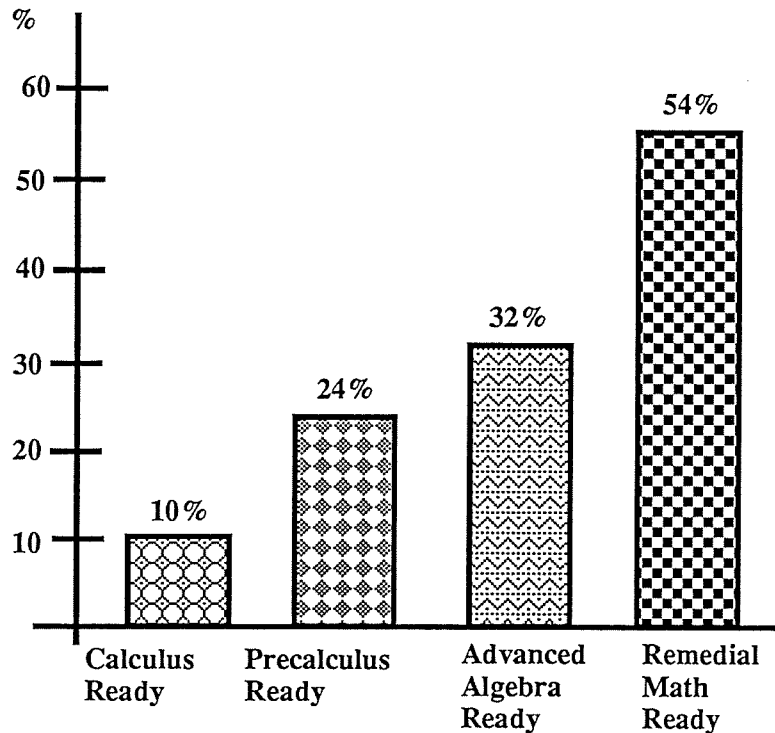


Only 34% of those freshmen placing at the remedial mathematics level reached senior status or graduated after four years, whereas 80% of those ready for calculus reached senior status or graduated after four years.

54% of the total 1980 entering freshmen class reached senior status or graduated after four years.

REMT INFO

The following chart indicates the percent of those Ohio State University students reaching at most sophomore status after four years (1980-84).



54% of those freshmen starting in remedial mathematics reached at most sophomore status after four years, whereas only 10% of those ready for calculus reached at most sophomore status after four years.

Many of these students have dropped out of college. Some eventually return to the university and graduate, and some transfer to other colleges and universities.

Early Detection Nips Math Problems in the Bud

A high school math testing program that started in Ohio shows that it's possible to improve math performance—and save money at the same time

AMID ALL THE ANGST ABOUT THE DISMAL state of science and math education in the United States, a program started by two Ohio educators 14 years ago is beginning to get a lot of attention. According to recent analyses, the program seems to be able to do the impossible: improve math achievement and save money while doing it. Small wonder, therefore, that the program, the Ohio Early College Mathematics Placement Testing Program (EMPT), has been spreading rapidly, mainly by word-of-mouth. It's now used in more than 600 high schools in Ohio, about 75% of the total, and has also been picked up by school systems in 15 additional states.*

EMPT uses an "early alert" test to warn junior year high school students of their math deficiencies in time for them to correct their shortcomings before graduation. Aimed primarily at college-bound students, the program has halved the need for remedial math courses in Ohio's major colleges and universities.

And it does this for peanuts, relatively speaking. The states spend about \$2 to \$3 for each student who participates in the program, and that is more than made up for by what they save in the cost of remedial mathematics courses.

EMPT dates back to 1977, a time when math educators already knew they had a problem on their hands. In Ohio and across the country, the scores on the math achievement tests administered to all high schoolers had been steadily plummeting since reaching a high in the mid-1960s. Concerned about the decline, the members of the Ohio state committee charged with running the tests the state used to assess the math skills of its high school students edged toward a classic squabble in a meeting held at the time. The university math contingent began blasting the secondary school teachers for failing to prepare their students adequately, and the high school teachers on the committee railed back that "ivory tower academicians" know very little about what

it's like to teach math to adolescents.

