

Relation between 8th Grade Math and High School Math

Terrence Willett, Director of Research
 twillett@calpass.org, (831) 277-2690

This report examines the relation between outcomes in 8th grade math, the first math class attempted in high school, and the highest level of math achieved in high school. A cohort of 1,119 8th grade students taking MATH 8-2 primarily in the 1999-2000 academic year were tracked into high school. Most students attempted Algebra I after taking MATH 8-2 (Table 1). In general, students with lower grades in MATH 8-2 were more likely to attempt a course below Algebra I.

Table 1. Level of first high school math attempted by grade in MATH 8-2.

		Level of first high school math attempted				Total	
		Arithmetic	Pre-Algebra	Algebra I	Above Algebra I	Percent	Count
Grade in MATH 8-2	A	6%	0%	92%	2%	100%	377
	B	10%	2%	85%	4%	100%	247
	C	26%	5%	69%	0%	100%	311
	D	29%	23%	47%	1%	100%	148
	F	24%	26%	50%	0%	100%	116
	All grades combined	17%	7%	75%	2%	100%	
	Total	199	82	898	14		1199

Grade in MATH 8-2 has a significant but weak correlation with grade in the first high school math attempted (Table 2). Looking row wise at GPA's, student's who earned A's or B's in MATH 8-2 have the highest GPA when attempting Algebra I while students who earned C's, D's, or F's in MATH 8-2 have the highest GPA when attempting Pre-Algebra. Almost all MATH 8-2 A or B students attempted the level of math associated with the highest grades in high school math. Other students, C students in particular, appeared more likely to attempt a level of math not associated with the highest grades earned in high school math.

Table 2. GPA in first high school math by grade in MATH 8-2.

		Level of first high school math attempted				All levels combined	Total Count
		Arithmetic	Pre-Algebra	Algebra I	Above Algebra I		
Grade in MATH 8-2	A	1.99	*	2.79	2.43	2.74	377
	B	1.73	*	2.49	2.08	2.39	247
	C	2.04	2.94	2.00	*	2.05	311
	D	1.90	2.27	1.59	*	1.84	148
	F	1.86	2.10	1.58	.	1.78	116
	All grades combined	1.94	2.32	2.36	2.09	2.28	
	Total Count	199	82	898	14		1199

About half of the cohort attempted at least Algebra II in high school (Table 3). There is a significant and moderately strong relationship between higher grades in MATH 8-2 and attempting higher levels of math in high school.

Table 3. Highest level of high school math attempted by grade in MATH 8-2.

		Highest level of high school math attempted				Total	
		Algebra I or below	Geometry	Algebra II	Above Algebra II	Percent	Count
Grade in MATH 8-2	A	6%	13%	4%	78%	100%	377
	B	10%	15%	9%	66%	100%	247
	C	20%	32%	10%	37%	100%	311
	D	34%	41%	5%	21%	100%	148
	F	44%	33%	8%	16%	100%	116
	All grades combined	17%	24%	7%	52%	100%	
	Total	209	284	84	622		1199

Grade in MATH 8-2 has a significant but weak correlation with grade in the highest level of high school math attempted (Table 4). In general, within each MATH 8-2 grade, students attempting higher levels of math earned higher grades on average. An exception is students who earned a D in MATH 8-2 whose highest grades are for those whose highest level of high school math was Algebra I.

Table 4. GPA in first high school math by grade in MATH 8-2.

		Highest level of high school math attempted				All levels combined	Total Count
		Arithmetic	Pre-Algebra	Algebra I	Above Algebra I		
Grade in MATH 8-2	A	1.54	1.57	1.84	2.46	2.27	377
	B	1.70	1.63	1.99	2.17	2.03	247
	C	1.38	1.70	1.56	1.96	1.72	311
	D	1.38	1.74	1.97	1.69	1.62	148
	F	1.28	1.62	1.85	1.84	1.52	116
	All grades combined	1.41	1.67	1.78	2.23		
	Total Count	209	284	84	622		1199

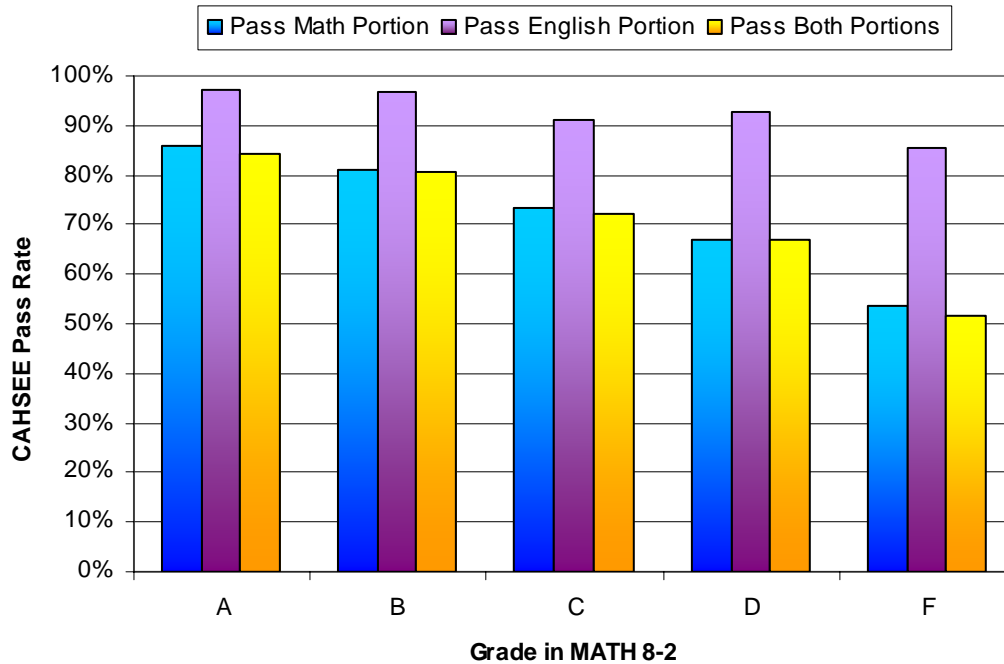


Figure 1. California High School Exit Exam (CAHSEE) pass rates by grade in MATH 8-2.

There is a significant but weak correlation between grade in MATH 8-2 and passing either or both portions of the California High School Exit Exam (CAHSEE) (Figure 1). There is a significant and moderately strong relation between the highest level of math attempted and passing either or both portions of the CAHSEE.

Outcomes by Demographics

Males were more likely than females to have higher grades in MATH 8-2 but females tended to have higher grades in the highest level of math attempted. There did not appear to be any differences by gender in level of first math or highest math attempted in high school. Females were more likely to have passed the English portion of the CAHSEE while there was no difference by gender in pass rates on the math portion. Males were more likely to have passed neither portion of the CAHSEE.

In MATH 8-2, Asians were more likely to have a grade of A, Whites and African-Americans were more likely to have a grade of B, and Hispanics were more likely to have a grade of D or F. While most students' first high school math was Algebra I, African-Americans were more likely to attempt a higher level class while Hispanics were more likely to attempt lower level classes. About half of all students attempted Algebra II or above with Asians more likely to be in this category and Hispanics more likely to have a highest level attempted lower than Algebra II. Asians and Whites were more likely to pass the math portion of the CAHSEE while there were no differences by ethnicity in pass rates on the English portion. Hispanics were more likely to have passed only one portion of the CAHSEE.