

High School Math Courses Taken by NHS Developmental Mathematics Students

General College Office of Research and Evaluation (ORE) report

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This report focuses on the high school math background of NHS (new high school admit) students enrolled in developmental mathematics courses at the General College (GC) Fall 2000 and Fall 2001. 91.9% of all students enrolled in these GC math courses Fall 2000-2001 were NHS students, so very few cases were discarded in the analysis. The report is based on the 984 NHS students who were enrolled in Elementary (GC 0721) and Intermediate Algebra (GC 0731) Fall 2000 and 2001. 93% of these students were General College matriculants.

High School (HS) course records were pulled from the University of Minnesota Admissions database for these 984 students. The High School course database contained information on the type of math course taken, credits taken, and grade earned for each HS course as well as grade in which the course was taken. There were 14 different types of HS math courses recorded in the database. These types of courses and the distributions of grade in which they were taken are displayed in the table below:

Table 1: Distributions for Grade in Which High School Math Courses Were Taken

High School math course	Grade in which course was taken					Total N w/record of course	% of all students w/record of course
	9th grade	10th grade	11th grade	12th grade	NA		
Elementary Algebra	84.4%	13.3%	1.7%	0.4%	0.1%	693	70.4%
Geometry	24.4%	58.8%	12.7%	3.8%	0.2%	913	92.8%
Intermediate algebra	5.9%	28.0%	54.0%	12.1%	0.0%	803	81.6%
Trigonometry	0.0%	2.1%	35.1%	62.8%	0.0%	94	9.6%
Algebra/Trigonometry	4.6%	25.9%	45.4%	24.1%	0.0%	174	17.7%
Geometry/Trigonometry/Algebra	5.6%	8.3%	55.6%	30.6%	0.0%	36	3.7%
Functions/Statistics/Trigonometry	0.0%	10.7%	53.4%	35.9%	0.0%	131	13.3%
Precalculus	0.0%	0.9%	32.4%	66.2%	0.5%	213	21.6%
Calculus	0.0%	0.0%	11.7%	87.0%	1.3%	77	7.8%
Senior math	0.0%	5.3%	31.6%	63.2%	0.0%	19	1.9%
Advanced math	0.0%	0.0%	26.5%	73.5%	0.0%	49	5.0%
Analysis	0.0%	8.5%	34.0%	57.4%	0.0%	94	9.6%
Statistics/probability	0.0%	2.6%	18.4%	78.9%	0.0%	38	3.9%

The table above only reflects whether or not students had a record of taking any one of these HS courses, not necessarily whether these courses were passed. The table below presents pass-rates for these courses. For Elementary Algebra, Intermediate Algebra, and Geometry, successful completion was defined as an average grade of C- or above for at least 1 unit of the course. For the other courses, number of units taken did not factor into successful completion determination.

Table 2: Successful Completion of High School Math Courses

High School math course	Completed course		% of course-takers who completed course
	N	% ^a	
Elementary Algebra	599	60.9%	86.4%
Geometry	733	74.5%	80.3%

Intermediate algebra	563	57.2%	70.1%
Trigonometry	32	3.3%	34.0%
Algebra/Trigonometry	95	9.7%	54.6%
Geometry/Trigonometry/Algebra	20	2.0%	55.6%
Functions/Statistics/Trigonometry	69	7.0%	52.7%
Precalculus	67	6.8%	31.5%
Calculus	13	1.3%	16.9%
Senior math	7	<1%	36.8%
Advanced math	15	1.5%	30.6%
Analysis	33	3.4%	35.1%
Statistics/probability	8	<1%	21.1%

a – percentage based on all students

From the HS course database records it appeared that a number of students had not completed some core HS math courses (i.e. Elementary Algebra, Geometry, and Intermediate Algebra). Either they had no record of having taken these courses, or there was record, but the student had not met the course completion criterion defined above. However, if students did have a record of completing a higher-level core HS math course, one could assume that they had acquired the skills of the lower-level core courses. It did frequently occur that students who had no record of completing, for example, high school Elementary Algebra, nevertheless had a record of having completed Geometry and/or Intermediate Algebra in high school. The table below presents data regarding course completion of other HS math courses by students who had no record of completing any of three HS core math courses.

Table 3: Course Completion of “Other” HS Math Courses by Students Who Had No Record of Completing any of Three HS Core Math Courses

High School math course:	Students with no record of having completed:					
	Elementary Algebra (N=385)		Geometry (N=251)		Intermediate Algebra (N=421)	
	N	%	N	%	N	%
	Completing other	Completing other	Completing other	Completing other	Completing other	Completing other
Geometry	267	69.3%			281	66.8%
Intermediate algebra	227	59.0%	111	44.2%		
Trigonometry	14	3.6%	7	2.8%	7	1.7%
Algebra/Trigonometry	33	8.6%	14	5.6%	86	20.4%
Geometry/Trigonometry/Algebra	13	3.4%	14	5.6%	5	1.2%
Functions/Statistics/Trigonometry	60	15.6%	17	6.8%	13	3.1%
Precalculus	52	13.5%	19	7.6%	15	3.6%
Calculus	10	2.6%	6	2.4%	6	1.4%
Senior math	3	7.8%	1	<1%	2	<1%
Advanced math	10	2.6%	2	<1%	4	<1%
Analysis	23	6.0%	8	3.2	14	3.3%
Statistics/probability	7	1.8	2	<1%	3	<1

Finally, several mutually exclusive groups were created describing the HS math courses students had completed. The overall distributions for these groups and distributions within each of the two GC developmental math courses are presented in the table below.

Table 4: Distributions of Completed High School Math Course Curriculum for Students Enrolled in GC Elementary

and Intermediate Algebra Fall 2000 and 2001

High School math course curriculum group:	GC Elementary Algebra		GC Intermediate Algebra		Overall	
	N	%	N	%	N	%
Did not complete any HS math	35	8.0%	11	2.0%	46	4.7%
Completed only elementary algebra	44	10.1%	20	3.6%	64	6.5%
Completed only geometry at most ^a	110	25.3%	76	13.8%	186	18.9%
Completed only intermediate algebra at most ^b	200	46.0%	283	51.5%	483	49.1%
Completed some core plus other math ^c	43	9.9%	150	27.3%	193	19.6%
Completed no core but other math ^d	3	.7%	9	1.6%	12	1.2%
TOTAL	435	100.0%	549	100.0%	984	100.0%

a – might also have record of having completed HS elementary algebra, but not record of completing any other HS math.

b – considered to have completed this if completed intermediate algebra, algebra/trigonometry, or geometry/trigonometry/algebra in high school. Might also have record of completing elementary algebra and/or geometry in high school, but no record of completing any other HS math.

c – completed elementary algebra, geometry and/or intermediate algebra in high school as well as some credits in at least one of the other HS math courses: trigonometry, pre-calculus, calculus, senior math, advanced math, analysis, functions/statistics/trigonometry, statistics/probability.

d – no record of having completed elementary algebra, geometry and intermediate algebra in high school, but did complete some credits in at least one of the other HS math courses (listed in c)