Instead of fighting over the cause of the declining math abilities, however, two members of the committee had a better idea. Bert Waits, a mathematics professor at Ohio State University (OSU), and Albert Adcock, then chairman of the math department at Westland High School in Columbus, joined forces to develop a program—EMPT—that sought to correct the problem. At the heart of the program is a test that students can take, on a voluntary basis and usually during their junior year, to identify their math deficiencies. The test is typically given during a 1-hour English or history class to snare as many students as possible. It has sections on algebra, trigonometry, and geometry, which can be scored separately.

In the early days of the program, Waits used to deliver the test results to the participating schools himself. Now EMPT is so widely used, he can no longer give participants that kind of individual attention, but the program still has an important personal dimension: The results are given personally to students by their guidance counselors or math teachers, and, unlike the national standardized tests, EMPT defines inadequacies in terms of a student's own career goals.

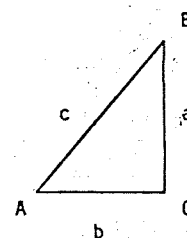
A student who plans to major in history, for example, might be judged well prepared in math even though he or she does poorly on the trigonometry section of the test, while a prospective economics or engineering major with the same score might be judged in need of more training. Moreover, the school guidance counselors then advise students who have done poorly on one or more sections of the test on what high school math courses need to be mastered before graduation if they are to have a reasonable chance of success in their chosen college majors.

"The Ohio EMPT offers a good tool for informing high school students what to expect in college," says John Luker of the University of Illinois, who directs that state's program. "Most important," he adds, "it encourages students to enroll in senior-level high school math."

After the first group of juniors was tested

How's your high school math?

- If $\frac{2}{3} - \frac{1}{2} = \frac{y}{4}$, then $y =$
(A) $3/2$ (D) $2/3$
(B) $1/12$ (E) none of these
(C) 1
- If the equations $2x + 2y = 9$ and $2x - y = -3$ are solved simultaneously, the value of x is found to be:
(A) $-1/2$ (D) -2
(B) $1/2$ (E) none of these
(C) 2
- If $x^2 + kx + 10 = (x + 2)(x + 5)$, then $k =$
(A) 2 (D) 7
(B) 5 (E) 3
(C) 10
- In triangle ABC, angle C is a right angle with $a = 6$ and $c = 12$. What is b ?
(A) $6\sqrt{3}$
(B) 6
(C) $6\sqrt{5}$
(D) $6\sqrt{7}$
(E) 9
- After a 15% reduction, the sale price of a knife was \$5.09. Before the reduction the price was:
(A) \$5.85 (D) \$6.21
(B) \$5.90 (E) \$5.99
(C) \$4.32



Answers:
(1.) B; (2.) B; (3.) A; (4.) D;
(5.) E.

*Arizona, Illinois, Louisiana, Maryland, Michigan, Missouri, Nebraska, New Hampshire, New Mexico, Oklahoma, Oregon, Pennsylvania, Rhode Island, Washington, and Wisconsin.

An EMPT sampler. Try your skills on a selection of problems from an outdated test.

in Ohio in 1977-78, they increased their math enrollment in the following year by 73% compared to senior math enrollment the year before. More recent surveys show that increased enrollment in senior-year math has been sustained at a level of 40% to 45%. Apparently, when the students have their deficiencies presented to them, with explanations of the potential impact on their college and career goals, they have a powerful motivation to take corrective action while still in high school.

"Raw scores don't have the impact of this type of personalized information," says Joan Leitzel, who participated in the early development of EMPT when she was on the OSU faculty, but has since become division director for education and human resources at the National Science Foundation. "Even though students are inclined to relax during their senior year of high school, they don't like the thought of spending the first year of college taking noncredit courses. And their parents don't like paying for it."

Indeed, EMPT graduates do better on college placement exams than students who haven't participated in the program and,

consequently, they need fewer remedial courses. At OSU, for example, about 25% of students from non-EMPT schools need remedial math compared to only about 13% of the program's participants. Largely as a result of EMPT, the percentage of freshman taking the remedial courses at OSU has declined from 47% in the late 1970s to 20% now, says Waits.

And that's saved money for the state. During the late 1970s, says Waits, "The [state] legislature was spending \$10 to \$12 million annually on remediation at the university level." But the annual cost of EMPT in Ohio is only about \$200,000. Although the program was originally funded by OSU and a local Columbus foundation, the Ohio legislature, gratified by the declining need for remedial math, now picks up the modest costs.

The program has other, more intangible benefits as well. One of these is the establishment of a friendly, ongoing dialogue among high school math teachers, guidance counselors, and college math faculty—a marked improvement over the tensions of the 1970s. "Now, university staff tend to look upon

high school staff as professional colleagues," says Adcock, still a math teacher at Westland High. "The success of the program has a lot to do with the personalities of the people involved. The OSU people respect the experience of the high school staff."

Although the EMPT focused strictly on math assessment at first, in recent years it has moved on to develop courses and other means of upgrading the abilities of high schoolers. The most recent effort in this regard is a "Calculus Readiness Course," which relies on computers and graphics to encourage problem-solving and give students a more intuitive sense of math. The course helps the students to anticipate the demands of higher math, says Waits.

Kenneth Wilson of OSU, a Nobel laureate in physics, is among those enthusiastic about EMPT's new direction. The program's earliest efforts, which focused on the students in trouble, did nothing, he says, to spur enrollment in graduate level sciences. "But," he predicts, "the latest developments, which encourage interest in precalculus in high school, could generate new majors in the sciences." ■ ANNE SIMON MOFFAT

Universities pass the word on math needs

By John R. Engen

The Wichita Eagle

LAWRENCE — On a visit to the University of Kansas two years ago, Nancee Scherich, a math teacher at West High in Wichita, heard what she has heard before from former students: Why didn't you tell us we would need so much math in college?

"You always get that," Scherich said. "One of the counselors said, 'We tried to tell you, but you wouldn't listen.'"

Now, high school teachers aren't the only ones preaching the message. State universities are, too.

A new program aimed at making students more aware of the math requirements at KU and other state universities is spreading across the state like a prairie fire.

During this school year, more than 100 Kansas high schools will participate in the Regents Early Math Test. Next year, that number is expected to more than double, according to Jack Porter, a KU math professor and the program's director.

About 10,000 students, including nearly 1,000 from the Wichita area, will participate, Porter said. Students at several local schools, including North, Northwest and South high schools in Wichita, will take the test this school year.

The program is simple. In January and February, college-bound juniors at about 100 high schools will take a 32-question, multiple-choice test designed by KU to assess their abilities in geometry and algebra. They also

See MATH, Page 3B

MATH

From Page 1B

will be asked to select two college majors and a state university they are interested in.

Within two weeks, students get their scores back, along with a listing of math courses required for entry into their selected major programs.

The program is intended to encourage students to take more math in high school by making them aware of college requirements. Studies also show that students who enter college with good math skills are more likely to graduate.

"Students are not really aware of the consequences of not continuing to take math in high school if they are college-bound," Porter said.

The program, in its second year, is modeled after a similar one run by Ohio State University.

And it seems to be working, Porter said. Some of the high schools that participated last year saw their senior math enrollments jump by 40 percent this year.

Math is a core requirement for many college majors. For instance, a business school graduate at KU needs to have completed a full year of calculus and a semester of statistics.

But many students, unaware of the math requirements until they arrive on campus, face a rude awakening. The result: They must spend an additional semester or more in college taking math courses.

Or they drop out.

A study conducted by Ohio State shows that 80 percent of students who arrive at college ready to take calculus graduate, compared with 54 percent of all freshmen and 34 percent of those who need remedial math courses.

"If we can reduce the number of students in remedial courses, that will mean that more students will actually finish college," Porter said. "That's the bottom line, and that's exciting."

Last year the program only accommodated students contemplating KU. It has since been expanded to cover all six state universities.

The only potential drawback, according to Stan Koplik, executive director of the Board of Regents, is the cost. The Board of Regents has asked the Legislature to pay the program's \$95,000 price tag for the coming year. That decision will be made during the upcoming session.

"Some will say, 'Can we afford it?'" Koplik said. "'Can we afford not to' is the better question. The emphasis on math is becoming more and more important."

"I hope that people who are interested in our state's progress will see the benefits of spending \$95,000."

Scherich said she is excited about the program. Her school will participate for the first time this January, and she hopes her colleagues' pleas that students take more math will be taken more seriously.

"When it comes from the universities saying, 'Hey, you need a little more math,' they might listen more," Scherich said.

THE 1990-91 REGENTS EARLY MATHEMATICS TESTING PROGRAM - KANSAS
KANSAS HIGH SCHOOL - ALGEBRA/GEOMETRY RESULTS

(Exam Date - Feb 14, 1991; 12 Students)

<u>NAME</u>	<u>I.D.</u>	<u>SCORE</u>	<u>GRADE</u>	<u>CURRENT COURSE</u>	<u>PLANS</u>	<u>MAJOR NO.1</u>	<u>MAJOR NO.2</u>	<u>UNIV</u>
BUICK BETTY B		10	Junior	Basic Math/Pre-Alg	Unknown	Social/Behavior Sciences	Architecture/Pharmacy	KU
CHEVY COLENE C		25	Junior	Algebra II	Coll/Univ	Physical Sciences	Humanities	FHSU
CHRYSLER CANDY C		22	Junior	Regular Geometry	Coll/Univ	Agriculture	Home Economics	KSU
DODGE DIANE D		12	Junior	Algebra I	Military	Education (Science)	Medical/Health	ESU
DOE JANE J		30	Junior	Trig/Pre-Calculus	Coll/Univ	Engineering	Computer Science	WSU
FORD FRANCES F		15	Junior		Comm College	Technology	Biological Sciences	PSU
JEEP JANET J		27	Junior	None	Unknown	Fine Arts (Art, Music)	Business	KU
KAISER KATHY ANN		19	Sophomore	Trig/Pre-Calculus		Education (Non-science)	Geology, Geography	FHSU
MERCURY MELISSA M		30	Junior	Algebra II	Comm College	Mathematics	Social Welfare/Journalism	KSU
NASH NANCY N		8	Junior	Consumer Math	Trade School	Biology	Fine Arts (Design)	ESU
PONTIAC PEGGY		13		Applied Math/Stat	Comm College	Computer Science	Business	WSU
SMITH SALLY SUSAN		24	Senior	Informal Geometry	None of above	Education (Elementary)	Economics	PSU

SAMPLE REPORT FOR HIGH SCHOOL

THE 1990-91 REGENTS EARLY TESTING PROGRAM - KANSAS
INDIVIDUAL STUDENT REPORT - ALGEBRA/GEOMETRY TEST

BUICK BETTY B
 STUDENT I.D.
 Kansas High School
 Junior

SCORE: YOUR SCORE IS **10** OUT OF 32.
 SELECTED UNIVERSITY: UNIV OF KANSAS
 SELECTED MAJORS:
 SOCIAL/BEHAVIOR SCIENCES
 ARCHITECTURE/PHARMACY

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RECOMMENDATION: Your test score indicates you are **not** ready to take the lowest math course taught at KU (Math 002); Math 002 is an intermediate algebra course which does not count towards a college degree. Almost all of the majors at KU require at least one math course beyond Math 002. The courses required before taking Math 002 are algebra I and geometry; your situation could be very serious if you need to take one of these courses at KU as neither is currently being taught there. If you plan to go to college, consult with your math teacher or counselor as soon as possible. They will help you determine what is the best math course (or courses) for you to take as a senior. There is still one year left and much can be accomplished during it.

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**SAMPLE
LETTER**

THE FIRST THREE (OR FEWER) COLUMNS BELOW
 DESCRIBE THE COURSES YOU NEED TO PREPARE FOR
THE ENTRY COURSE RECOMMENDED FOR YOUR MAJOR.

MAJORS	ENTRY COURSE RECOMMENDED			
	YOU ARE PREPARED <u>TO TAKE</u>	NEXT <u>COURSE</u>	NEXT <u>COURSE</u>	FOR YOUR <u>MAJORS</u>
SOCIAL/BEHAVIOR SCIENCES (SOCIOLOGY, COMMUNICATIONS, POLITICAL SCIENCE, PRE-LAW, PSYCHOLOGY, ANTHROPOLOGY)	ALG I (NOT AT KU)	002 (REMEDIAL)	101	101*
ARCHITECTURE	ALG I (NOT AT KU)	002 (REMEDIAL)	101	115
PHARMACY	ALG I (NOT AT KU)	002 (REMEDIAL)	101	115

*ADDITIONAL MATH COURSES ARE REQUIRED, BUT THIS IS WHERE YOU START.

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BRIEF LIST OF ELEMENTARY MATH COURSES AT KU

<u>COURSE</u>	<u>DESCRIPTION</u>	<u>PREREQUISITE</u>
002	INTERMEDIATE MATH	ALG I & GEOM
101	COLLEGE ALGEBRA	002
104	COLLEGE ALGEBRA AND TRIGONOMETRY	002
115	CALCULUS FOR BUSINESS	101
121	CALCULUS FOR SCIENTISTS/ENGINEERS	104
365	ELEMENTARY STATISTICS	101

THE 1990-91 REGENTS EARLY TESTING PROGRAM - KANSAS
INDIVIDUAL STUDENT REPORT - ALGEBRA/GEOMETRY TEST

CHEVY COLENE C
STUDENT I.D.
Kansas High School
Junior

SCORE: YOUR SCORE IS 25 OUT OF 32.
SELECTED UNIV: FORT HAYS STATE UNIV
SELECTED MAJORS:
PHYSICAL SCIENCES
HUMANITIES

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RECOMMENDATION: Good job! Your test score indicates you are understanding basic algebra and geometry concepts at the proper depth and you are ready to take MACS 110. All majors in mathematics and physical sciences and some other majors require you to take a math course beyond this course. If you are a junior, this placement indicates your mathematics preparation for college is on schedule. If you are taking an algebra course this year, complete it and take a mathematics course during your senior year. Depending on your goals, maybe a trigonometry course or analytical geometry course would be appropriate during your senior year. Talk with a math teacher or a counselor to receive the best advice.

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**SAMPLE
LETTER**

THE FIRST THREE (OR FEWER) COLUMNS BELOW
 DESCRIBE THE COURSES YOU NEED TO PREPARE FOR
THE ENTRY COURSE RECOMMENDED FOR YOUR MAJOR.

<u>MAJORS</u>	<u>YOU ARE PREPARED NEXT TO TAKE</u>	<u>NEXT COURSE</u>	<u>NEXT COURSE</u>	<u>ENTRY COURSE RECOMMENDED FOR YOUR MAJORS</u>
PHYSICAL SCIENCES				
PHYSICS, CHEMISTRY (B.S.)	110	122 or 130	234	234*
EARTH SCIENCE	110	331		331*
CHEMISTRY (B.A.)				
HUMANITIES				
HISTORY, PHILOSOPHY, FOREIGN LANGUAGES	110			110
ENGLISH	110			UR

*ADDITIONAL MATH COURSES ARE REQUIRED, BUT THIS IS WHERE YOU START.

UR = FOR THE GENERAL EDUCATION PROGRAM OF THE UNIVERSITY EACH STUDENT MUST TAKE 12 HOURS OF MATH OR SCIENCE.
 ALL STUDENTS ARE REQUIRED TO TAKE A COMPUTER COURSE; THE PREREQUISITE FOR THE COMPUTER COURSE IS AN ACT MATH
 SCORE > 11 OR ONE FHSU MATH COURSE. ALL TEACHERS MUST TAKE MACS 110, 234, OR 331.

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BRIEF LIST OF ELEMENTARY MATH COURSES AT FHSU

<u>COURSE</u>	<u>DESCRIPTION</u>	<u>PREREQUISITE</u>
010	BASIC ALGEBRA	
101	FUNDAMENTALS OF MATHEMATICS	
110	COLLEGE ALGEBRA	010 OR MATH ACT > 15
130	PRE-CALCULUS MATHEMATICS	110 OR MATH ACT > 22
234	ANALYTIC GEOMETRY AND CALCULUS I	130 OR 110 & TRIG
331	CALCULUS METHODS	110 OR MATH ACT > 21

**THE 1990-91 REGENTS EARLY TESTING PROGRAM - KANSAS
INDIVIDUAL STUDENT REPORT - ALGEBRA/GEOMETRY TEST**

CHRYSLER CANDY C
STUDENT I.D.
Kansas High School
Junior

SCORE: YOUR SCORE IS 22 OUT OF 32.
SELECTED UNIVERSITY: KANSAS STATE UNIV
SELECTED MAJORS:
AGRICULTURE
HOME ECONOMICS

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RECOMMENDATION: Your test score indicates you are ready to take MATH 100 or MATH 150 or MATH 201 depending on your major. All majors in mathematics and physical sciences and some other majors require you to take a math course beyond these courses. If you are a junior, this placement indicates your mathematics preparation for college is on schedule. If you are taking an algebra course this year, complete it and take a mathematics course during your senior year. Depending on your goals, maybe a trigonometry course or analytical geometry course would be appropriate during your senior year. Talk with a math teacher or a counselor to receive the best advice.

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**SAMPLE
LETTER**

THE FIRST THREE (OR FEWER) COLUMNS BELOW
DESCRIBE THE COURSES YOU NEED TO PREPARE FOR
THE ENTRY COURSE RECOMMENDED FOR YOUR MAJOR.

<u>MAJORS</u>	YOU ARE			ENTRY COURSE
	PREPARED	NEXT	NEXT	RECOMMENDED
	TO TAKE	COURSE	COURSE	MAJORS
AGRICULTURE				
AGRIBUSINESS, AGRONOMY, BAKERY SCIENCE, CROP PROTECTION, FEED SCIENCE, FOOD SCIENCE, HORTICULTURE, MANAGEMENT, MILLING SCIENCE	100			100*
CLOTHING & TEXTILES, FOODS & NUTRITION, HUMAN ECOLOGY, HOTEL & RESTAURANT MANAGEMENT	100			100
FOOD SCIENCE, NUTRITION & EXERCISE SCIENCE, NUTRITIONAL SCIENCE	150	210 or 220		210 or 220
TEXTILE CHEMISTRY	150	220		220*

*ADDITIONAL MATH COURSES ARE REQUIRED, BUT THIS IS WHERE YOU START.

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BRIEF LIST OF ELEMENTARY MATH COURSES AT KSU

<u>COURSE</u>	<u>DESCRIPTION</u>	<u>PREREQUISITE</u>
010	INTERMEDIATE MATH	HIGH SCHOOL ALG I
100	COLLEGE ALGEBRA	010
150	PLANE TRIGONOMETRY	010
205	GENERAL CALCULUS & LINEAR ALGEBRA	100
210	TECHNICAL CALCULUS	150
220	ANALYTIC GEOMETRY AND CALCULUS I	150

THE 1990-91 REGENTS EARLY TESTING PROGRAM - KANSAS
INDIVIDUAL STUDENT REPORT - ALGEBRA/GEOMETRY TEST

DODGE DIANE D
STUDENT I.D.
Kansas High School
Junior

SCORE: YOUR SCORE IS 12 OUT OF 32.
SELECTED UNIV: EMPORIA STATE UNIV
SELECTED MAJORS:
EDUCATION (SCIENCE)
MEDICAL/HEALTH

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RECOMMENDATION: Your test score indicates you are ready to enter Math 096, a remedial geometry course at ESU which does not count towards a college degree. Math 096 is a math course which should be completed in high school. Almost all of the majors at ESU require at least one math course beyond Math 096. You have an opportunity to significantly improve your situation by taking a math course during your senior year. Talk with a math teacher or a counselor as to what is the best math course to take as a senior.

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**SAMPLE
LETTER**

THE FIRST THREE (OR FEWER) COLUMNS BELOW
 DESCRIBE THE COURSES YOU NEED TO PREPARE FOR
THE ENTRY COURSE RECOMMENDED FOR YOUR MAJOR.

<u>MAJORS</u>	<u>YOU ARE PREPARED TO TAKE</u>	<u>NEXT COURSE</u>	<u>NEXT COURSE</u>	<u>ENTRY COURSE RECOMMENDED FOR YOUR MAJORS</u>
SECONDARY EDUCATION				
MATH & PHYSICAL SCIENCE	096 (REMEDIAL)	110		161*
MEDICAL OR HEALTH FIELDS				
PRE-MEDICAL, PRE-OSTEOPATHIC	096 (REMEDIAL)	110	161 or 165	161 or 165
PRE-OPTOMETRY, MEDICAL TECHNOLOGY				
PRE-DENTAL	096 (REMEDIAL)	156		156

*ADDITIONAL MATH COURSES ARE REQUIRED, BUT THIS IS WHERE YOU START.

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BRIEF LIST OF ELEMENTARY MATH COURSES AT ESU

<u>COURSE</u>	<u>DESCRIPTION</u>	<u>PREREQUISITE</u>
095	ALGEBRA SKILLS DEVELOPMENT	
096	GEOMETRY SKILLS DEVELOPMENT	095
110	COLLEGE ALGEBRA	096 OR MATH ACT > 16
156	PRINCIPLES OF MATHEMATICS	096 OR MATH ACT > 16
161	CALCULUS I	110 & TRIG
165	BASIC CALCULUS	110

THE 1990-91 REGENTS EARLY TESTING PROGRAM - KANSAS
INDIVIDUAL STUDENT REPORT - ALGEBRA/GEOMETRY TEST

FORD FRANCES F
 STUDENT I.D.
 Kansas High School
 Junior

SCORE: YOUR SCORE IS 15 OUT OF 32.
 SELECTED UNIV: PITTSBURG STATE UNIV
 SELECTED MAJORS:
 TECHNOLOGY
 BIOLOGICAL SCIENCES

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RECOMMENDATION: Your test score indicates you are ready to enter Math 112, a remedial algebra course at PSU which does not count towards a college degree. Math 112 is a math course which should be completed in high school. Almost all of the majors at PSU require at least one math course other than Math 112. You have an opportunity to significantly improve your situation by taking a math course during your senior year. Talk with a math teacher or a counselor as to what is the best math course to take as a senior.

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**SAMPLE
LETTER**

THE FIRST THREE (OR FEWER) COLUMNS BELOW
 DESCRIBE THE COURSES YOU NEED TO PREPARE FOR
THE ENTRY COURSE RECOMMENDED FOR YOUR MAJOR.

<u>MAJORS</u>	<u>YOU ARE PREPARED NEXT TO TAKE</u>	<u>NEXT COURSE</u>	<u>ENTRY COURSE NEXT FOR YOUR RECOMMENDED MAJORS</u>
TECHNOLOGY (PRINTING, AUTOMOTIVE OR WOOD)	112 (REMEDIAl)	113	113
BIOLOGY SCIENCES B.S. IN MEDICAL TECHNOLOGY	112 (REMEDIAl)	113	113
PRE-MEDICINE/PRE-DENTAL	112 (REMEDIAl)	113	150

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BRIEF LIST OF ELEMENTARY MATH COURSES AT PSU

<u>COURSE</u>	<u>DESCRIPTION</u>	<u>PREREQUISITE</u>
017	ELEMENTARY ALGEBRA	
103	NATURE OF MATHEMATICS	017
112	INTERMEDIATE ALGEBRA	017
113	COLLEGE ALGEBRA	112
114	ELEMENTS OF TECHNICAL ANALYSIS	112
150	CALCULUS I	113
153	INTRODUCTION TO ANALYTIC PROCESSES	113

THE 1990-91 REGENTS EARLY TESTING PROGRAM - KANSAS
INDIVIDUAL STUDENT REPORT - ALGEBRA/GEOMETRY TEST

DOE JANE J
STUDENT I.D.
Kansas High School
Junior

SCORE: YOUR SCORE IS 30 OUT OF 32.
SELECTED UNIV: WICHITA STATE UNIV
SELECTED MAJORS:
ENGINEERING
COMPUTER SCIENCE

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RECOMMENDATION: Wow!! Congratulations! You did an excellent job on this test. You may be ready to enroll in a calculus course. Talk to your math teacher and arrange to take the calculus readiness test. By all means, continue to build on your strong math foundation by taking a math course during your senior year. Depending on your background, maybe a trigonometry or analytical geometry course would be appropriate during your senior year. Talk with a math teacher or a counselor to receive the best advice.

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**SAMPLE
LETTER**

THE FIRST THREE (OR FEWER) COLUMNS BELOW
 DESCRIBE THE COURSES YOU NEED TO PREPARE FOR
THE ENTRY COURSE RECOMMENDED FOR YOUR MAJOR.

<u>MAJORS</u>	<u>YOU ARE</u>		<u>ENTRY COURSE</u>	
	<u>PREPARED</u>	<u>NEXT</u>	<u>NEXT</u>	<u>FOR YOUR</u>
	<u>TO TAKE</u>	<u>COURSE</u>	<u>COURSE</u>	<u>MAJORS</u>
ENGINEERING (AEROSPACE, ELECTRICAL, INDUSTRIAL, MECHANICAL)	112	242		242*
COMPUTER SCIENCE				
B.A. DEGREE	112	211		211*
B.S. DEGREE	112	211		211*

*ADDITIONAL MATH COURSES ARE REQUIRED, BUT THIS IS WHERE YOU START.

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BRIEF LIST OF ELEMENTARY MATH COURSES AT WSU

<u>COURSE</u>	<u>DESCRIPTION</u>	<u>PREREQUISITE</u>
011	ALGEBRA	HIGH SCHOOL ALG I
110	COLLEGE ALGEBRA	011
112	PRECALCULUS MATHEMATICS	011
144	BUSINESS CALCULUS	111 OR 112
242	CALCULUS I	TRIG & 109 OR 111
331	CALCULUS METHODS	TRIG & 109 OR 111



KANSAS ASSOCIATION OF COMMUNITY COLLEGES

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W. Merle Hill
Executive Director

Phone 913/357-5156
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To: Senate Committee on Education

From: Merle Hill, Executive Director
Kansas Association of Community Colleges

Date: January 19, 1994

Subj: Senate Bill No. 443, an ACT concerning community colleges;
relating to the term "main campus of a state educational
institution."

Mr. Chairman, members of the Committee, I am Merle Hill, executive director of the Kansas Association of Community colleges. Thank you for giving our Association members an opportunity to comment on Senate Bill No. 443.

The Association has no objection to applying the term "main campus of a state educational institution" to both Riley County and Saline County for the operations of Kansas State University.

Behind this proposed legislative change, as some of you know from presentations last summer to the Legislative Educational Planning Committee, are the educational courses several community colleges have been offering in Saline County since 1978 and, also, a possible expanded community role for the KSU Salina campus.

Since 1978, the six counties in which the main campuses of the state universities are located, Shawnee County and Saline County have been "off-limits" counties for community colleges. By State Department of Education rules and regulations, no community college could provide any type of educational offering in these counties without (1) approval of the State Board of Education and (2) authorization by the chief executive officer of a state university or, in Shawnee County, Washburn

*Sen. Ed.
1/19/94
Attachment 5*

University of Topeka. In Saline County, that authorization has been given by the President of Kansas State University in Manhattan.

The following courses and/or specialized training have been or are being offered in Saline County with **approval of the State Board of Education and the President of Kansas State University in Manhattan** and, currently, **the CEO of the Salina campus, Dr. Henry**. All of these programs, by the way, were requested by the agencies being served.

Allied Health Programs, including Adult Health Care, R.N. Re-licensing, Nursing Home Care, Dietary Management, Nurse Aid Certification, Emergency Medical Training; **specialized programs** for the Highway Patrol, the National Guard, the Saline County Sheriff's Office, the Salina Police Department, and Saline County fire departments; **joint programs** with the Salina Area Vocational-technical School; and **training-retraining programs for business and industry**.

These programs fulfill parts of the 12 missions assigned to the community colleges by the State Board of Education and are expected to be carried out on a statewide basis. The members of the Kansas Association of Community Colleges trust that the community colleges will be able to continue fulfilling these kinds of unique educational needs in all counties of the state and that the Salina Kansas State University two-year technical program will not be expanded to have a "state community college" duplicating at greater cost to individuals and the state what the community colleges are already providing.

I shall attempt to answer any questions you may have. Thank you.